National Education Assessment 2021 – Grade III Report

Bhutan Council for School Examinations and Assessment
Ministry of Education and Skills Development
Royal Government of Bhutan, 2023

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This National Education Assessment 2021– Grade III (End of Lower Primary School) Report is developed by Assessment and Monitoring Division (AMD), Bhutan Council for School Examinations and Assessment (BCSEA) in collaboration with the Australian Council for Educational Research (ACER), India under National Education Assessment (NEA) project.

The project is funded by Global Partnership for Education (GPE) under Education Sector Programme Implementation Grant (ESPIG) with support from Save the Children International-Bhutan (SCI) as Grant Agent and United Nations International Children's Fund (UNICEF) as Coordinating Agency.

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GNH Progress Wheel

Acknowledgements

The Bhutan Council for School Examinations and Assessment (BCSEA) would like to acknowledge the contribution of team members involved in the development of National Education Assessment 2021-Grade III Report.

The assessment teams from BCSEA, NEA administration team, school staff and students, officials from other agencies and the team from Australian Council for Educational Research (India) who have worked collaboratively to deliver this report.

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We would like to thank GPE for the financial support, UNICEF for its role as the Coordinating Agency and SCI as the Grant Agent in the development of National Education Assessment -2021 Grade III Report. We also extend our deep appreciation to all the stakeholders for providing valuable feedback and suggestions during the series of consultative meetings – the BCSEA Board of Directors' Meeting, Education Sector Coordination Meeting, Curriculum and Technical Advisory Board Meeting and all school teachers, principals and Dzongkhag/Thromde Officers.

MINISTER

དཔལ་ལྡན་འབྲུག་གཞུང་། ཤེས་རིག་ལྟན་བཞག།

Royal Government of Bhutan
Ministry of Education

Rethinking Education

FOREWORD

Bhutan aims to build an education system that helps students develop the necessary skills and abilities that enable them to succeed in the 21st century. The focus remains on imparting both traditional and modern values intrinsic to the Bhutanese identity. The Draft National Education Policy 2019 and Bhutan Education Blueprint 2014-24 reflect and support the development of a robust, inclusive and holistic education system.

The National Education Assessment (NEA), a triennial large scale education assessment, conducted by the Bhutan Council for School Examinations and Assessment (BCSEA) with technical support from the Australian Council for Educational Research (India) and financial assistance from Global Partnership for Education (GPE). It was a move towards Bhutan's efforts in providing quality education to all students and improvement of learning outcomes. Based on the National Educational Assessment Framework (NEAF) developed in 2020, the assessment measures students' knowledge, skills, understandings and their ability to apply them in real world contexts.

In 2021, NEA was administered to Grade III students in specific areas of learning. This assessment was different from the earlier cycles of NEA as it was scientifically designed to measure the competencies of students rather than students' rote memorisation of content.

The assessment approach of NEA 2021 will inform the future cycles of NEA to establish an assessment system in Bhutan which is technically rigorous and validated through research to produce valid, reliable, and timely results that help to understand what students know and can do at the key stage of learning.

NEA 2021 will help to understand the learning progress of students over time and ensure the participation of students with special needs through the provision of accommodations.

The findings from NEA 2021 cycle show that most students were able to achieve the minimum proficiency levels. It also provides valuable insights into the factors affecting student learning outcomes, teaching and learning during COVID-19 and areas of concern that would require additional resources and support.

Ministry of Education and Skills Development, Royal Government of Bhutan intends to respond by follow up on the recommendations and interventions highlighted in this report which is targeted to improve student performance and to enhance the overall quality of the education system. Stakeholders at different levels need to consider the use of the assessment data to make decisions on how to provide students with appropriate resources and support teaching that will help to improve learning outcomes throughout the school years.

Success in education relies on people and organisations across the community working together for the benefit of children and young people. We trust the information in this report will help all of us involved in improving our education system.

I would like to commend BCSEA for spearheading the conduct of NEA 2021 and coming up with the NEA report on time, Australian Council for Education and Research(ACER) India for rendering the technical support, GPE for the financial support, UNICEF as coordinating agency and Save the Children (SCI) as grant agent.

Tashi Delek!

Minister
Ministry of Education and Skills Development

FOREWARD

The National Education Assessment (NEA) 2021 is a ground-breaking large-scale survey in the history of Bhutan's educational reforms. It marks the inception of an assessment system that focuses on measuring competencies and attributes of students and not simply the memorisation of facts.

NEA 2021 report presents the results achieved by grade III students in Dzongkha, English and Mathematics assessment, the outcome of resources invested in our education system, and the learning environments in our schools and communities. It also describes the variation in performance among students from different districts in the domains tested; between boys and girls; between rural and urban schools; between private and public schools and between students from high-income and low-income families.

NEA 2021 was conducted at a time when schools and learners spent the past year learning virtually due to the COVID-19 pandemic. Thus, student outcomes cannot be viewed without considering the profound impact of the emergency on learners and learning.

The data on student performance along with the factors affecting education will enable the policy makers and educationists to understand what students know and can do, so that they can identify the areas which require improvement and also to elucidate if the existing interventions are supporting the improvement of learning of all learners, leaving no one behind.

The capacity building activities that were embedded into each phase of the 14 key areas of robust assessment programme resulted in strengthening the capacity of the technical core team members of Bhutan which will benefit in the seamless and successful conduct of future NEA cycles.

This report would not have been possible without the collaborative efforts and inputs from the Ministry of Education and Skills Development, Department of Education Programs, Department of School Education, Dzongkhag/Thromde Education Offices, Schools, Royal University of Bhutan, Save the Children, UNICEF, ACER-India and Global Partnership of Education (GPE).

I would like to commend on the tireless effort put by BCSEA core team in collaboration with ACER, India in coming up with this report on time.

Tashi Delek!

Director
Bhutan Council for School Examinations and Assessment
Ministry of Education and Skills Development

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List of abbreviations

ACER	Australian Council for Educational Research
AF	Assessment Framework
AMD	Assessment and Monitoring Division
BBE	Bhutan Board of Examinations
BCSEA	Bhutan Council for School Examinations and Assessment
CDEO	Chief District Education Officer
CRT	Constructed Response Task
CTEO	Chief Thromde Education Officer
CTT	Classical Test Theory
CWD	Children With Disabilities
DCPD	Department of Curriculum and Professional Development
DYS	Department of Youth and Sports
ECCD	Early childhood care and development
EMIS	Education Management Information System
ESPIG	Education Sector Programme Implementation Grant
GDP	Gross Domestic Product
GNH	Gross National Happiness
GPE	Global Partnership for Education
HOD	Head of Department
HSS	Higher Secondary School
ICT	Information and Communications Technology
IQR	Inter-Quartile Range
IRT	Item Response Theory
J-PAL	Abdul Latif Jameel Poverty Action Lab
MCQ	Multiple Choice Question
MoE	Ministry of Education
MoESD	Ministry of Education and Skills Development
MSS	Middle Secondary School
NCWC	National Commission for Women and Children
NEA	National Education Assessment
NEAF	National Educational Assessment Framework
NEP	National Educational Policy
OECD	Organisation for Economic Cooperation and Development

OLS	Ordinary Least Squares
PD	Professional development
PISA-D	Programme for International Student Assessment for Development
PPD	Policy and Planning Division
PPS	Probability Proportional to Size
REC	Royal Education Council
RGoB	Royal Government of Bhutan
SCI	Save the Children
SDG	Sustainable Development Goal
SEN	Special Education Needs
SES	Socio-economic status
SIM	Self-Instructional Manual
SIP	School Improvement Plan
SPMS	School Planning and Management System
SRS	Simple Random Sampling
TLM	Teaching Learning Materials
TRE	Teacher Requirement Exercise
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Fund

Executive summary

Bhutan is a unique sovereign nation in the world. It has adopted Gross National Happiness rather than Gross Domestic Product as an indicator of its developmental progress. This governmental strategy percolates the country's education policies and programmes.

Since the introduction of modern education in the 1960s, Bhutan has made considerable progress in achieving the objectives of enhancing access to education and ensuring educational quality, equity, and efficiency within the system.

The Royal Government of Bhutan introduced the National Education Assessment (NEA) to understand what students in the country know and can do with their learning. The results of this large-scale assessment will enable the government to take proactive measures in the provision of quality and equitable education.

NEA is a triennial large-scale assessment programme that evaluates the ability of students in using knowledge, skills, values, and attitudes related to core school subjects in grades III, VI and IX which are the key stages of student learning in Bhutan.

NEA 2021 was conducted from November to December 2021 in Dzongkha Reading, English Reading and Mathematical Literacy with grade III learners. From this year onwards, children with disabilities will be able to participate in NEA as Accommodation Guidelines for the Assessment of Children with Disabilities were developed.

NEA being the first national assessment adopting the literacy approach, scales scores were used for the first time in the 2021 cycle for reporting learning of students. The scale scores are derived through scientific calculations based on international best practices. It is expected that NEA will continue to use scale scores for reporting learning achievements in the foreseeable future.

Scale scores enable the comparison of assessment results of future cycles with the current ones, and trace changes in student learning over time and between different cohorts and grades. The average score for the whole population tested is initially set at 300, with a standard deviation of 50 for NEA 2021 for each testing literacy. However, if educational standards improve, the overall average will rise in future cycles.

Participation in the National Education Assessment 2021

- Cognitive test participation

A total of 4,685 (35%) grade III students, including (24) students with special needs, from 184 schools across 24 Dzongkhags and Thromdes participated in NEA 2021.

4,685 students

184 schools

24 Dzongkhags and Thromdes

There were 19 private schools included in the sample, constituting 8 percent student participation.

Management	Number of schools	Number of students	Student percentage
Public	165	4308	92%
Private	19	377	8%
Total	**184**	**4685**	**100%**

Participation from rural areas (2,480 students, 53%) was 6 percent higher- than urban areas (2,205 students, 47%).

Area	Number of schools	Number of students	Student percentage
Rural	106	2480	53%
Urban	78	2205	47%
Total	**184**	**4685**	**100%**

Girls (2,328 students, 50%) and boys (2,357 students, 50%) equally participated in the assessment.

Gender	Number of schools	Number of students	Student percentage
Female	184	2328	50%
Male	183	2357	50%
Total	**184**	**4685**	**100%**

District	Number of schools	Number of students	Student percentage
Bhumtang	4	101	2%
Chhukha	11	286	4%
Dagana	7	170	4%
Gasa	2	27	1%
Gelephu Thromde	2	64	1%
Haa	7	164	4%
Lhuentse	4	89	2%
Mongar	9	219	5%
Paro	15	350	7%
Pema Gatshel	5	117	2%
Phuntsholing Thromde	5	137	3%
Punakha	6	170	4%
Samdrup Jongkhar	6	141	3%
Samtse	15	406	9%
Sarpang	9	251	5%
SJongkhar Thromde	2	64	1%
Thimphu	5	151	3%
Thimphu Thromde	27	744	16%
Trashigang	14	325	7%
Trashiyangtse	5	123	3%
Trongsa	4	102	2%
Tsirang	6	148	3%
Wangdue Phodrang	10	250	5%
Zhemgang	4	86	2%
Total	**184**	**4685**	**100%**

• Questionnaire participation

Questionnaire	Number of participants
Student Background Questionnaire	4658
Value Questionnaire (Student)	4656
Value Questionnaire (Teacher)	4662 entries by teachers
Teacher Background Questionnaire	558
Principal Questionnaire	184
CDEO/CTEO Questionnaire	24

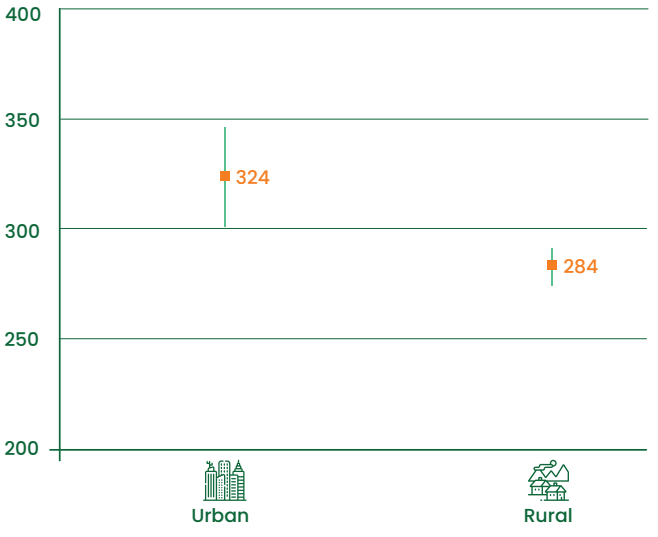
• What students know and can do

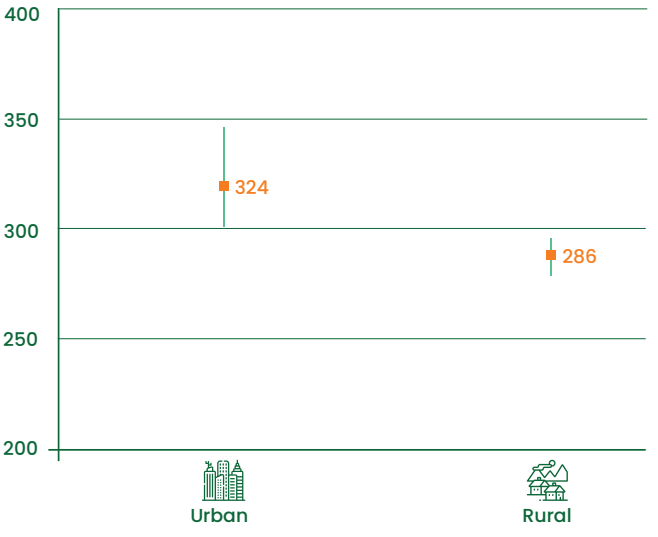
Student performances in each test domain were distributed around the set mean in most of the districts.

Urban and rural schools

English	Mean	SE	Confidence Interval
Urban	324	11.4	302-347
Rural	284	3.1	278-290

Mathematical literacy	Mean	SE	Confidence Interval
Urban	321	8.7	304-338
Rural	286	2.9	280-292

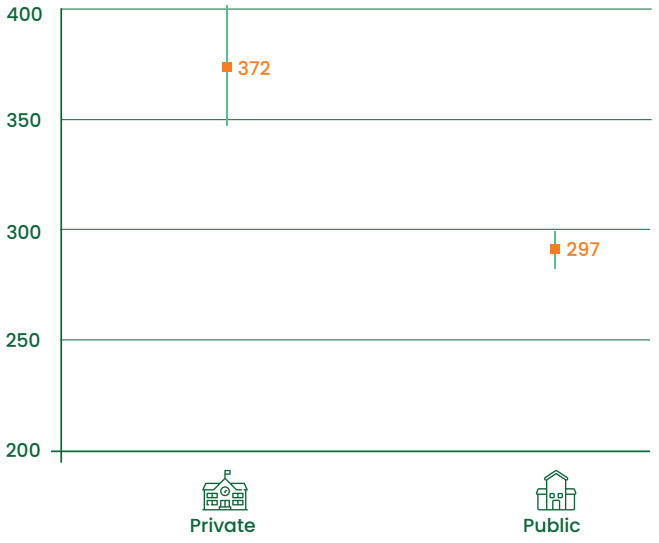


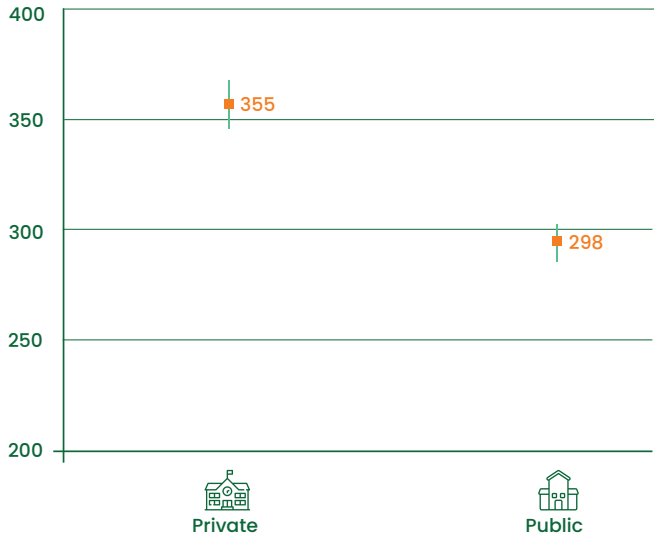


Private and public schools

English	Mean	SE	Confidence Interval
Private	372	16	341-404
Public	297	6	285-309

Mathematical literacy	Mean	SE	Confidence Interval
Private	355	6.3	342-367
Public	298	5.9	286-309



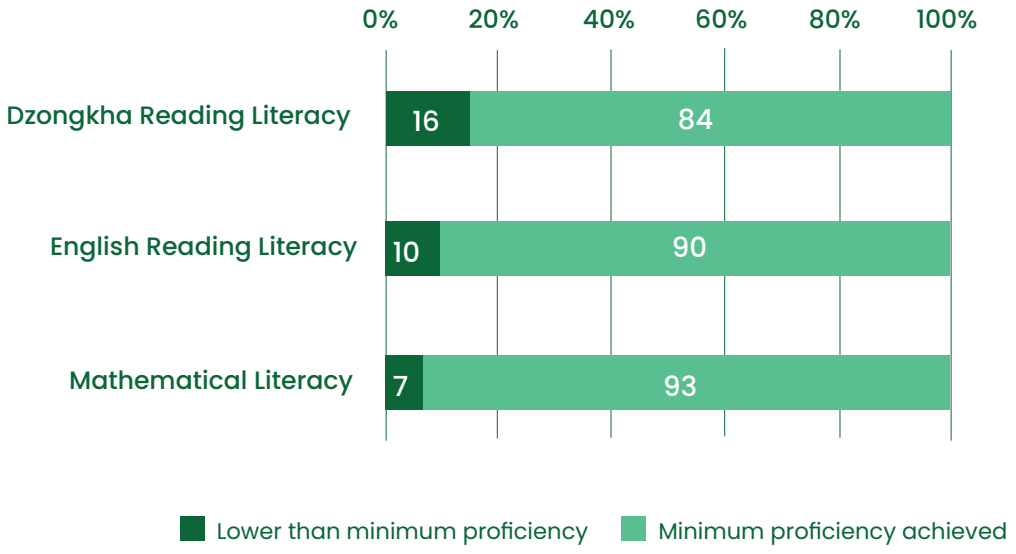


Factors affecting student performance

- Girls were more likely to outperform boys in Reading Literacy, both Dzongkha and English.
- Students from a higher-income household and students with college educated father performed better in English Reading and Mathematical Literacy.

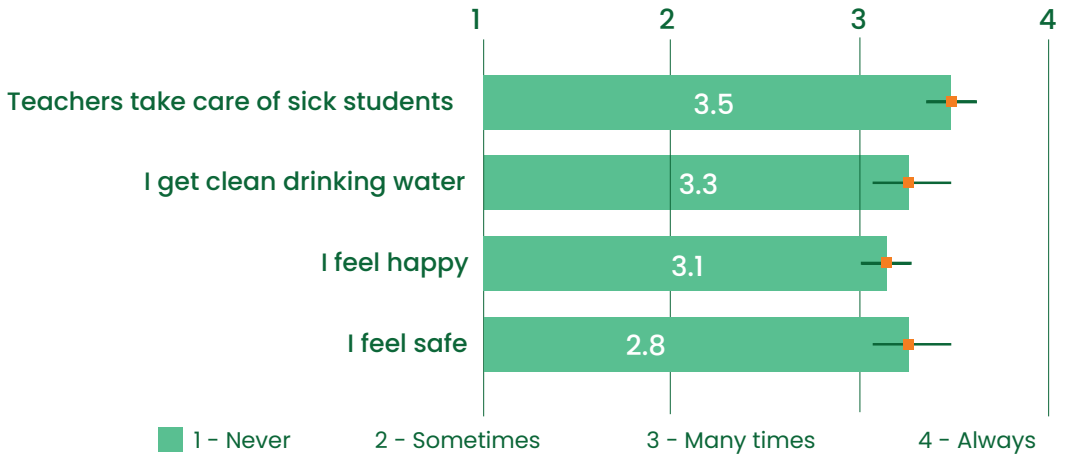
Minimum profeciencies

At the national level, 84 percent of students in Dzongkha Reading, 90 percent in English Reading and 93 percent in Mathematical Literacy were able to meet the minimum proficiencies for grade III.



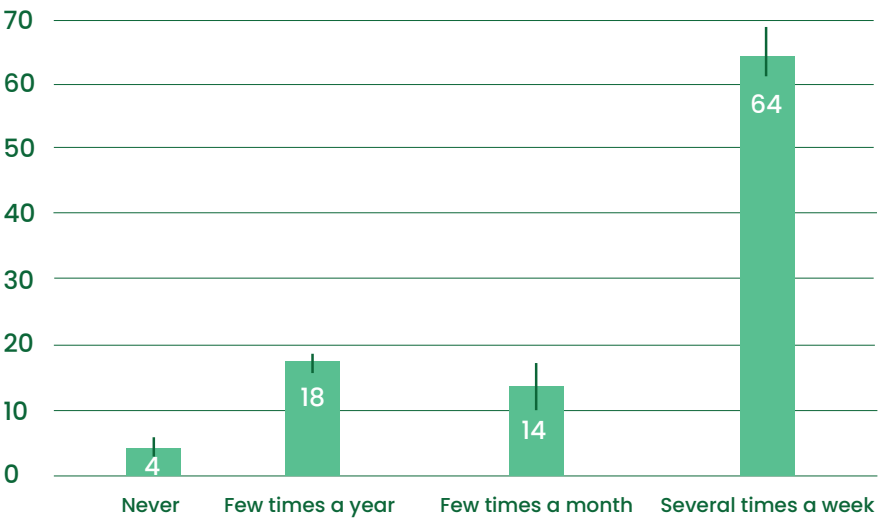
- ## Environment for students

Students evaluated their school environments positively.

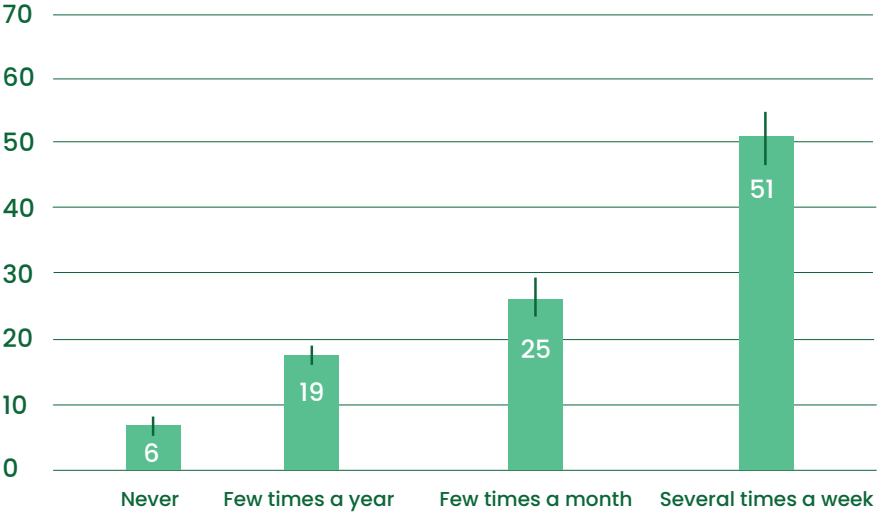


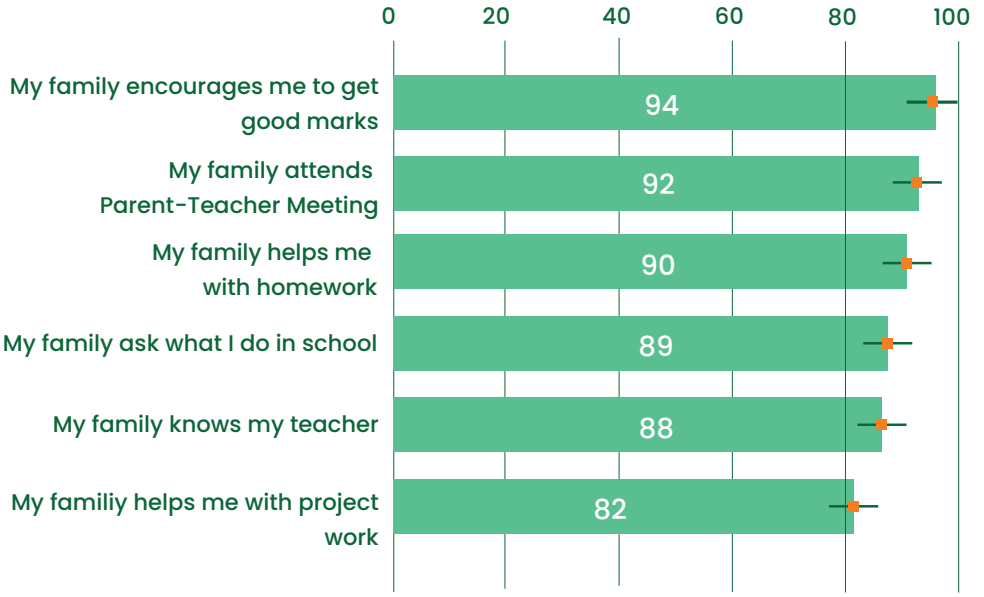
Healthy family interactions were reported by most of the students.

Family activities: Your parents or someone in your family eat meals with you (%)

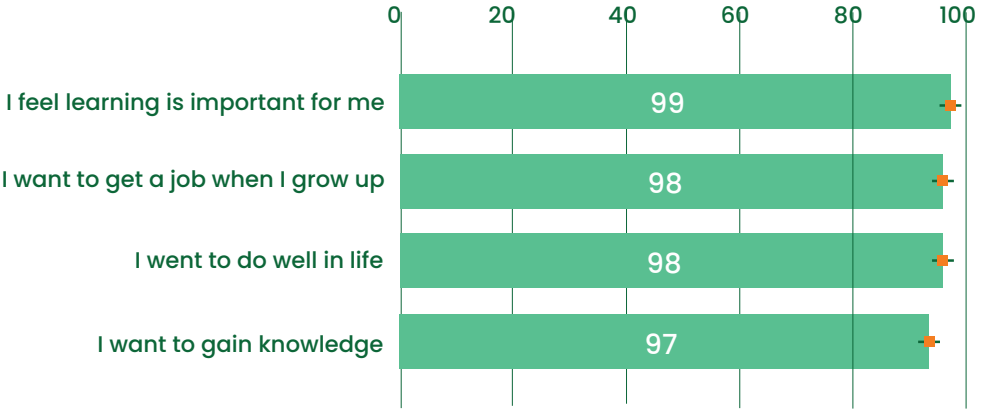


Family activities: Your parents or someone in your family talk to you about the importance of education (%)

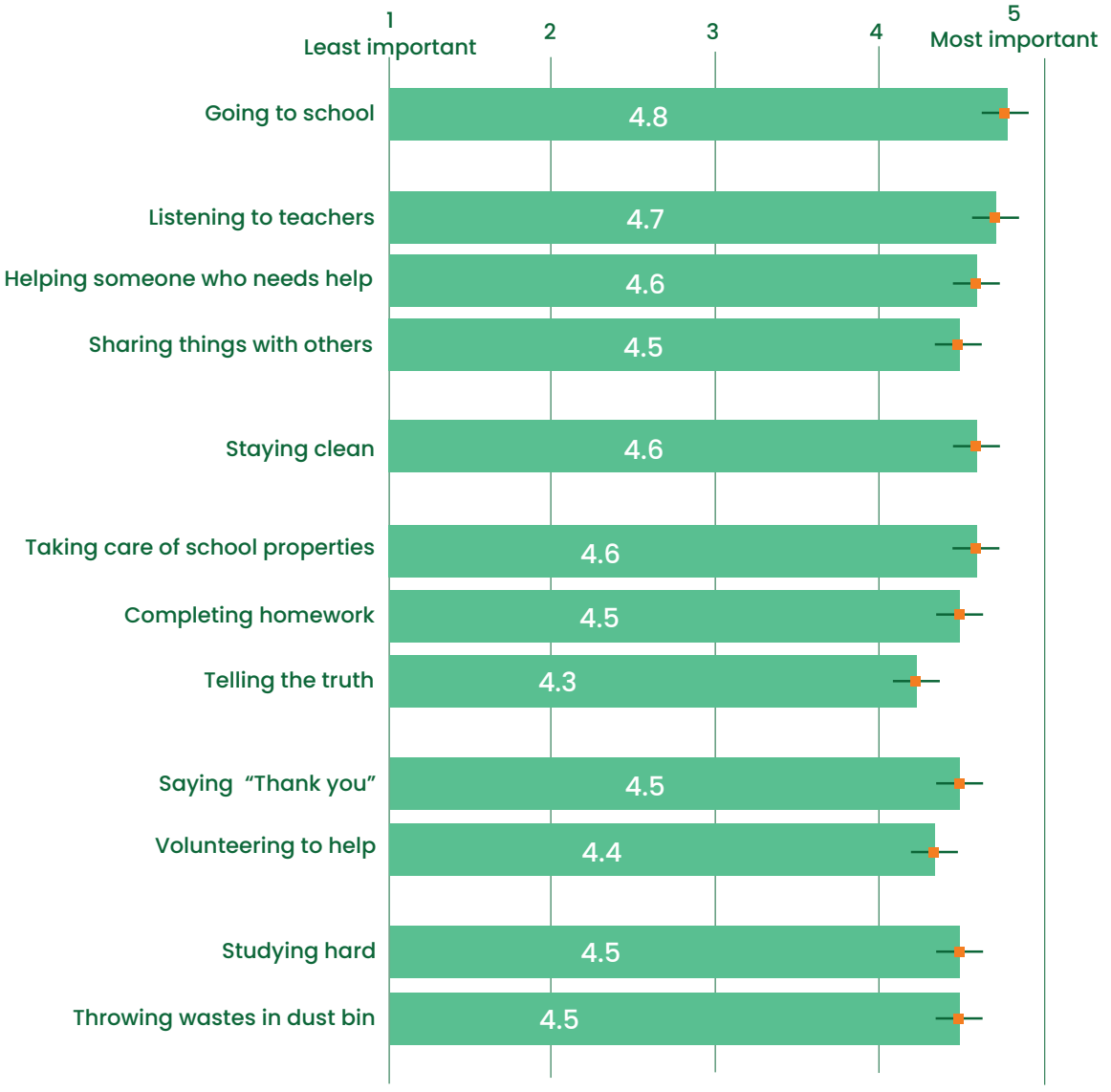




Students had positive attitudes towards learning.

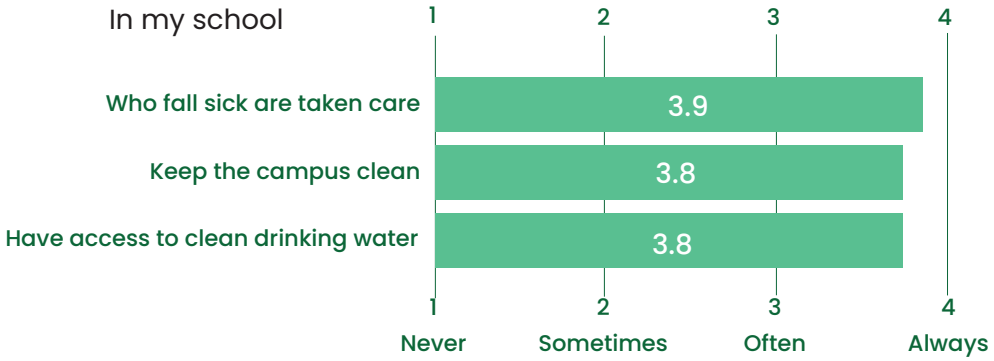


Based on the self-ratings of students on the nine student attributes, students nurtured the nine attributes well.

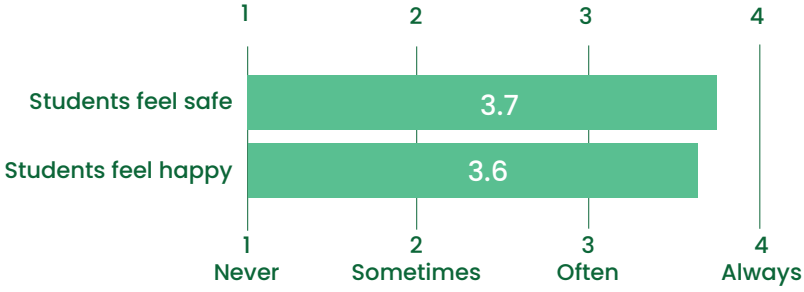


- ## Environment for teachers

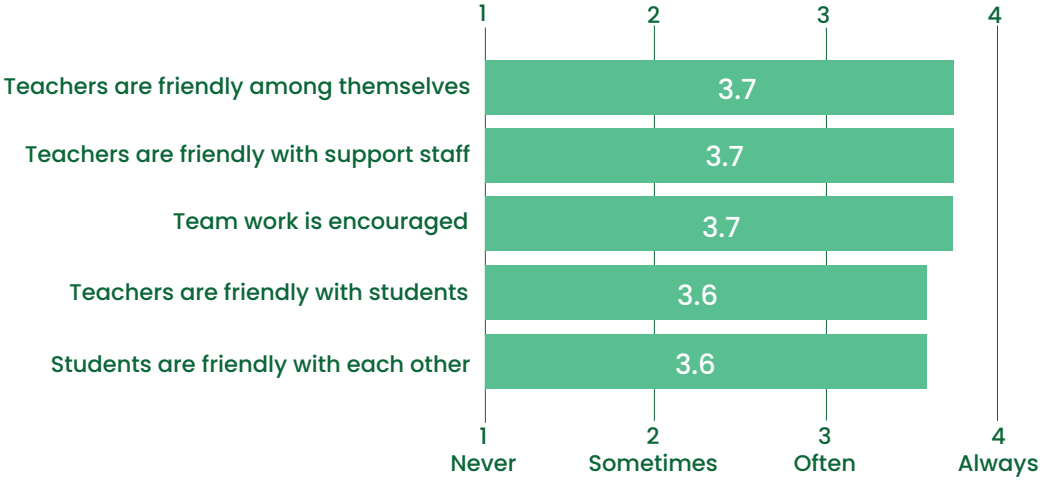
Teachers reported positive school environment.



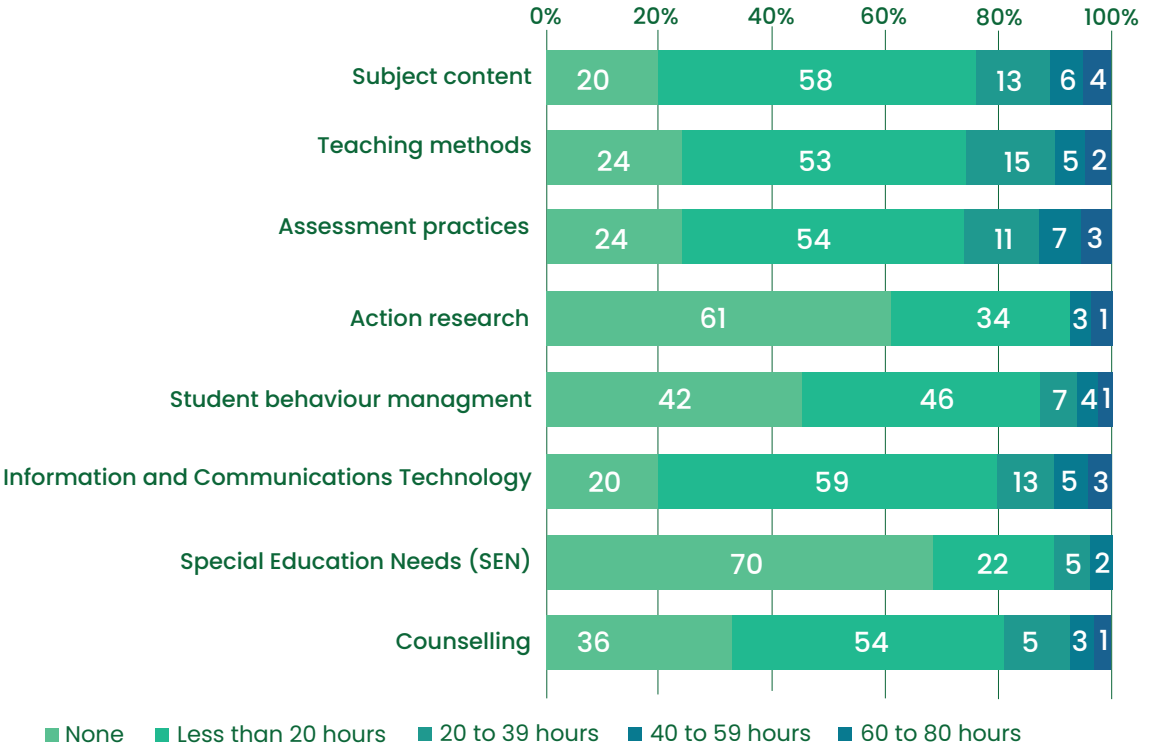
Teachers evaluated that students in their schools felt safe and happy.



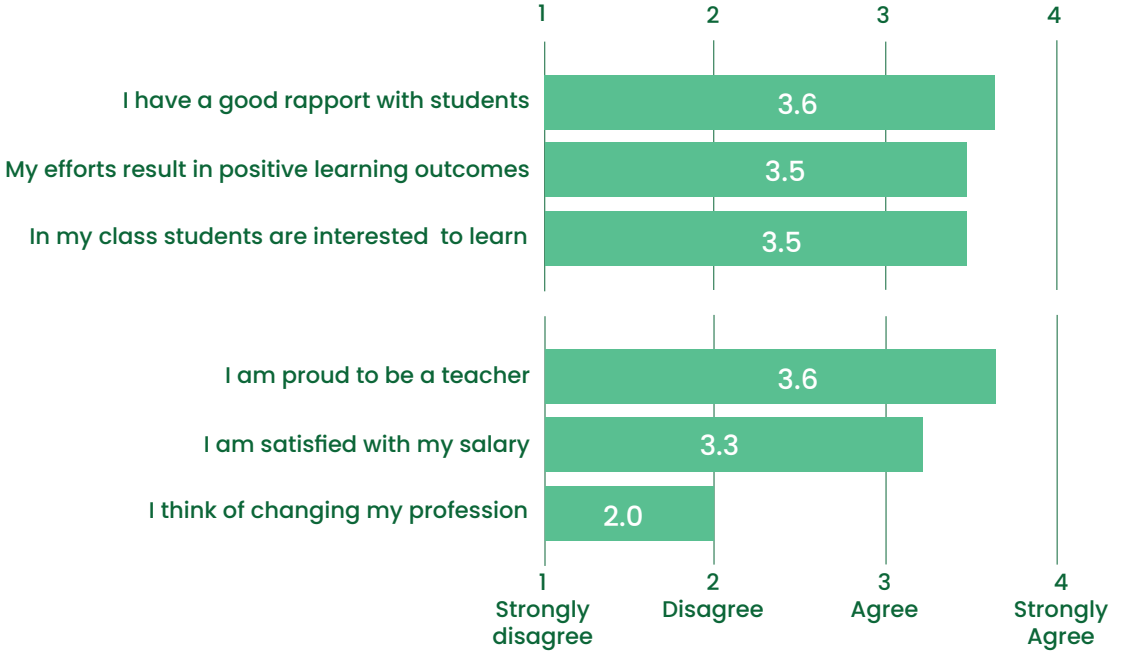
Teachers agreed that their school environments are friendly, cooperative, and orderly.



Teachers received various professional development programmes in 2021.

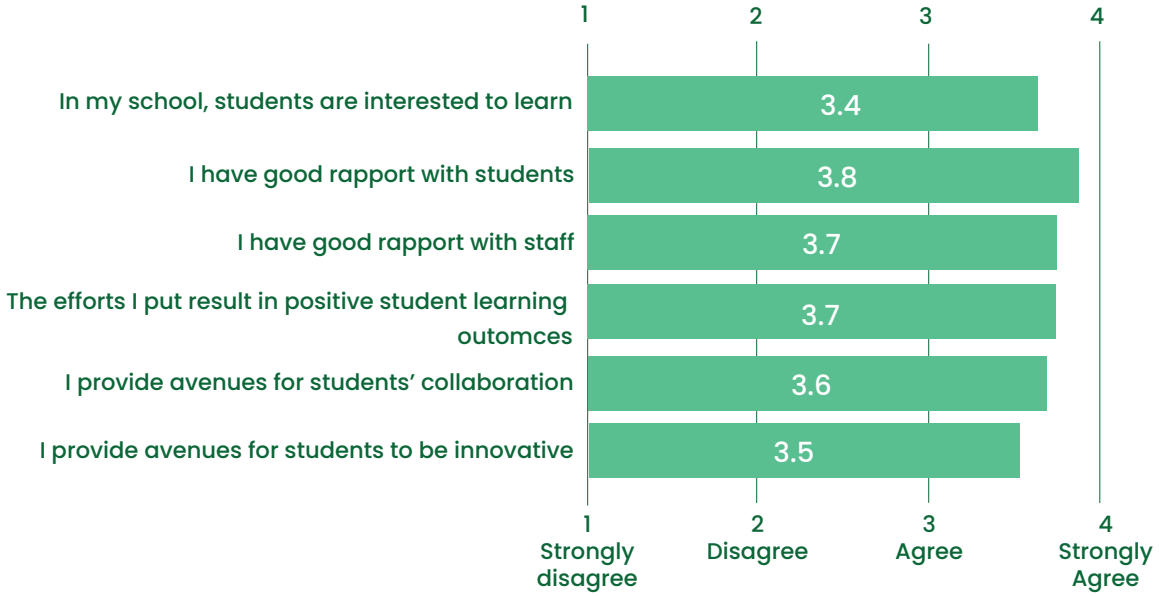


Teachers reported that they were highly motivated to teach with high job satisfaction.

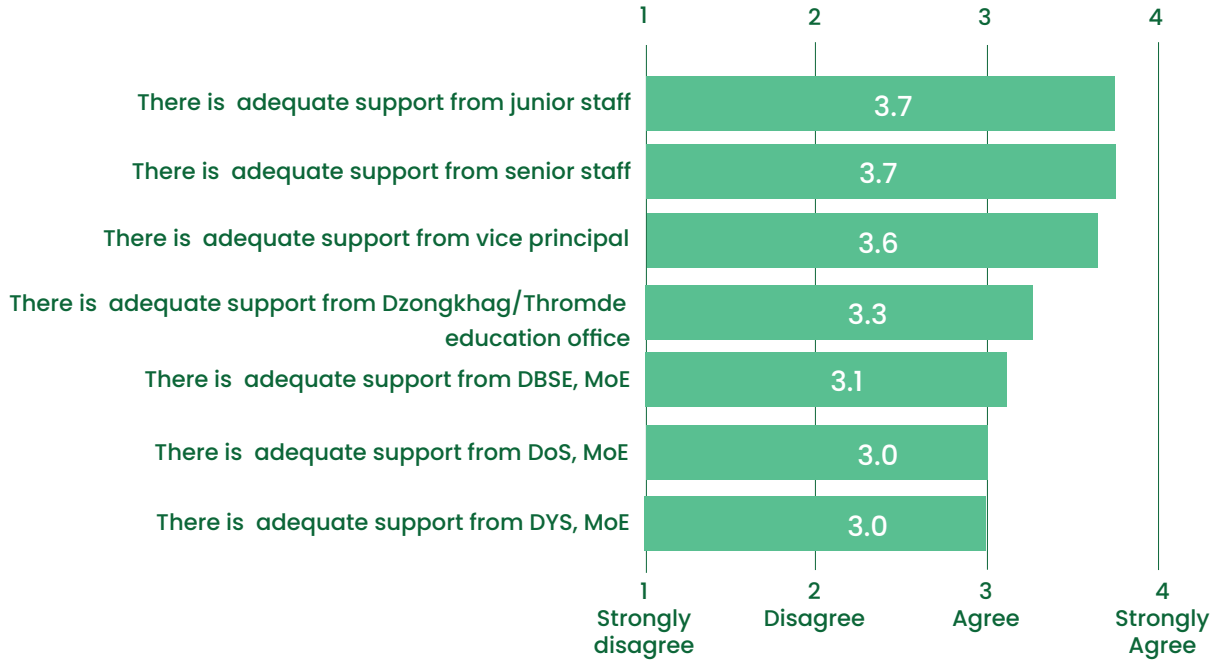


- ## Environment for schools

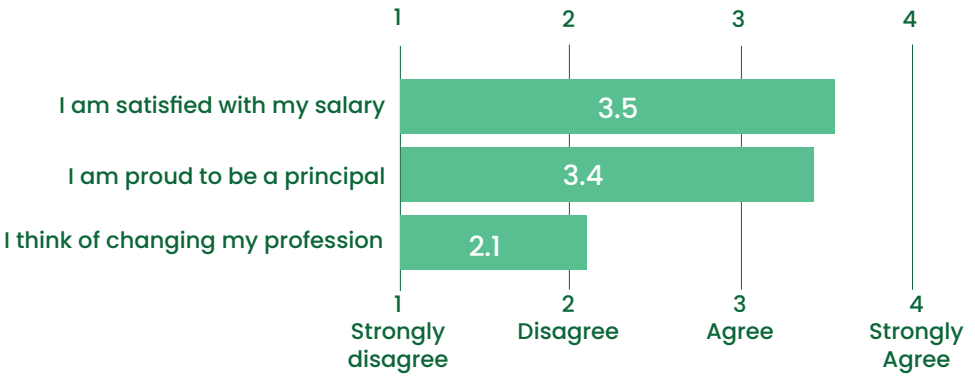
Principals evaluated that their school environments were positive. They maintained good relationships with their school staff and students. They felt that their efforts contributed to improving student learning outcomes.



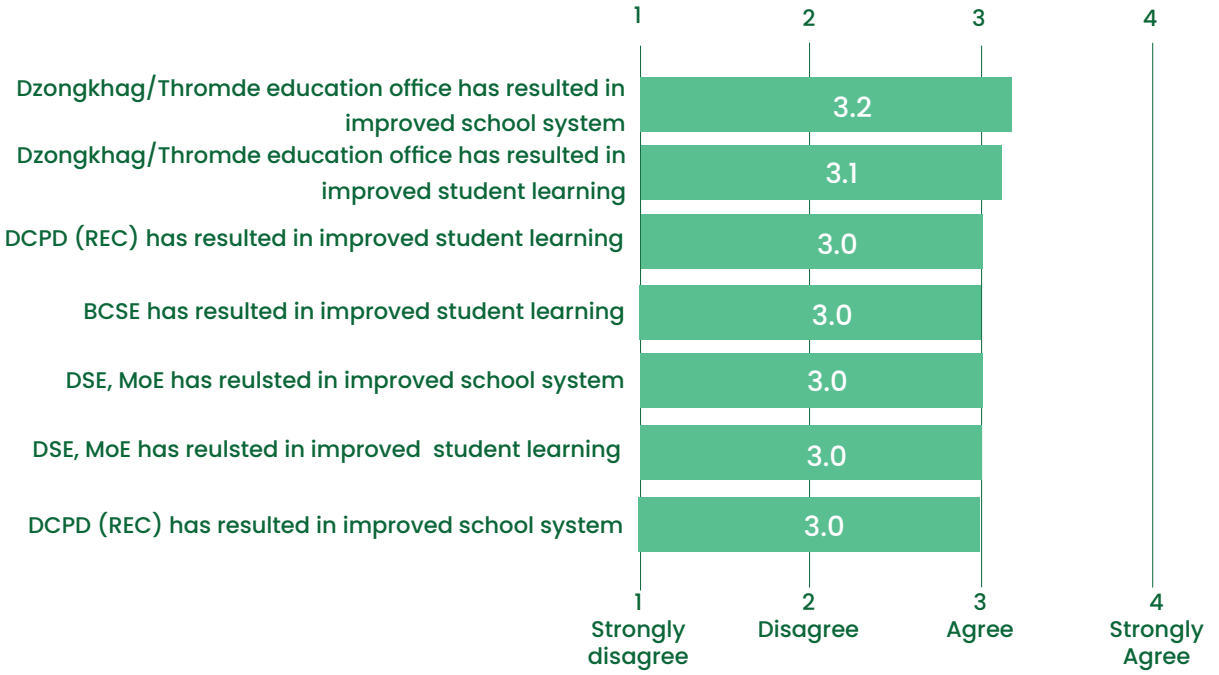
Principals received adequate support from their school staff, vice principals, district education offices, and MoE.



Principals reported they had a high level of job satisfaction.

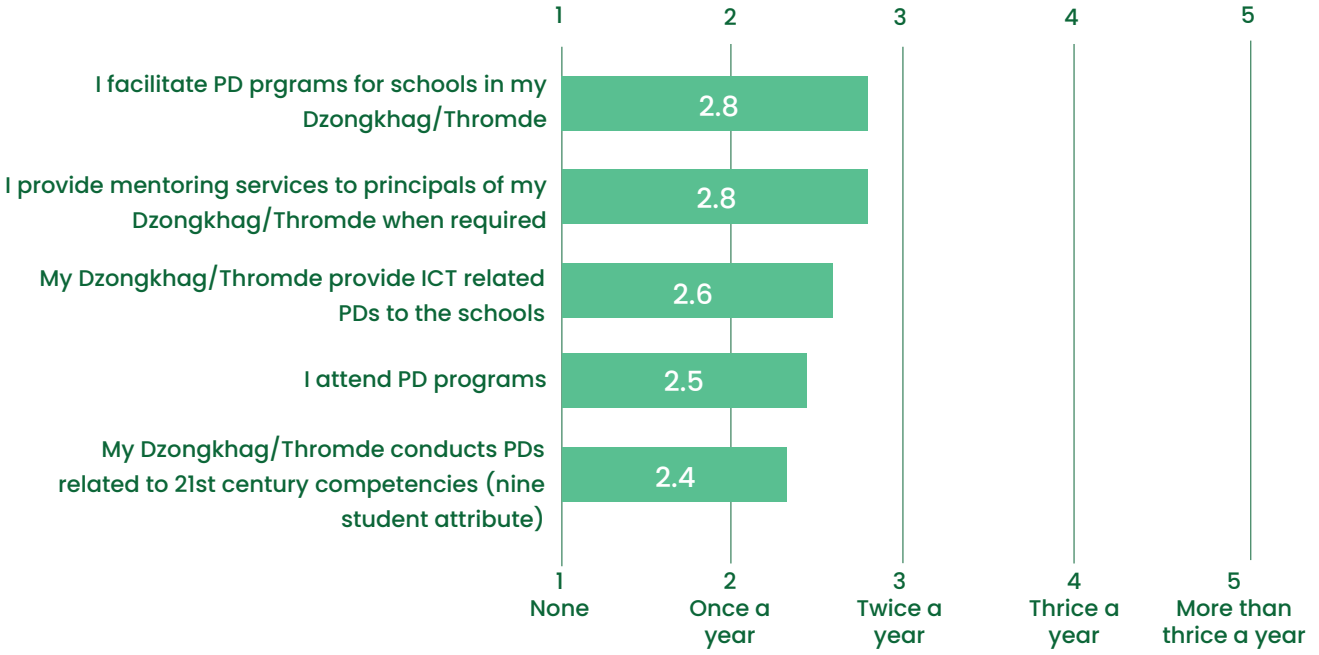


Principals evaluated the support from district education offices was more effective.

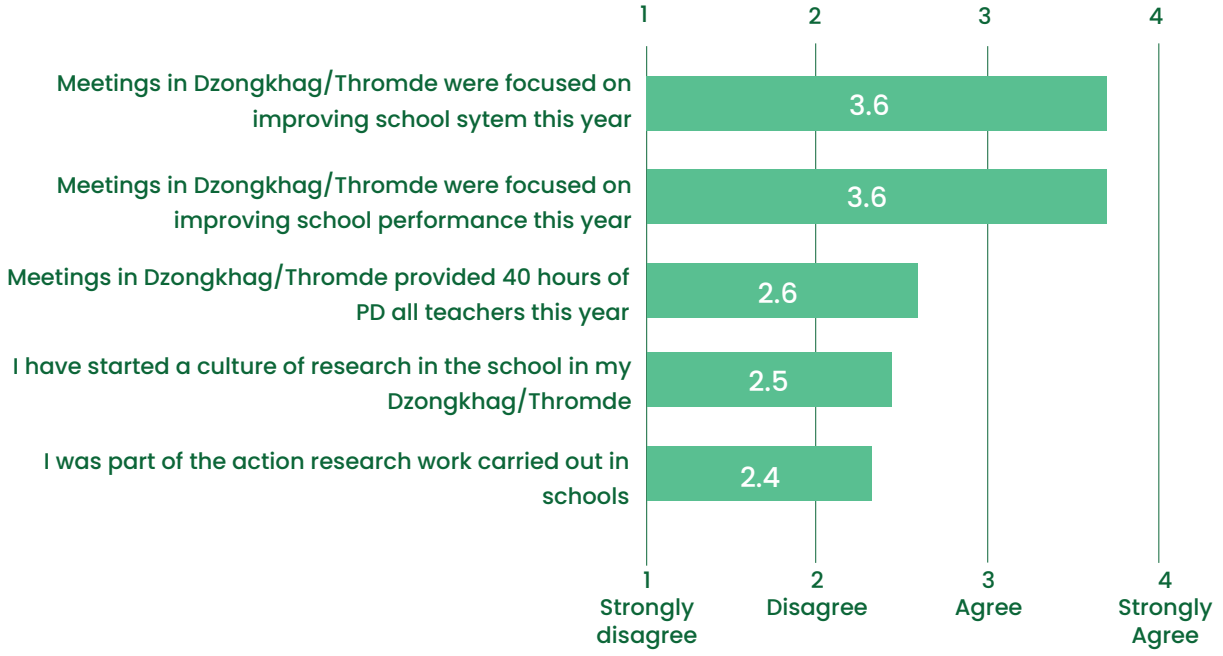


- ## Support from districts

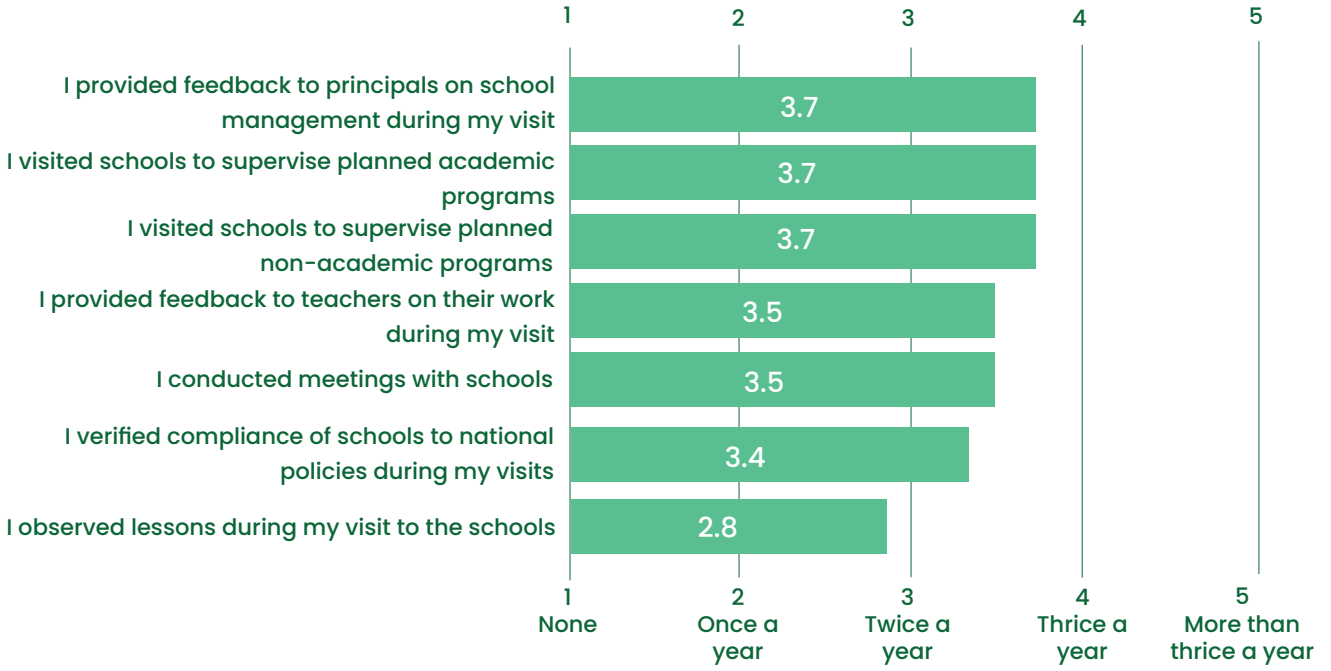
Various professional development activities took place at least once a year.



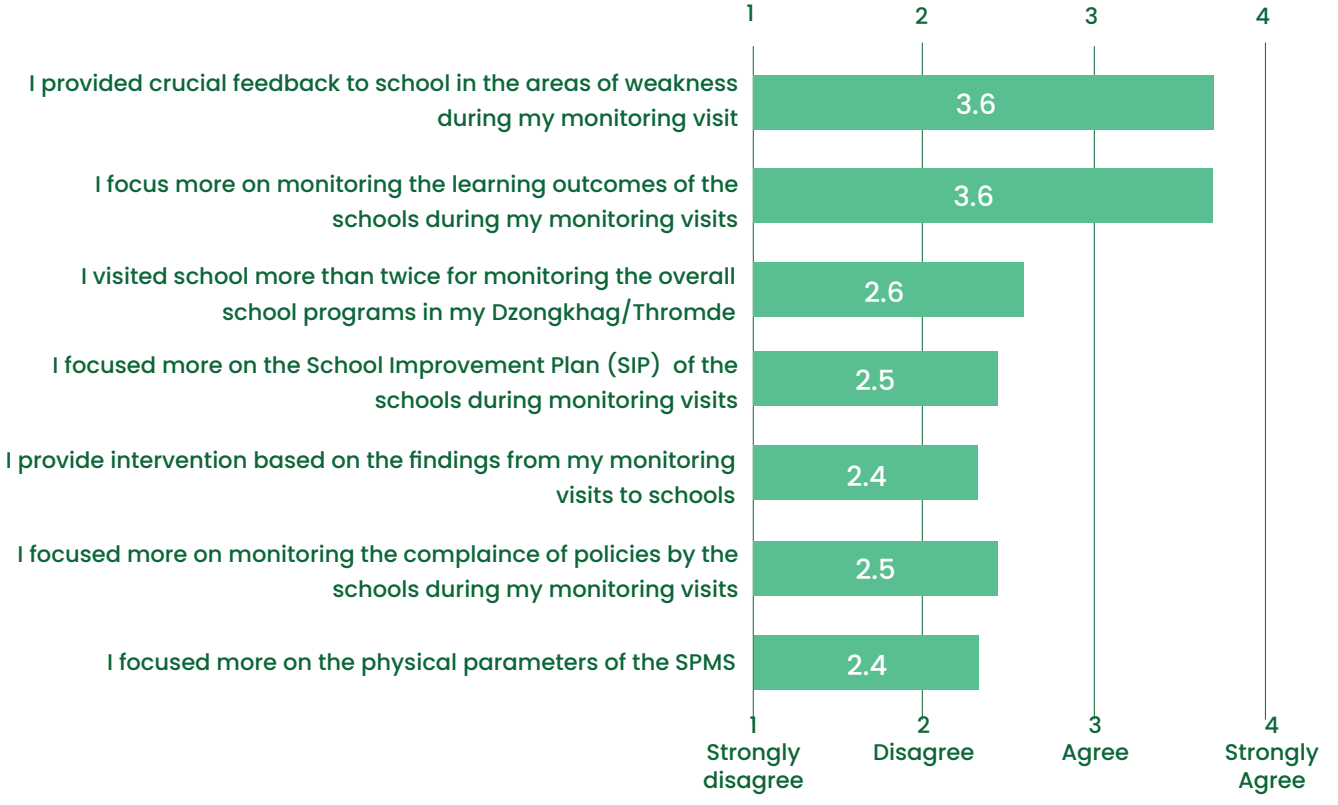
CDEOs and CTEOs evaluated their professional development support in various ways.



CDEOs and CTEOs reported that they were engaged with each of the professional supervision activities at least twice a year.

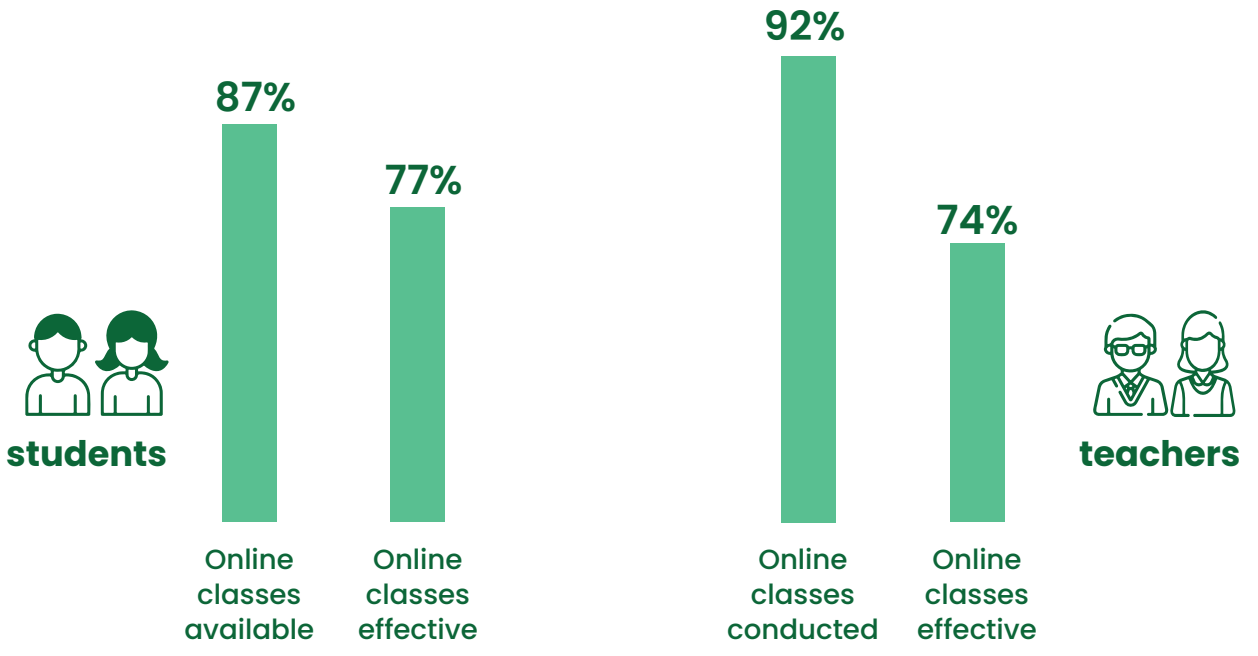


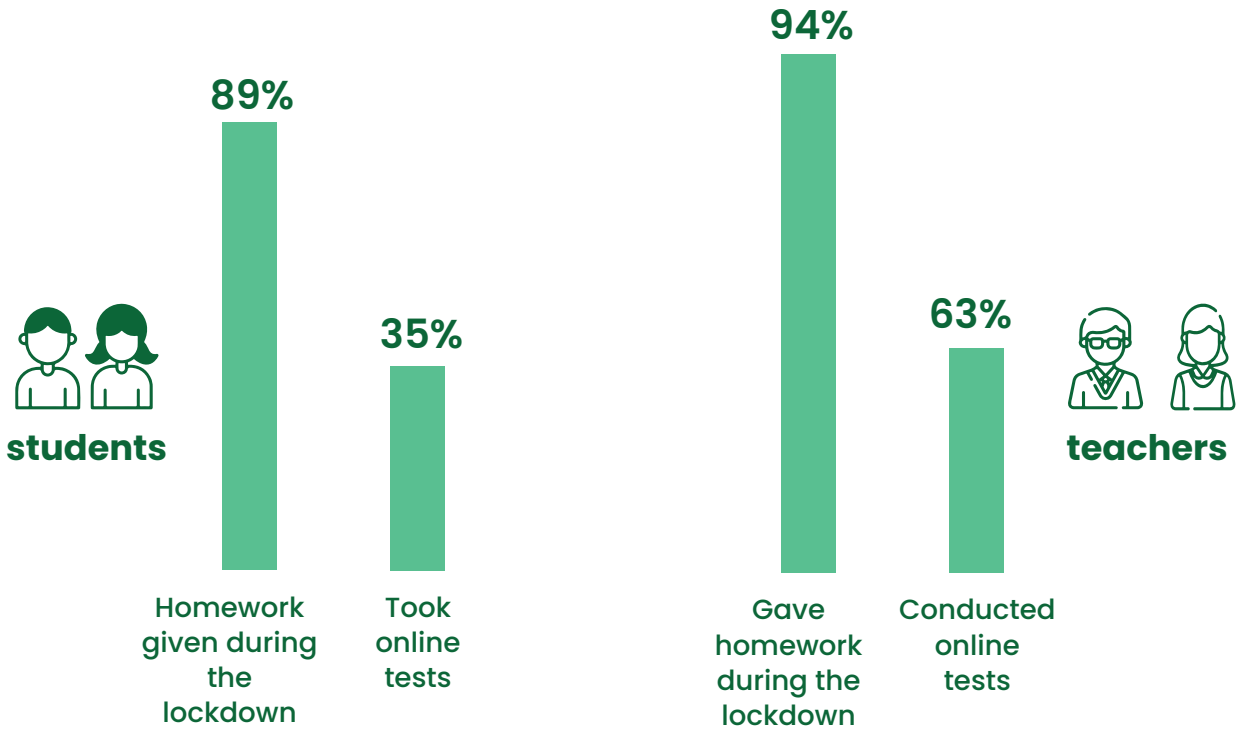
CDEOs and CTEOs reported that resource management was carried out in their districts following the regulations.



- Teaching and learning during the COVID pandemic period

The availability of online classes was rated higher than the effectiveness of online classes by students and teachers.





Chapter 1. Introduction

Box 1:
The National Education Assessment

The National Education Assessment (NEA) is a triennial large-scale competency-based assessment programme conducted in Bhutan by the Bhutan Council for School Examinations and Assessment (BCSEA) at grades III, VI and IX in core school subjects. NEA:

- assesses students' learning outcomes at grades III, VI and IX every three years;
- measures students' literacy in English, Dzongkha, Mathematics, and Science (except for grade III, where science is not assessed);
- assesses students' embodiment of nine student attributes;
- assesses children with disabilities by providing special accommodations and adaptations;
- collects information pertaining to factors affecting students' learning outcomes; and
- reports and compares students' learning outcomes on a proficiency scale informing what they know and what they can do.

Box 2:
The National Education Assessment 2021

NEA 2021 was conducted from 25th of November to 15th of December 2021. It assessed grade III students in Dzongkha Reading, English Reading and Mathematical Literacy and collected information from students, teachers, principals and CDEOs/CTEOs through various contextual questionnaires.

A total of 4,685 (35.9%) grade III students, including students with special needs (24), from 184 schools across 24 Dzongkhags and Thromdes participated in NEA 2021. To make NEA 2021 an inclusive learning assessment, test accommodations were provided to students with disabilities enabling their participation in the assessment. While data on Children with disability is considered insignificant for generalization of any inferences in this report.

1.1. Overview of the national education system in Bhutan

Bhutan is a unique sovereign nation in the world, as reflected by the fact that while other nations use Gross Domestic Product (GDP) as a key indicator of their developmental progress, Bhutan's economic, environmental, societal, and other policies are guided by its goals for Gross National Happiness (GNH). This profound approach has undoubtedly influenced Bhutan's education policies as well. The Royal Government of Bhutan (RGoB) understands the vital role of education in the nation-building process and in giving Bhutan its "distinct identity as a small, peaceful, progressive and happy nation" (Ministry of Education, 2014). Since the introduction of modern education in the 1960s, Bhutan has made considerable progress in achieving the objectives of enhancing access to education and ensuring educational quality, equity, and efficiency within the system.

The vision for Bhutan from the perspective of education is to create an educated and enlightened society based on the traditional values of *tha dam-tshig* and *ley gyu-drey* (sublime values of solemn devotion and trust based on interconnectedness, relationship and bonding, and cause and effect). Hence, the outcome expected from the education system is to develop citizens with skills and abilities that are an ideal blend of modern and traditional values reflecting the unique Bhutanese identity.

The nation strives to ensure that future Bhutanese citizens are well-equipped to prosper beyond the 21st century, uphold the Bhutanese identity, and value its ancient tradition, culture and wisdom. This requires a system of inclusive and holistic education that builds these competencies embracing new developments in line with the vision.

To realise this vision, the Draft National Educational Policy (NEP) 2019 envisages to create a robust, inclusive, and holistic education system that:

- inculcates the principles and values underpinning the philosophy of GNH;
- upholds Bhutan's unique cultural and spiritual heritage and values; and
- prepares citizens to become knowledgeable, skilful, creative, innovative, enterprising, and capable of responding to national needs and emerging global trends.

The Bhutan Education Blueprint 2014-24 also supports the fulfilment of this vision by outlining a strategy for the critical areas responding to the challenges and changing needs of the education system more holistically. The strategy focuses on bringing various educational reforms in three sequential waves in order to ensure that the planned complex interventions are executed systematically and strategically.

The first wave targets to enable teachers, principals and schools achieve a minimum quality standard by up-skilling teachers, empowering principals, and providing other supportive measures. The second wave emphasises on change initiatives such as institutional work dynamics and culture. Spillover work from the first wave such as improving student learning outcomes in tune with international benchmarks will also be carried out during this period. The third wave of reforms focuses on creating a self-sustaining system that is creative, innovative, and enterprising so that schools continue to

perform at high levels of effectiveness and efficiency.

The reforms are carried out through eight shifts which are thematically linked to four important outcomes – access, quality, equity, and efficiency. Amongst these, quality is considered as the most important aspect and, therefore, it remains as an underlying theme across all the eight shifts. Large-scale learning assessments can provide information on various aspects of an education system, efficiently evaluating the quality of education and supporting evidence-based policy making. Many governments around the world utilise evidence from their national learning assessments to improve their education systems. For example, in Vietnam, the national assessment was used to monitor students' learning progress over time, and to evaluate the effectiveness of policy initiatives focused on improving educational quality and helping schools meet new school-based standards (Attfield & Vu, 2013). Australia used its national assessment to evaluate in-service professional development programmes targeted at improving teacher and school quality in identified schools. Literacy and numeracy coaches were provided to identified school staff for an improvement in pedagogy (ACER, 2015).

1.1.1. Need for a Robust Learning Assessment at the National Level

The education policies of Bhutan explicitly state the need to prepare students for the 21st century and meet international standards while being rooted in the heritage of Bhutan. Although access to education has expanded significantly across Bhutan in recent years, the quality of learning still remains a major challenge. A study on the quality of education carried out by REC (2009) revealed the following findings:

- Student learning outcomes were below the minimum expected grade levels, and many students were unable to perform basic numeracy and literacy tasks.
- A majority of students were unable to understand core concepts and apply knowledge to real-life situations across grades and subjects.
- Students performed better in questions related to recall.
- Gaps existed in procedural learning as students made simple mistakes in questions related to procedural applications.
- Students across grades performed poorly in questions related to visual problems, indicating that students had poor comprehension ability.
- Employers perceived graduates as lacking academic preparation and professional skills to succeed in entry-level jobs.

The findings from NEA 2013-14 and the Programme for International Student Assessment for Development (PISA-D) conducted in 2017 showed similar concerns about the quality of educational outcomes in Bhutan. The PISA-D findings revealed that the average solution rate in Bhutan was 45% in Reading Literacy, 39% in Mathematical Literacy and 45% in Scientific Literacy (BCSEA, 2019). When compared with the other seven PISA-D participating countries, the performance of Bhutan's students was ranked between the two highest-performing PISA-D countries (Ecuador and Paraguay). However, the report further stated that a reliable estimate based on percent correct scores was significantly below that of the Organisation for Economic Cooperation and Development (OECD) countries and the best

education systems in Asia. Therefore, it is evident that the Bhutanese education system needs urgent interventions to upscale the quality of education. One of the immediate measures is to review the current practice of examination and assessment system to understand and address the gap between current and expected learning levels of students. Other interventions such as pedagogical practices, resources, professional development, learning environment, health and wellbeing and support systems will remain crucial and require periodical reviews and appropriate interventions.

Realising the gaps in the current education and assessment systems, the Bhutan Education Blueprint 2014-24 highlights a need to revamp these systems to attain desired competencies at various levels. In order to effectively achieve these objectives, the government has identified a need for a standardised nationwide low-stakes diagnostic assessment. A well-designed robust education assessment at national-level would serve the purpose of informing specific policy and system-level interventions in Bhutan.

Large-scale education assessments are important because results of such assessments can (BCSEA, 2020):

- provide information about achievement levels of students at critical stages of learning;
- monitor educational standards and learning outcomes over time and how they relate to the improvement in educational inputs and initiatives implemented;
- guide educational policy development and interventions to improve learning outcomes and to address inequalities in learning outcomes;
- make decisions about resource allocations based on the impact of educational inputs in learning outcomes; and
- generate and capture reliable data that can be used to identify trends in educational achievement and growth over a period of time.

1.1.2. National Education Assessment

The National Education Assessment is a triennial large-scale assessment programme conducted in Bhutan by the Bhutan Council for School Examinations and Assessment (BCSEA) at key stages of student learning - grades III, VI and IX. NEA evaluates the Bhutanese education system by assessing the ability of students in using knowledge, skills, values, and attitudes related to core school subjects. The ultimate goals of NEA lie in improving overall student learning achievement and enhancing the education system based on the evidence of what Bhutanese students know and what they can do with that knowledge.

The first NEA was conducted in 2004 by the erstwhile Bhutan Board of Examinations (BBE) for grade VI students in literacy (English) and numeracy (Mathematics). In 2006, grade VI was assessed in Dzongkha, followed by an assessment of grade X students in English and Mathematics in 2007. The second round of NEA in literacy and numeracy for grade VI was conducted in 2011. Subsequently, grade X students underwent second round of NEA in English and Mathematics in 2013. The test items for the NEAs were developed in line with the national standards to cover learning outcomes as well as competencies outlined in the curriculum.

Even though a couple of rounds of NEA of grades VI and X were conducted in the past, there has been limited use of their findings in policy development due to various reasons. A need has been felt to improve the NEA system to provide valid, reliable and timely information on student learning. In order to develop a robust national learning assessment programme for Bhutan, RGoB has been supported by the Global Partnership for Education (GPE) from 2018 to 2022. The support from GPE is focused on the development and implementation of the National Education Assessment Framework (NEAF). The Australian Council for Educational Research (India) supported this endeavour as a technical partner, helping BCSEA develop NEAF and its implement as per the international standards and best practices.

Under the technical support, NEAF was developed in 2020 to describe what NEA intends to measure. NEAF (2020) defined the key elements of NEA, including test grades, test domains, competencies and learning outcomes, contextual questionnaires, assessment guidelines for children with disabilities, assessment design, and assessment cycles. NEAF serves as the guiding document for the conduct of consistent and reliable NEA. Based on the newly developed NEAF, NEA at grade III was conducted in 2021.

The NEA cycle has been designed as a three-year model. NEA will start with grade III, and after a gap of three and six years, grades VI and IX will be added respectively. Thus, from the third cycle onward, all three target grades will be assessed together.

This model serves two fundamental purposes - tracking the same cohort across the school years, and identifying the impact of long-term interventions in the school education system. The triennial model allows policy changes to be introduced at grade III (key stage one) and monitoring their effect in phases. It reduces the load of introducing changes to the cohorts accustomed to a certain model of education. [1]

The key aspects of NEA based on NEAF are highlighted here.

NEA:

- assesses students' learning outcomes at grades III, VI and IX every three years;
- measures students' literacy in English, Dzongkha, Mathematics, and Science (except for grade III, where science is not assessed);
- assesses students' embodiment of nine student attributes;
- assesses children with disabilities by providing special accommodations and adaptations;
- collects information pertaining to factors affecting students' learning outcomes; and
- reports and compares students' learning outcomes on a proficiency scale informing what they know and what they can do.

1.2. National Education Assessment 2021

NEA 2021 was conducted from 25th of November to 15th of December 2021. Considering the importance of foundational learning and the need to pay attention to learning outcomes of students in their early years, it was decided to assess grade III students first in Dzongkha Reading, English Reading and Mathematical Literacy. Thus, the NEA 2021 cohort of grade III students serves as the reference cohort for tracing learning

[1] The National Education Assessment Framework (BCSEA 2020, p.155) provides the graphical illustration of the NEA assessment cycle.

progress over time in the Bhutanese education system using the triennial cycle of NEA.

This effort is in line with meeting UN Sustainable Development Goal 4 (SDG 4), which is to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all ". The first indicator of SDG 4, Indicator 4.1.1, requires reporting "the proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex ". Therefore, it is critical for RGoB to set the minimum proficiency levels of grade III in Dzongkha reading, English reading and Mathematics through NEA 2021.

In addition, NEA 2021 also aims to trace learning progress over time in Bhutanese education system using the triennial cycle of NEA. Further, it is expected that the online teaching, learning and assessment during COVID -19 lockdowns was not effective and might have caused learning losses in various domains.

In light of this, the decision to assess grade III students in the foundational cognitive domains is even more relevant.

1.2.1. NEA as an inclusive assessment

One of the key aspects of NEA is to include children with disabilities in the assessment. This effort is in line with the UN SDG Target 4.5 which states "By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations." Promoting inclusiveness in education policies is a crucial part of meeting the target.

In order to accommodate any special needs of such nature, BCSEA developed Accommodation Guidelines for the assessment of Children with Disabilities (2021). This document contains guidelines to customise assessment instructions, directions, instruments, materials, and conditions and timing, considering special educational needs of students. It will help in fulfilling accessibility needs of the students so that they are able to demonstrate their learning competencies. The document also entails the types of accommodations and processes that could be followed to facilitate the participation of children with disabilities in NEA and to keep up with the inclusive nature of the assessment. NEA 2021 considered presentation, response, scheduling, and setting accommodations to meet varied needs of CWDs for their successful participation in the assessment. [5]

1.2.2. NEA scale scores

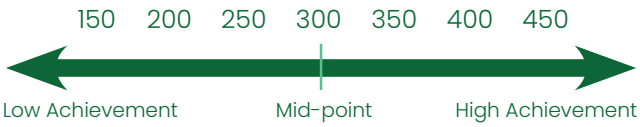
Throughout this report, results are reported using 'scale scores', which are calculated using Item Response Theory (IRT). These replace the percentage correct scores that were published in the previous NEA reports before the development of NEAF. This is an important change that brings significant advantages.

Most importantly, the scale thus created remains fixed so that results from all future surveys can also be reported on the same scale. This is achieved by applying appropriate equating procedures and adequate linking through common items

Retrieved from UN, Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, Overview, https://sdgs.un.org/goals/goal4, on 24 August, 2022.
Retrieved from UN, Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, Targets and Indicators, https://sdgs.un.org/goals/goal4, on 24 August, 2022.
Retrieved from UN, Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, Targets and Indicators, https://sdgs.un.org/goals/goal4, on 24 August, 2022.
For details of the accommodations and adjustments, see Accommodation Guidelines for the Assessment of Children with Disabilities NEA 2021 by BCSEA (2021).

(also known as anchor items). For example, a score of 320 in year 2021 will be equivalent to a score of 320 in three years time, even though the items used may not be the same. Thus, in cases where a district's average score rises or falls over a three-year period in a particular domain, can be directly seen, progress of different districts can be easily compared, and meaningful conclusions can be drawn about changes in student achievement. This is possible because even though the scores may be derived from different students taking different tests at different times, the reporting scale is fixed, and the scores are equated using statistical procedures.

The average score for the whole population tested is initially set at 300, with a standard deviation of 50 for NEA 2021. However, if educational standards improve, the overall average will rise.



This means that a majority of students (about 70%) are expected to have scores in the range of 250 to 350. On this scale, a score of more than 450 would represent an extraordinarily high level of achievement. It should be noted that the adoption of this sophisticated reporting scale allows comparison with all future cycles, however, it is not possible to make direct comparisons with the values reported in the earlier NEAs before the development of NEAF.

It is also worth noting that the scores for Dzongkha Reading Literacy, English Reading Literacy, and Mathematical Literacy are derived independently by applying the same principles, leading to an independent scale for each domain. Therefore, it is important that readers do not compare scores across subjects.

1.2.3. NEA proficiency scales

NEA aims to build a common proficiency scale, where student performances in a testing domain from all subsequent NEA cycles will be aligned together. The scale enables:

- comparison of student performances between different cohorts, grades and cycles;
- tracking changes in learning outcomes across grades and over time; and
- describing what students know and how they are able to apply their knowledge and skills in various situations.

The results from NEA 2021 serve as a foundation for constructing the NEA proficiency scale with the help of IRT. Since this is the first assessment in the series of NEAs as per the design provided in NEAF, all three test domain proficiency scales for grade III are set with a mean score of 300 and standard deviation of 50. In the future NEA cycles, student performances will be placed on the same proficiency scale regardless of the grade-level of students.

National level large-scale learning assessments are expected to provide information on student achievement levels as well as factors affecting student performance. NEA is designed to provide information to support evidence-based policy making. In this report, student performances have been analysed to report student learning levels, differences among population sub-groups, and key factors affecting performances of grade III students.

Two major statistical methods have been applied to the NEA 2021 data for analysis - t-tests and linear regression analysis. A t-test is used to determine whether there is a significant difference between the means of two groups. Linear regression models a linear association that investigates straight-line relationship between a dependent variable and a single or multiple independent variable(s) that is usually continuous but can be categorical.

The NEA 2021 sampling allows the comparison of mean scores of different groups. The NEA 2021 sample is representative at the national level as well as district level, enabling comparison of group mean performances of grade III students at various levels. The data allows comparison of overall student performance by a national level variable such as location (urban vs. rural) and between districts. It also allows a comparison of district statistics against national statistics as a benchmark.

1.2.4. NEA proficiency levels

The main purpose of NEA is to inform policy debates by providing information about contextual factors that influence achievement and teaching practices by illustrating what students know and can do. The NEA data can also be used to reveal trends in educational growth from one grade to another, as well as measuring changes within one grade level over time. Student performances on the cognitive items can be used to describe the skills, knowledge, and understanding of grade III students, as demonstrated by their performance on the assessment instruments.

In order to better describe students' knowledge, skills, and understanding in the test domains, NEA has adopted the literacy approach to the test domains, rather than the traditional content-based approach, and has developed proficiency scales for each domain. Following the approach defined in NEAF, the foundational proficiency scales of grade III were developed for the first time in the country, based on the results from NEA 2021.

Although the scales are continuous, for the ease of interpretation, each scale for every domain has been divided into proficiency bands or levels – Level 1, Level 2, and so on. Once the difficulty level of each test item in a test domain has been analysed, items are arranged in the order of difficulty level from the most difficult items to the easiest ones. After that, subject experts and statisticians work together, applying their professional judgement, to group the items in bands so that the knowledge and skills required to solve the items in each band may be identified.

In NEA, students are said to be at a particular level on the proficiency scale if their performance indicates that they are likely to answer at least half of the items correctly on a test composed of items which are spread uniformly across that level. A student located at the bottom of a particular level would be expected to succeed in approximately half of the items on a test comprising items within that level. Students scoring higher within that level would be expected to get a progressively higher proportion of such items correct, until at the top of the level where they would be expected to answer 70 to 80 percent of those items successfully (depending exactly on how wide the band width is set). Such students cannot be moved

to the next level as they have not reached the stage of answering at least half of the items in the subsequent higher level. Put simply, students at the bottom of a level would have a moderate (at least 50 percent) likelihood of being able to demonstrate the skills described in a level. Students at the top of a level would have a high likelihood (between 70% and 80%) of demonstrating those skills.

1.3. Components of NEA 2021

NEA 2021 is composed of cognitive tests in three domains - Dzongkha Reading Literacy, English Reading Literacy and Mathematical Literacy. It also contains various contextual questionnaires.

1.3.1. Cognitive tests

Three sets of cognitive tests of NEA 2021 were developed reflecting the proportions of each domain area defined by NEAF. The details are discussed in the following sections.

Reading Literacy

Reading Literacy as a domain is described in terms of context, text variables, and item variables. Context refers to the theme or setting of texts. Text variables refer to parameters such as text type, text format, appropriate length, and complexity. Item variables comprise the cognitive competencies that are assessed and item formats used to frame the items. Items in the Reading Literacy domain are generally presented as units that include a reading text and items to assess comprehension of the text.

The National Education Assessment Framework (BCSEA 2020, p.155) provides the graphical illustration of the NEA assessment cycle.

Dzongkha Reading Literacy

The Dzongkha Reading Literacy test of NEA 2021 has the following distribution of units or items from different aspects.

Table 1.1: Distribution of test units by context

Context	Defined in NEAF	Target numbers of units	Numbers of units
Personal	50 - 60%	3-4	3
Local	30 - 40%	2-3	4
Global	5 - 15%	1-2	2
Total			**9**

Table 1.2: Distribution of test units by text type

Type of Texts	Defined in NEAF	Target numbers of units	Numbers of units
Imaginative	50 - 60%	2	1
Descriptive	30 - 40%	2	3
Persuasive	5 - 15%	1	2
Instructional	10-20%	1	**3**
Transactional	5-15%	1	1
Total			**10**

Table 1.3: Distribution of test items by skill

Skill	Defined in NEAF	Target numbers of units	Numbers of units	Percent*
Locate	35-45%	14-18	1	36%*
Interpret	25-35%	10-14	3	31%
Infer	15-25%	6-10	2	16%
Reflect	5-15%	2-6	**3**	18%
Total			**45**	**100%**

*Due to rounding the sum of percent may exceed 100.

Table 1.4: Distribution of test items by item format

Item type	Defined in NEAF	Numbers of items	Percent
CRT	15% – 20%	12	27%
MCQ	80% – 85%	33	73%
Total		**45**	**100%**

English Reading Literacy

The English Reading Literacy test of NEA 2021 has the following distribution of units or items from different aspects.

Table 1.5: Distribution of test units by context

Context	Defined in NEAF	Target numbers of units	Numbers of units
Personal	50 - 60%	3-4	3
Local	30 - 40%	2-3	2
Global	5 - 15%	1-2	2
Total			7

Table 1.6: Distribution of test units by text type

Type of Texts	Defined in AF	Target numbers of units	Numbers of units
Imaginative	25-35%	2	2
Descriptive	20-30%	2	2
Persuasive	5-15%	1	1
Instructional	10-20%	1	1
Transactional	5-15%	1	1
Labelling*	5-15%		
Total			7

*The items under labelling are not counted, since they are not considered as a part of a text unit.

Table 1.7: Distribution of test items by skill

Skill	Defined in NEAF	Target numbers of units	Numbers of units	Percent*
Locate	35-45%	14-18	16	35.6%
Interpret	25-35%	10-14	12	26.7%
Infer	15-25%	6-10	7	15.6%
Reflect	5-15%	2-6	3	6.7%
Labelling*			7	15.6%
Total			**45**	**100%**

* Labelling is not considered to be a skill, but a pre-skill. However, the category of labelling is included in the table to tally the total number of items in the English Reading Literacy test.
**Due to rounding the sum of percent may exceed 100.

Table 1.8: Distribution of test items by item format

Item type	Defined in NEAF	Numbers of items	Percent
CRT	15% – 20%	12	27%
MCQ	80% – 85%	33	73%
Total		**45**	**100%**

Mathematical Literacy

Mathematics is defined as a logical way of studying numbers, shapes, and spaces with the help of a system of symbols and rules to organise them. Another way to define it is, as the study of structure, order, and relation, which develop gradually from the practices of counting, measuring, and describing objects. These practices provide the prerequisite mathematical language and tools to investigate and explore our surroundings.

There are two branches of Mathematics. The first one is a discipline that can be studied for its intrinsic pleasure, and the other, to explore, understand and communicate with the world around us. However, both are connected by the same mathematical body of knowledge. In NEA, this knowledge is interpreted in terms of mathematical literacy. The mathematical literacy test of NEA 2021 is comprised of items as per the following proportions in various aspects, including mathematical content, context, cognitive processes, and item format.

Table 1.9: Distribution of test items by mathematical content

Content	Defined in NEAF	Numbers of items	Percent
Number and Algebra	55-65%	25	56%
Measurement	10-20%	7	16%
Geometry	10-20%	8	18%
Data management and Probability	5-15%	5	11%
Total		45	**100%**

Table 1.10: Distribution of test items by mathematical context

Context	Numbers of items	Percent
Personal	8	18%
Local	23	51%
Global	2	4%
Intra-mathematical	12	27%
Total	45	**100%**

Table 1.11: Distribution of test items by cognitive process

Cognitive process	Defined in NEAF	Numbers of items	Percent
Formulating	25 - 30%	10	22%
Applying	45 - 50%	19	42%
Interpreting	25 - 30%	16	36%
Total		45	**100%**

Table 1.12: Distribution of test items by item format

Item format	Defined in NEAF	Numbers of items	Percent
MCQ	80% – 85%	38	84%
CRT	15% – 20%	7	16%
Total		45	**100%**

1.3.2. Contextual questionnaires

Learning does not take place in isolation. Often there are other factors that influence learning. Students' acquisition of knowledge and skills is influenced by factors associated with their backgrounds and learning environments. These include home, school and classroom contexts - the information of which can be collected through contextual questionnaires. To be able to accurately inform teaching strategies and policymaking, data collected from any learning assessment should support reporting that identifies nuanced differences between student cohorts, school types and other pertinent contexts. This can only be achieved by using contextual questionnaires alongside cognitive assessment of students.

One of the objectives of NEA is to investigate and understand the differences found in student learning outcomes in the context of key factors related to the system, schools and students. Students' learning occurs through a variety of activities and experiences happening at different levels and through different processes. A series of questionnaires are used to collect relevant information on student background and learning environment from various stakeholders, including students, teachers, school principals, and Chief District Education Officers or Chief Thromde Education Officers. The questionnaires of NEA 2021 are listed below along with a brief explanation:

- The Student Questionnaire examines students' background, socio-economic status, language used at home, attitude towards learning, engagement, health, and the embodiment of nine student attributes. It also gathers information about students' learning environments, material resources, inclusive facilities, quality instruction, learning time, and family support.
- The Teacher Questionnaire is answered by teachers and provides essential information about classroom instructions, assessment practices, learning time, material resources, and support from education officials. It also provides teachers' background information such as their academic and professional qualifications, motivation to teach, and professional enhancement opportunities. Further, it examines whether nine student attributes are taught and assessed in schools.
- The Principal Questionnaire collects information from school principals pertaining to the school and the administrative system. It collects information about schools, such as learning environments, inclusiveness, quality of instruction, learning time, material resources, teaching and assessment of nine student attributes, family and community support, and monitoring and support from stakeholders. In addition, principals' information such as their attitudes towards the profession and leadership experience is also collected.
- The Chief District Education Officer (CDEO)/Chief Thromde Education Officer (CTEO) Questionnaire collects information from CDEOs or CTEOs pertaining to schools under their jurisdiction and administration. The questionnaire collects information about professional and academic development of teachers, policy and planning, management and administration, and financial management. Further, CDEO

CTEOs' background information such as educational qualifications and professional experience is obtained.
- The Values Questionnaires for students and teachers collect information on students' embodiment of the nine student attributes.

1.3.3. Development of the NEA 2021 tools

The development of the tools for NEA 2021 entailed a significant amount of effort from BCSEA experts with technical support from ACER India. In order to make NEA tools valid, reliable and at par with the international best practices, a strict quality control process was observed at each developmental stage.

Pilot NEA

The Pilot NEA survey was conducted in June 2021. A total of eight CDEO/CTEOs, 44 principals, 134 teachers and 892 students across 45 sample schools took part in the pilot study. Cognitive instruments for Dzongkha Reading Literacy, English Reading Literacy and Mathematical Literacy domains, and questionnaires including the CDEO/CTEO Questionnaire, Principal Questionnaire, Teacher Questionnaire, Student Questionnaire, and Value Questionnaires (for both students and teachers) were administered during the study.

The Pilot NEA was administered with two main objectives. One of the objectives was to evaluate the appropriateness of the assessment instruments and use that information to finalise the instruments for the Main NEA. The process enabled BCSEA to develop reliable and valid cognitive items and questionnaires. The second objective was to check survey operation procedures in the field at a smaller scale, and refine the operational tools and processes for the Main NEA in order to address unanticipated issues during the implementation.

For the Pilot NEA, 45 sample schools were identified based on convenience and availability. About 20 students were randomly selected in each sample school and asked to participate. The students completed paper-based cognitive tests in Dzongkha Reading Literacy, English Reading Literacy and Mathematical Literacy – each lasting for 40 minutes. Each domain consisted of three different booklets which were randomly assigned to the students. Besides the cognitive tests, the students also filled-up the Student Questionnaire of 35 minutes duration and the Value Questionnaire lasting 15 minutes.

The cognitive data were analysed with psychometric techniques including IRT to check item validity and test reliability. Following the evaluation of validity and reliability of the pilot cognitive items, two booklets in each test domain were finalised for the Main NEA. The questionnaires were also revised and improved for the Main NEA based on the pilot study.

Main NEA

To accurately measure learning progression, the required number of items is usually more than the number of items that can possibly be answered by a student within the available testing time. To mitigate this issue, NEA deploys multiple booklets for each domain which increases the number of items while keeping the testing duration for any given student optimal. To ensure that different difficulty levels of each of these

booklets are to be controlled during analysis, each domain has some common items between its booklets – also known as 'anchor items'. Thus, each student is required to complete only one booklet per domain. Appropriate equating methods employed by data analysts ensure valid comparability of student learning outcomes resulting from different booklets.

During the Main NEA, students were asked to complete the paper-based cognitive tests in all the three domains. Each domain consisted of two different booklets (Booklet A and Booklet B). The test booklets contained 30 test items each, including anchor items. Depending on the length of tests and reading requirements, different testing durations (40 or 60 minutes) were provided for each domain. The table below summarises the details of the NEA 2021 cognitive testing.

1.3.4. Sample

NEA 2021 followed international best practices which have been incorporated in large-scale student assessments, such as the Programme for International Student Assessment (PISA), to achieve the target precision at a confidence interval of ±3.5 percent. The following considerations were made to draw the sample size for NEA 2021.

Target population

NEA has been designed to investigate learning achievements of students at the district level in Bhutan. Hence, the target population for NEA 2021 (13,049 students) was all grade III children studying in both government and private schools. Before defining the target population of NEA 2021 of grade III, international (non-Bhutanese)

Table 1.13: Details of the NEA 2021 cognitive testing

Test domain	Numbers of booklets	Number of items per booklet	Numbers of anchor items	Total numbers of items	Test duration
Dzongkha Reading Literacy	2	30	15	45	60 min
English Reading Literacy	2	30	15	45	60 min
Mathematical Literacy	2	30	15	45	60 min

In addition, students were also asked to complete the 60-minute Student Questionnaire and the 15-minute Value Questionnaire. NEA 2021 collected contextual information from CDEOs/CTEOs, school principals and teachers through contextual questionnaires. Class teachers of the sampled students were also asked to participate in the Value Questionnaire, containing the same questions as given in the Students Value Questionnaire.

students and students with severe functional and intellectual disabilities were excluded from the sample frame (28 students). The sample frame covers 99.8 percent of the entire grade III student population in Bhutan. This made the desired target population of NEA 2021 of grade III equal to 13,021 students. Taking operational difficulties into account, further exclusions were considered, and two school-level exclusions were finalised to define the final target population of NEA 2021:

- Schools with class size less than eight students.
- Schools located in the areas which are geographically inaccessible and difficult to reach.

Reputed international large-scale assessments usually allow up to five percent of such exclusions. The exclusions comprise 4.3 percent of the defined target population of NEA 2021, reaching a population coverage of 95.7 percent.

Sample design and method

The sample design for each district, i.e., Dzongkhag/Thromde, involved a two-stage cluster design which used a combination of two probability sampling methods. At the first stage, schools were selected using Probability Proportional to Size (PPS) sampling principles. This means that the probability of selecting a particular school depended on the number of grade III students enrolled in that school. At the second stage, the required number of students in each school, calculated as 32 in the case of NEA 2021, was selected using Simple Random Sampling (SRS) method. In the survey, PPS sampling was based on grade III enrolment data from the Education Management Information System (EMIS) of 2021, maintained by the Ministry of Education (MoE). SRS was conducted according to class registers available in sampled schools.

Stratification

Stratification means classifying schools into similar groups according to selected variables, referred to as stratification variables. Two types of stratifications were used in the NEA 2021 sampling design- explicit and implicit stratification. Explicit stratification consists of grouping schools into strata that would be treated independently from one another, as if they were separate school sampling frames, while implicit stratification essentially consists of sorting the schools uniquely within each explicit stratum by a set of designated implicit stratification variables.

A total of four explicit strata was considered in the NEA 2021 sampling, which are 1) private schools, 2) special institutes, 3) schools in small regions and 4) schools in regular regions. All the schools in the first three strata were taken in the NEA 2021 sample, but small schools that met the small school exclusion standard (enrolment less than 8) were excluded. Schools belonging to the last stratum, regular region, were selected as per the sampling design mentioned earlier. The table below summarises the explicit strata used in NEA 2021 and the sample design applied in each stratum.

Table 1.14: Explicit strata and sample design of NEA 2021

Explicit stratum	Criteria	Total numbers of schools	Sampling design
Private schools	School management	19	School level census, 32 students from a school by SRS
Special institutes	Special education	2	School level census, 32 students from a school by SRS
Schools in small region (Haa, Gasa, Gelephu Thromde and Samdrup Jongkhar Thromde)	Size of region	20	School level census, 32 students from a school by SRS 7 difficult schools dropped
Schools in regular region (All districts except the four districts in small region)	Size of region	475	School level by PPS, 32 students from a school by SRS
Total		**516**	

The sampling of schools in regular regions involved the use of implicit strata. District and location (urban or rural) variables were used as implicit strata. This means that schools in the sampling frame were sorted in a specific order of the implicit strata. The schools were organised at the first level by the district variable, followed by the location variable at the second level, and lastly by school size. The schools were sorted by their school size from low to high and then high to low through all possible combinations of the implicit strata.

NEA 2021 attained a sample list of 184 schools and 4,685 students after applying the methods explained above. In this report, the sample data was weighted appropriately, taking their representation in the population into account for analysis and reporting to describe student performances and characteristics.

1.3.5. Participation

A total of 4,685 (36%) grade III students, including students with special needs (24), from 184 schools across 24 Dzongkhags and Thromdes participated in NEA 2021. Depending on the size of the school, a minimum of 8 and a maximum of 32 students were randomly selected from each sample school.

An attempt was made to make NEA an inclusive learning assessment. Test accommodations were provided to students with disabilities enabling their participation in the assessment. This reflects Bhutan's efforts in building an equitable and quality assessment system for all students. The accommodations included the provision of test booklets in colour, sign language interpreters, scribe, time extension, etc.

Cognitive test participation

The following tables summarise the distribution of participating schools and students in NEA 2021. In the sample, more than 15 percent of the students were from Thimphu Thromde (744 students, 16%) and almost 10 percent from Samtse (406 students, 9%), whereas only one percent of them were from Gasa (27 students, 1%), Gelephu Thromde (64 students, 1%), and Samdrup Jongkhar Thromde (64 students, 1%). There were 19 private schools included in the sample, constituting 8 percent student participation. About six percent more students came from rural areas (2,480 students, 53%) than urban areas (2,205 students, 47%). Girls (2,328 students, 50%) and boys (2,357 students, 50%) equally participated in the assessment. A total of 22 CWDs, comprising 17 boys and five girls, participated in the tests.

Table 1.15: Distribution of participants by district

District	Number of schools	Number of students	Percent (student)
Bumthang	4	101	2%
Chhukha	11	286	6%
Dagana	7	170	4%
Gasa	2	27	1%
Gelephu Thromde	2	64	1%
Haa	7	164	4%
Lhuentse	4	89	2%
Mongar	9	219	5%
Paro	15	350	7%
Pema Gatshel	5	117	2%
Phuntsholing Thromde	5	137	3%
Punakha	6	170	4%
Samdrup Jongkhar	6	141	3%
Samtse	15	406	9%
Sarpang	9	251	5%
SJongkhar Thromde	2	64	1%
Thimphu	5	151	3%
Thimphu Thromde	27	744	16%
Trashigang	14	325	7%
Trashiyangtse	5	123	3%
Trongsa	4	102	2%
Tsirang	6	148	3%
Wangdue Phodrang	10	250	5%
Zhemgang	4	86	2%
Total	**184**	**4685**	**100%**

Table 1.16: Distribution of participants by school management

Management	Number of schools	Numbers of students	Student percent
Public	165	4308	92%
Private	19	377	8%
Total	**184**	**4685**	**100%**

Table 1.17: Distribution of participants by location

Area	Number of schools	Number of students	Student percent
Rural	106	2480	53%
Urban	78	2205	47%
Total	**184**	**4685**	**100%**

Table 1.18: Distribution of participants by gender

Gender	Number of schools	Number of students	Student percent
Female	184	2328	50%
Male	183	2357	50%
Total	**184**	**4685**	**100%**

Table 1.19: Distribution of participants by domain

Domain	Number of schools	Number of students	Percent rate
Dzongkha Reading Literacy	184	4652	99%
English Reading Literacy	184	4655	100%
Mathematical Literacy	184	4658	100%

Questionnaire participation

Sample students for NEA 2021 participated in the contextual questionnaires to collect information on the factors affecting their learning and their acquirement of the nine student attributes. A total of 4,658 students completed the background questionnaire and 4,656 students filled the Value Questionnaire.

A total of 558 teachers, comprising of 3 from each sample school were asked to participate in the Teacher Questionnaire. In addition, they also validated the attainment of nine student attributes of each sampled student by responding to the Value Questionnaire.

The principals of 184 sample school took part in the Principal Questionnaire while 24 CDEOs or CTEOs responded to the CDEO/CTEO Questionnaire. The questionnaire participation is summarised in the table below.

Table 1.20: Questionnaire participation

Questionnaire	Number of participants
Student Background Questionnaire	4658
Value Questionnaire (Student)	4656
Value Questionnaire (Teacher)	4662 entries by teachers
Teacher Background Questionnaire	558
Principal Questionnaire	184
CDEO/CTEO Questionnaire	24

1.4. How to read the report

Standard error and confidence interval

NEA assesses a sample of students to draw inferences about the entire population of children in Bhutan studying in particular grades. This introduces an uncertainty about how close the sample estimates are to the true value of the population. Hence, an indication of the uncertainty associated with each estimate is required. Standard error provides a way to indicate such uncertainty in sample studies by calculating the confidence interval. Instead of the point value of a sample statistic, the confidence interval gives an estimated range of values which is likely to include an unknown population parameter, such as mean. In this report, all sample statistics regarding students have been reported with standard error, hence any interpretation of a statistic is to be done considering the associated confidence interval.

t-test

A t-test is used to determine whether there is a statistically significant difference between the means of two groups. Differences in means are considered significant when the test statistic t is outside the critical values ±1.96 (a = 0.05). The t value is calculated by dividing the difference in means by its standard error.

Linear regression

Regression analysis refers to a set of techniques used for predicting a dependent variable using one or more independent variables. It involves using the pattern of previously collected data to build a statistical model that predicts value of a dependent variable based on the values of independent variables. A statistically significant regression coefficient in a regression model captures the magnitude of the impact of an independent variable on the dependent variable. Among the linear regression techniques, Ordinary Least Squares (OLS) regression models with multiple independent variables were used to determine factors of student achievement in the analysis of NEA 2021.

1.4.2. Statistical significance

The presence of statistical significance shows that the differences identified in a sample are likely to be reflected in the population, rather than being a result of the random nature of the data. Throughout this report, 95% confidence level has been used to compute confidence intervals and statistical significance.

The differences found to be statistically significant and positive are indicated by a triangle '▲', the differences found to be statistically significant and negative are denoted by an inverted triangle '▼', and the differences that are not found to be statistically significant are specified by a dash '–'. Standard errors have been calculated and used while discussing whether any differences are statistically significant.

1.4.3. Rounding

All statistics, including their totals and differences, are rounded for reporting purposes. Because of rounding, a few figures in some tables may appear inconsistent. Where a value of 0 is reported, it means

that the value is less than 0.5. In general, student cognitive test scores and any percentages are reported in the form of integer without any decimal place after rounding in the text of the report. However, in the tables and wherever appropriate in the report, percentages and standard errors are reported after rounding to one decimal place.

1.5. Limitations of NEA 2021

NEA 2021 undoubtedly represents a significant step forward in the development of national learning assessment in Bhutan. However, in conducting NEA 2021, some lessons have been learnt and the following limitations have been noted so that they may be addressed in future NEA cycles.

Firstly, the NEA 2021 cognitive tests were developed through rigorous technical processes, including a pilot study that assessed grade IV students, instead of grade III students . The pilot study was rolled out to evaluate the appropriateness of cognitive tests and to improve validity and reliability by matching the difficulty level of the tests with the ability of the student population. Although the English Reading Literacy test and Mathematical Literacy test were targeted at the appropriate student ability levels in the main survey, the Dzongkha Reading Literacy test was found to be difficult for average-level students. This means that the Dzongkha test had a smaller number of easy items to analyse students at lower-ability levels and provide information about what the students at those levels know and can do. For future NEAs, it is recommended to reduce the time gap between pilot and main studies and to test grade III students instead of grade IV students during the pilot.

Secondly, the tests and questionnaires were found to be lengthy for grade III students. All sampled students sitting for the three cognitive tests took 140 minutes in total to answer 90 test items. After the testing, the students were also asked to participate in the Student Questionnaire and the Value Questionnaire, taking additional 75 minutes. It is to be noted that the testing and questionnaire participation is a huge burden for grade III students due to the length and duration. Students experience fatigue and can easily lose their interest and concentration. This being the case, validity of the test and questionnaire data may come under question. For future NEA cycles, it is recommended to consider grade and age level appropriate questionnaires.

Furthermore, in order to meet the key objectives of NEA 2021, schools and students were sampled in a systematic fashion. This meant that teachers could not be explicitly sampled in the same way. As a result, the analysis of teacher-related variables against student attainment could not be made in a comprehensive manner.

It should be noted that in the past NEAs, Classical Test Theory (CTT) model was used for developing tests and analysing the results. For the NEA 2021 survey, IRT has been used. These two methodologies are quite different, hence, as a limitation the results of these surveys are not directly comparable with each other.

Lastly, BCSEA has used IRT for the first time for analysis of the NEA data instead of CTT. Therefore the results of NEA 2021 are reported in terms of scale scores rather than percentage correct scores. Whilst this is an important step towards emulating

[7] This decision of testing grade IV students in the pilot was made mainly due to the curriculum coverage and expectation of future learning progress of grade III students.

international best practice, unfamiliarity with this approach makes it more difficult for a layperson to interpret results. It is expected that when IRT becomes more widely used in Bhutan, this understanding will also improve in general.

1.6. Summary and conclusion

Bhutan is a unique sovereign nation that has chosen to prioritise national happiness in its developmental process. In line with this vision, the NEP 2019 envisages creating a robust, inclusive and holistic education system. Under such a system, the principles and values of GNH and the nation's cultural and spiritual heritage will be inculcated in students. Over time, citizens will become knowledgeable, skilful, creative, innovative, enterprising, and capable of responding to national needs and emerging global trends.

NEA contributes to this education reform by providing information on various aspects of the education system of Bhutan, efficiently evaluating the quality of education and supporting evidence-based policy making. Inspired by the goal of establishing a robust national learning assessment system, NEAF was developed in 2020. It addresses what NEA intends to measure, as it defines the key elements of NEA, including the competencies to be tested, test domains, test grades, contextual questionnaires, assessment of children with disabilities, assessment design, and assessment cycles.

NEA is a triennial large-scale assessment programme conducted BCSEA at key stages of student learning, grades III, VI and IX. NEA evaluates the Bhutanese education system by assessing the ability of students in using knowledge, skills, values and attitudes related to core school subjects and the factors affecting their learning. The ultimate goals of NEA lie in improving overall student learning achievement and enhancing the education system based on evidence of what Bhutanese students know and can do.

NEA 2021 was administered to grade III Bhutanese students from 25 November to 15 December 2022. A total of 4,685 grade III students from 184 schools across 24 Dzongkhags and Thromdes were tested in Dzongkha Reading Literacy, English Reading Literacy, and Mathematical Literacy.

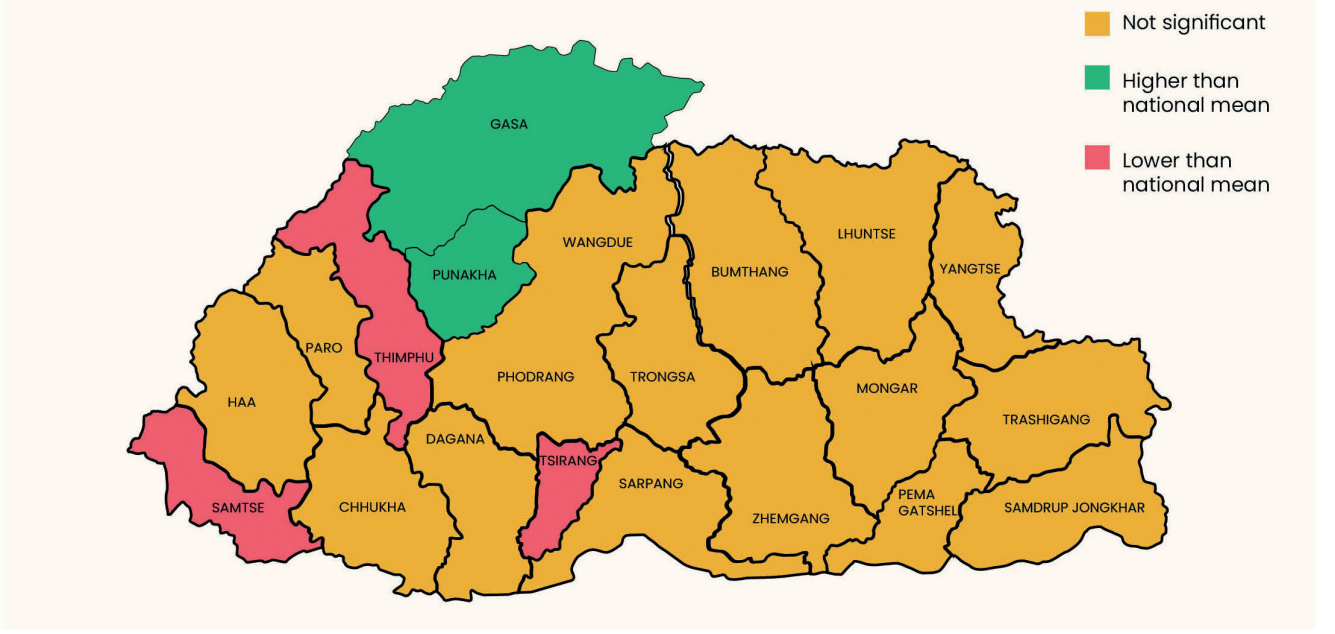
An attempt was made to make NEA an inclusive learning assessment. Test accommodations were provided to children with disabilities enabling their participation in the assessment. This reflects Bhutan's efforts in building an equitable and quality assessment system for all students. The accommodations included the provision of test booklets in colour, sign language interpreters, scribe, time extension, etc. However, data on the students with disabilities is considered insignificant for generalization of any inferences in this report.

In addition to the cognitive testing in three domains, NEA 2021 also collected information from CDEOs or CTEOs, school principals, teachers, and students through several contextual questionnaires. The data collected through the questionnaires provide valuable insights into aspects of schooling that affect the learning achievements of students.

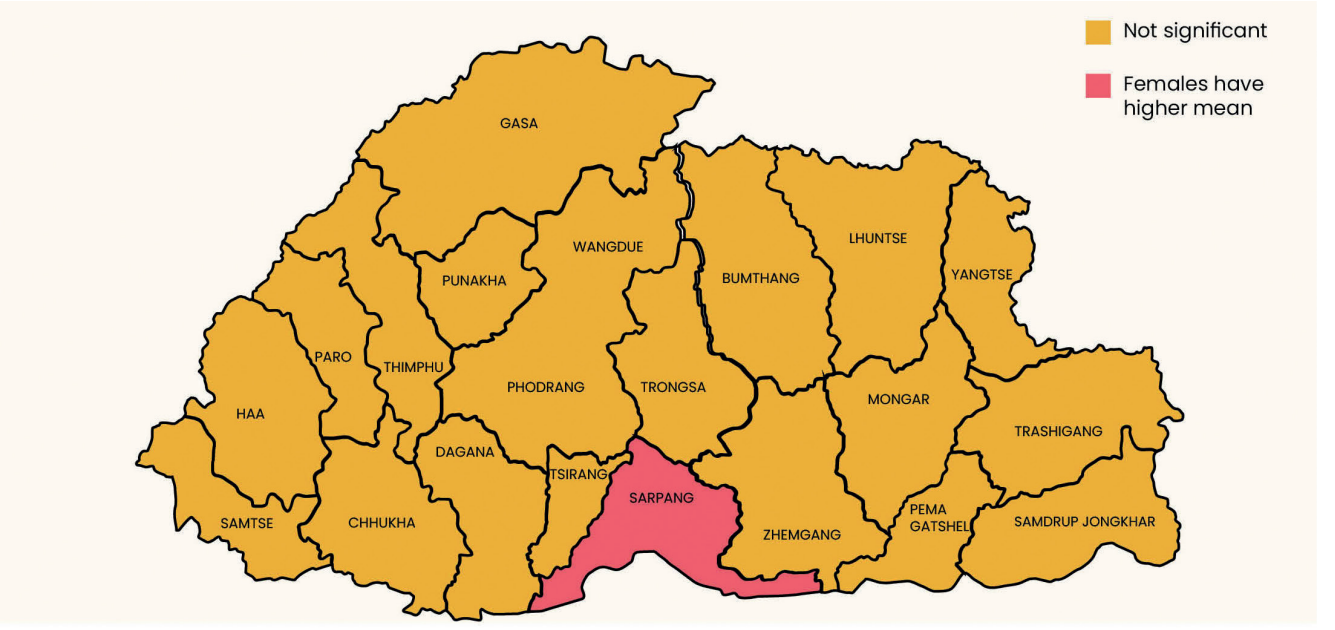
The following chapters describe the results from NEA 2021, informing about the levels of knowledge gained by grade III students in the three test domains and what they can do with that knowledge. The later chapters also examine student learning in context of the factors collected through various questionnaires.

Chapter 2. Achievement of grade III students in Dzongkha Reading Literacy

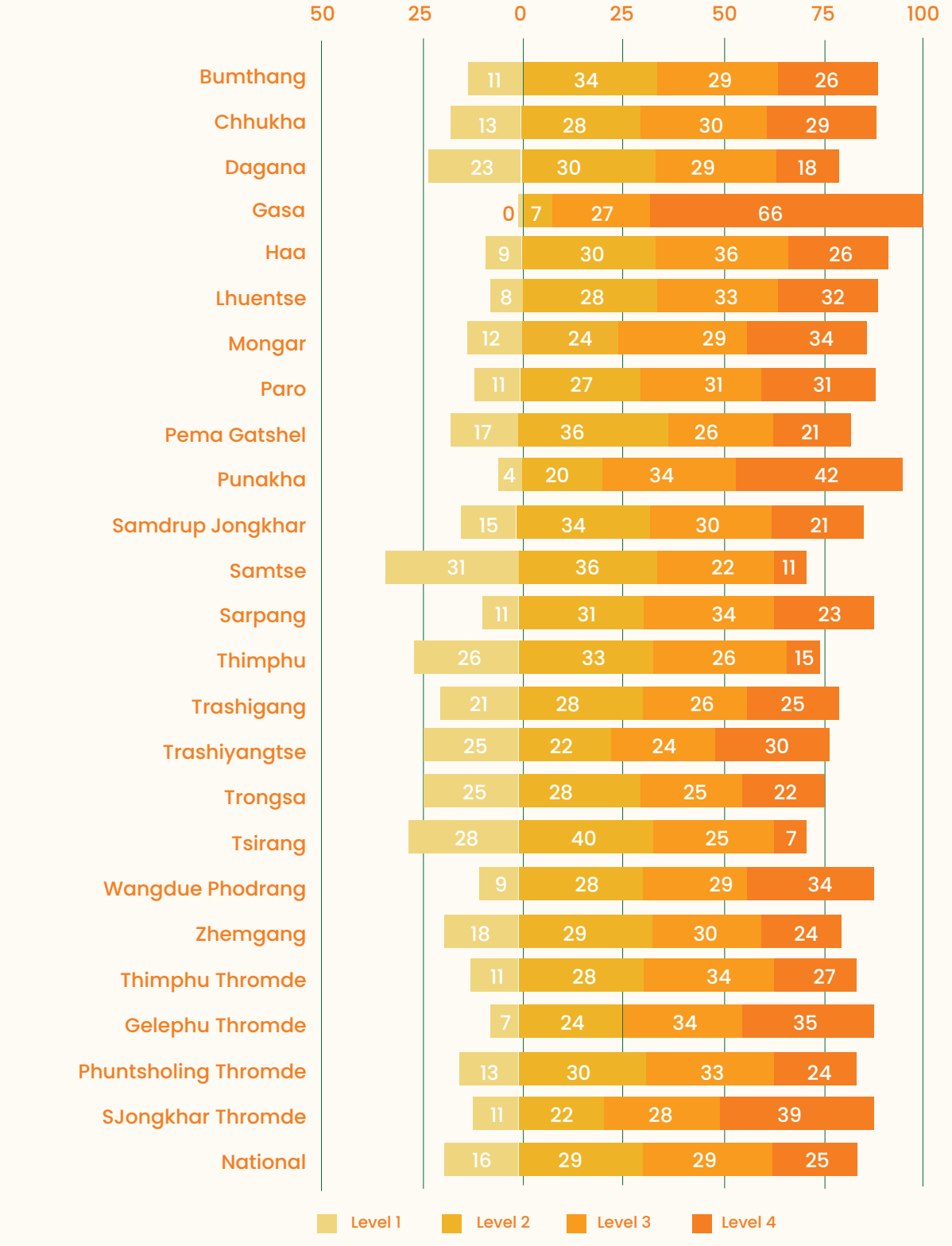
Box 1:
Student achievement in Dzongkha Reading Literacy



Box 2:
Student achievement by gender in Dzongkha Reading Literacy



Box 3: Distribution of proficiency levels in Dzongkha Reading Literacy by district (in percent)



2.1. Student achievement in Dzongkha Reading Literacy

This chapter presents grade III student achievement in the Dzongkha Reading Literacy test of NEA 2021. The discussion is focussed on the analysis of student mean scores, percentile distributions, proficiency levels, group differences, and contextual factors affecting student learning.

The table below shows mean scores of all the districts as well as the national mean. Along with the mean scores, associated standard errors and confidence intervals are also provided for statistical comparison. The results of t-tests comparing the national mean with each district's mean along with the corresponding t-values are provided in the table.

In NEA 2021, two districts, Gasa and Punakha, had the mean score significantly higher than the national mean. The students from Gasa (mean score = 356) performed better than the national cohort (national mean score = 300) by 56 score points, which is more than the standard deviation of the test. In Punakha, the mean score (324) was 24 score points higher than the national mean. On the other hand, the students from three districts, Samtse (mean score = 273), Thimphu (mean score = 284) and Tsirang (mean score = 274), performed lower than the national mean.

Table 2.1: Mean scores of student achievement in Dzongkha Reading Literacy

District	Mean	SE	Confidence interval	t value	Significance	
Bumthang	308	18.5	272-344	0.43	Not significant	
Chhukha	304	9.0	286-322	0.42	Not significant	
Dagana	288	8.3	272-304	-1.34	Not significant	
Gasa	356	2.8	351-361	12.94	Higher than national mean	▲
Haa	306	21.4	264-348	0.28	Not significant	
Lhuentse	310	5.6	299-321	1.54	Not significant	
Mongar	311	11.3	289-333	0.93	Not significant	
Paro	308	7.3	294-322	1.00	Not significant	
Pema Gatshel	295	10.9	274-316	-0.44	Not significant	
Punakha	324	7.5	309-339	2.93	Higher than national mean	▲
Samdrup Jongkhar	297	7.0	283-311	-0.39	Not significant	
Samtse	273	5.4	262-284	-4.27	Lower than national mean	▼
Sarpang	304	5.8	293-315	0.60	Not significant	
Thimphu	284	6.7	271-297	-2.14	Lower than national mean	▼
Trashigang	295	10.6	274-316	-0.45	Not significant	
Trashiyangtse	298	5.2	288-308	-0.32	Not significant	
Trongsa	292	19.3	254-330	-0.41	Not significant	
Tsirang	274	5.7	263-285	-3.95	Lower than national mean	▼
Wangdue Phodrang	312	8.0	296-328	1.39	Not significant	
Zhemgang	297	17.8	262-332	-0.17	Not significant	
Thimpu Thromde	307	14.3	279-335	0.48	Not significant	
Gelephu Thromde	315	9.3	297-333	1.52	Not significant	
Phuntsholing Thromde	301	9.4	283-319	0.10	Not significant	
SJongkhar Thromde	317	47.9	223-411	0.35	Not significant	
National	**300**	**3.3**	**294-306**			

The table below compares the mean Dzongkha Reading Literacy scores achieved by boys with that of girls. It shows that no significant difference was detected in the mean achievement levels of the two groups at the national level.

In general, no significant difference was found between the mean performance of boys and girls in any of the districts, except Sarpang where female students (mean score = 313) outperformed male counterparts (mean score = 295) by an average of 18 score points.

Table 2.2: Mean scores of student achievement by gender in Dzongkha Reading Literacy

District	Mean (male)	SE (male)	Mean (female)	SE (female)	Significance	
Bumthang	298	22.9	317	19.6	Not significant	
Chhukha	299	9.0	309	9.6	Not significant	
Dagana	284	12.0	293	6.8	Not significant	
Gasa	351	5.1	369	8.1	Not significant	
Haa	298	15.9	313	27.0	Not significant	
Lhuentse	308	9.5	313	4.7	Not significant	
Mongar	304	11.2	317	13.1	Not significant	
Paro	304	6.7	313	8.6	Not significant	
Pema Gatshel	291	13.9	297	10.1	Not significant	
Punakha	316	7.7	335	8.1	Not significant	
Samdrup Jongkhar	294	7.3	301	8.6	Not significant	
Samtse	269	5.0	277	7.7	Not significant	
Sarpang	295	6.3	313	6.5	Females have higher mean	▼
Thimphu	278	5.6	291	8.6	Not significant	
Trashigang	294	10.4	297	12.8	Not significant	
Trashiyangtse	300	9.2	295	3.9	Not significant	
Trongsa	286	12.7	298	26.8	Not significant	
Tsirang	269	4.1	279	8.7	Not significant	
Wangdue Phodrang	309	7.6	316	10.4	Not significant	
Zhemgang	292	24.0	302	13.1	Not significant	
Thimpu Thromde	300	14.7	314	14.7	Not significant	
Gelephu Thromde	309	18.0	321	40.6	Not significant	
Phuntsholing Thromde	295	12.2	307	7.7	Not significant	
SJongkhar Thromde	303	42.5	329	46.5	Not significant	
National	**295**	**3.0**	**305**	**5**		

2.1.1. Performance in Dzongkha Reading Literacy

Percentiles

Percentile is a way of describing the level of performance in a group or groups of students and a statistic that reports relative standing of an observation within the group. It is used to know where someone stands compared to the rest of the group. In case of NEA, a percentile indicates the value (of a scale score) below which a corresponding percentage of students fall. For example, the 10th percentile score in Dzongkha Reading Literacy test denotes a score below which ten percent of the total students have scored.

Percentiles inform readers about dispersion of student scores and the degree of homogeneity in terms of student abilities. For example, a range between 25th and 75th percentile (the inter-quartile range) represents performance of the middle half of students. Similarly, a difference between 5th and 95th percentiles covers 90 percent of the student scores. The wider this range, the wider is the ability gap among students in a test domain.

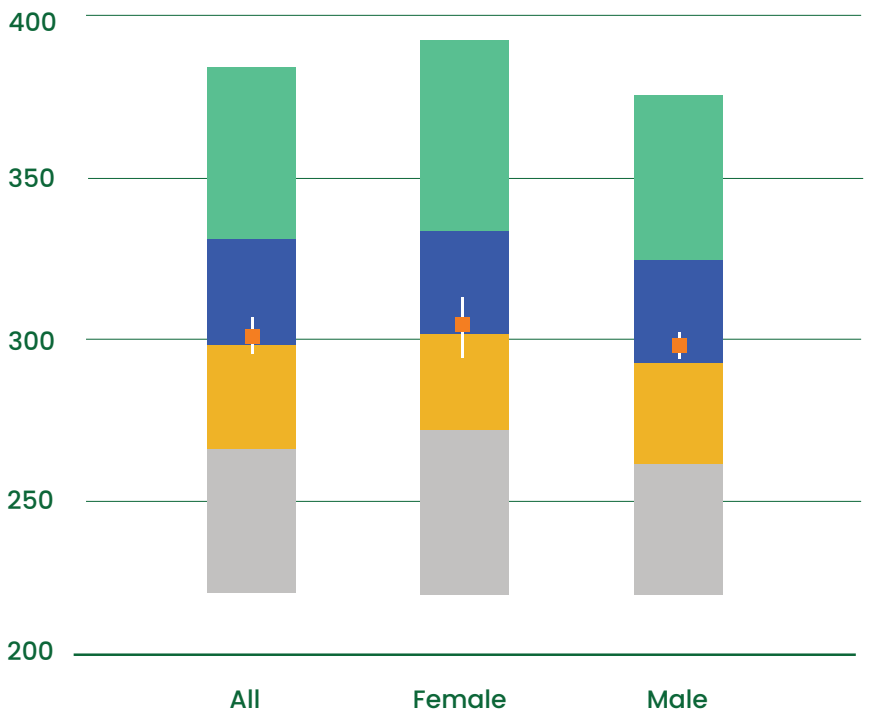
The table below shows the percentile scores and the ranges in the percentiles scores in the Dzongkha Reading Literacy test of NEA 2021. Half of the students lie between scores 266 and 331, with a score point difference of 65, and 90 percent of them lie between 222 and 387 with a range of 165 scores. Dzongkha Reading Literacy scores of the girls were distributed wider than those of the boys, showing the 5th - 95th percentile range of 170, which was greater than the range of the boys' scores (159).

Table 2.1: Mean scores of student achievement in Dzongkha Reading Literacy

District	5th	25th	50th	75th	95th	Range 25th-75th	Range 5th-95th
National	222	266	297	331	387	65	165
Male	220	263	293	325	379	62	159
Female	224	270	303	338	394	68	170

The figure below is an illustrated demonstration of the percentile scores and the group mean scores with confidence intervals.

Figure 2.1: Percentile scores in Dzongkha Reading Literacy



The inter-quartile range (IQR) was highly variable across districts. For example, Tsirang had an IQR of 50 score-points whilst Trashiyangtse had a corresponding value of 89. These values suggest that the grade III student population in Tsirang was far more homogeneous in performance than Trashiyangtse. In most districts, the range of performance for the middle half was found to be between 54 and 78 scale-score points. Performances at the 5th and 95th percentiles respectively show extremes in low and high achievement. The range between these two points, which includes 90 percent of the population, was found to be highly variable - ranging from 128 (Tsirang) to 200 (Trashiyangtse).

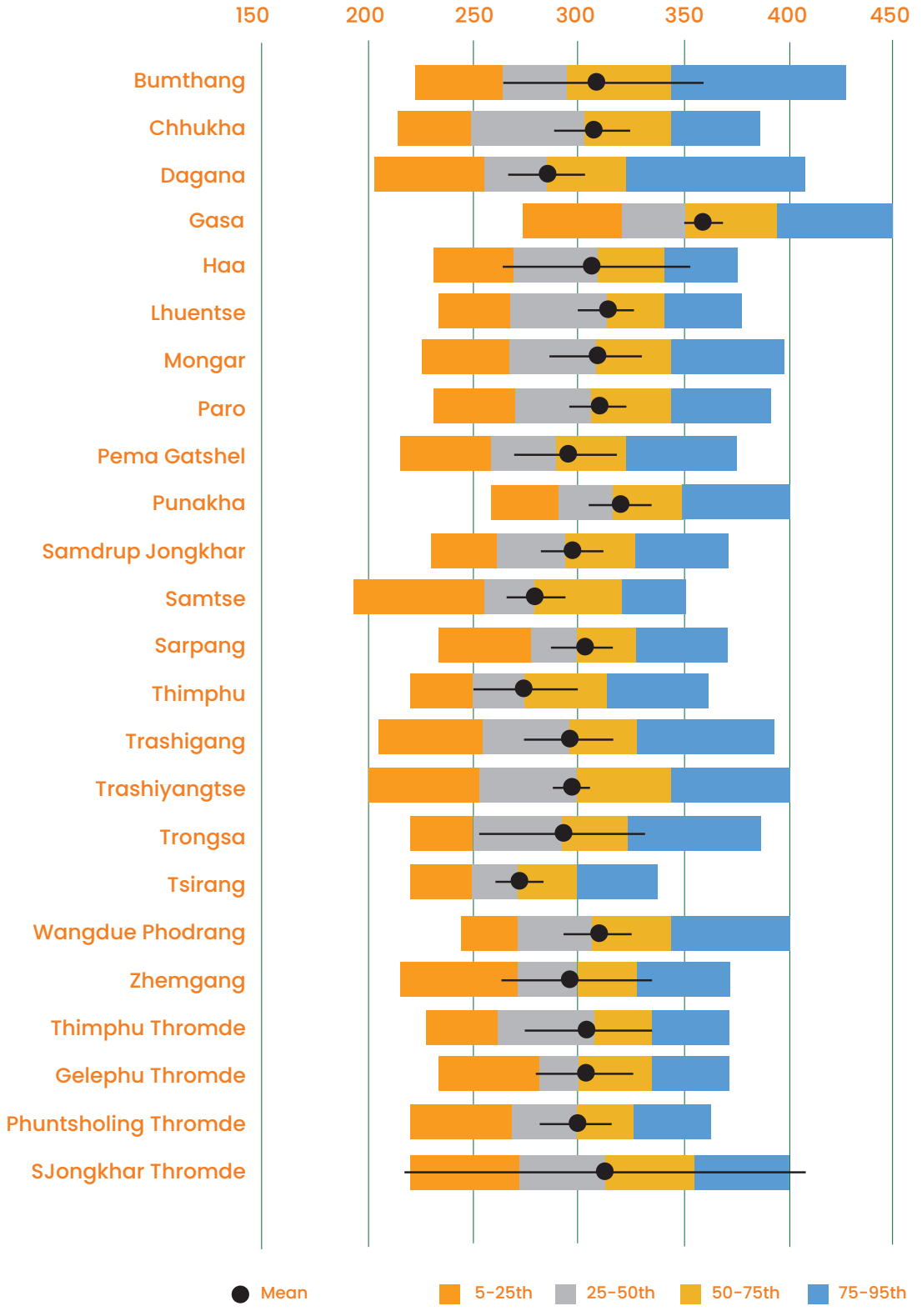
The percentiles provide additional information when comparing Dzongkha Reading Literacy performance amongst districts. For example, when the districts are arranged in the order of average score, the difference between adjacent districts tend to be small. However, the range of scores may not be similar, hence there is high dispersion. For example, there was no significant difference between the median score (50th percentile) of Sarpang (301) and Trashiyangtse (301). However, the IQRs were vastly different - Sarpang's IQR was 56 compared with Trashiyangtse's IQR of 89. This indicates that whilst average achievement was very similar in the two districts, Trashiyangtse had a more heterogeneous group of grade III students than Sarpang.

Table 2.4: Percentile scores in Dzongkha Reading Literacy for districts

District	5th	25th	50th	75th	95th
Bumthang	234	271	297	337	413
Chhukha	228	271	302	337	388
Dagana	207	256	289	319	379
Gasa	275	316	351	394	453
Haa	239	278	304	332	381
Lhuentse	242	283	307	338	381
Mongar	231	275	309	346	398
Paro	236	274	304	339	392
Pema Gatshel	224	260	287	322	382
Punakha	258	294	322	352	403
Samdrup Jongkhar	228	264	294	327	381
Samtse	193	244	274	302	352
Sarpang	235	273	301	329	385
Thimphu	216	251	282	312	371
Trashigang	208	258	292	331	390
Trashiyangtse	198	252	301	341	398
Trongsa	213	251	288	324	396
Tsirang	211	250	272	300	339
Wangdue Phodrang	240	279	307	344	400
Zhemgang	216	266	295	328	381
Thimphu Thromde	236	277	305	335	389
Gelephu Thromde	242	282	314	346	392
Phuntsholing Thromde	226	273	298	328	378
SJongkhar Thromde	227	280	317	354	404

The figure below is an illustration of the percentile scores and the district mean scores with confidence intervals.

Figure 2.2: Percentile scores in Dzongkha Reading Literacy for districts



2.1.2. Proficiency levels in Dzongkha Reading Literacy

The following table shows the proficiency levels developed to describe student performances in Dzongkha Reading Literacy. As students go up from Level 1 to Level 4, their abilities improve from low to high. Students at a higher level can comfortably demonstrate the skills and knowledge of the assigned level and the levels below it.

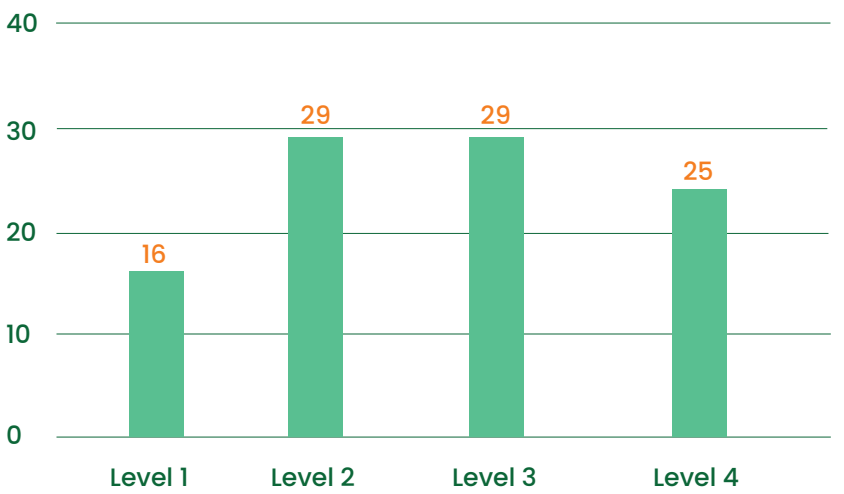
Table 2.5: Proficiency descriptions for Dzongkha Reading Literacy

Proficiency level (འཇོལ་བཤད་)	Description (འགྲེལ་བཤད་)
ཐ ལྷོད་ཕྱག་གི་གྲངས་ཁ།	དབྱེ་ཞག་འདི་ནང་གི་ ལྷོད་ཕྱག་ཚུ་གིས་ ཡིག་བྱེསམ་རྣམ་པ་མ་འདྲཕ་ རིངམོ་ཚུ་ཕྱག་སྟེ་ འདི་ནང་ལས་ སྐྱོན་ཡོན་ཀྱི་བསམ་འཆར་བཀོད་ཚུགསཔ་མ་ཚད་ རང་སྐྱོབས་ཀྱིས་གནས་རིམ་དང་བསྟུན་པའི་ དོན་ཚན་དེའི་ཐོག་ལུ་ ཁྱངས་དོན་བཀོད་དེ་ རང་སོའི་རིག་སྐྱོབས་དང་བསྟུན་པའི་ བསམ་ཞིབ་དང་དབྱེ་ཞིབ་ཚུ་འབད་ཚུགས། དེ་ལས་ དོན་ཚན་འདི་དང་ རིགས་བསྒྲེས་ཏེ་ རྒྱས་བཤད་རྒྱབ་ནི་དང་ བཅུད་བསྡུ་ནི་ གཞན་ཡང་ དོན་ཚན་འདིའི་ཐོག་ལུ་ འཕྲི་སྟོན་ཚུ་འབད་ཚུགས་པའི་ཁར་ ཁྱད་པར་ཡང་ཅི་ཚུགས།
ཧ ལྷོད་ཕྱག་གི་གྲངས་ཁ།	དབྱེ་ཞག་འདི་ནང་གི་ལྷོད་ཕྱག་ཚུ་གིས་ ཡིག་བྱེསམ་ཚུ་ཕྱག་སྟེ་ འདི་ནང་ལས་ བརྡ་དོན་འཆོལ་ཚུགས་པའི་ཁར་ རིགས་སྒྲི་གི་བཤད་པ་རྒྱབ་ཚུགས། དེ་བཟུམ་སྟེ་ ཡིག་བྱེསམ་མ་འདྲཕ་ཚུ་ ཕྱག་ཞིནམ་ལས་དོན་ཚན་ཚུ་ལུ་ ཁྱད་པར་ཅི་ཅམ་ཡང་མེད་ཚུགསཔ་མ་ཚད་ གོ་དོན་ཚུ་ཡང་བརྡ་སྐྱུར་འབད་ཚུགསཔ་ཅིན། གཞན་ཡང་ ཡིག་བྱེསམ་གྱི་བཅུད་དོན་ བཏོན་ཚུགས་ནི་དང་ བརྡ་དོན་དབྱེ་དཔྱད་འབད་དེ་ གཏམ་འཐུག་འབད་ཚུགསཔ་ཅིན། དེ་མ་ཚད་ གནས་རིམ་དང་བསྟུན་པའི་རྒྱུ་མཚན་བཀོད་ཐོག་ལས་ རང་སོའི་བསམ་འཆར་ཚུ་ བཀོད་ཚུགས།
ར ལྷོད་ཕྱག་གི་གྲངས་ཁ།	དབྱེ་ཞག་འདི་ནང་གི་ ལྷོད་ཕྱག་ཚུ་གིས་ རྩོད་ཚིག་དང་ བཤད་པ་ རན་ཏོག་ཏོ་ཡོད་པའི་ ཡིག་བྱེསམ་ཚུ་ཕྱག་སྟེ་ འདི་ནང་ལས་ བརྡ་དོན་འཆོལ་ཏེ་ བཤད་པ་རྒྱབ་ཚུགས་པའི་ཁར་ དོས་འཛིན་འབད་དེ་ གདམ་ཁ་རྒྱབ་ཚུགས། དེ་ལས་ མིངཚིག་བརྡ་སྐྱུར་འབད་དེ་ བཅུད་དོན་ཚུ་ལེན་ཚུགསཔ་མ་ཚད་ མིངཚིག་ཚུ་ཕྱག་སྟེ་ གོ་དོན་ལེན་ཚུགསཔ་ཅིན། དེ་མ་ཚད་ ཡིག་བྱེསམ་ཚུ་ཕྱག་སྟེ་ ཁེ་ཡན་དབྱེ་དཔྱད་འབད་ཞིནམ་ལས་ རྒྱུ་མཚན་ཚུ་ཡང་ བཀོད་ཚུགས།
ཀ ལྷོད་ཕྱག་གི་གྲངས་ཁ།	དབྱེ་ཞག་འདི་ནང་གི་ལྷོད་ཕྱག་ཚུ་གིས་ བཤད་པ་ཐུང་སུ་ཡོད་པའི་ ཡིག་བྱེསམ་ཚུ་ཕྱག་སྟེ་ འདི་ནང་ལས་ གོ་དོན་ལེན་ཏེ་ བརྡ་དོན་འཆོལ་ཚུགས་པའི་ཁར་ ཅ་ཆས་ཚུ་ དོས་འཛིན་འབད་དེ་ མིངལྟབ་ཚུགས། དེ་མ་ཚད་ གནས་ཚད་དང་མཐུན་པའི་ དོན་ཚན་གྱི་ཐོག་ལུ་ བཤད་པ་ཐུང་ཀུ་དེ་རྒྱབ་ཚུགས་ནི་དང་ ཁྱངས་ཁ་ཡང་བརྡ་སྐྱུར་ཚུགས་ནི་ཅིན། དེ་ལས་ ལྷོད་ཕྱག་ཚུ་གིས་ བརྡ་རྟགས་ཚུ་ བརྡ་སྐྱུར་འབད་ནི་དང་ པར་ལུ་བལྟ་སྟེ་ མཐུན་སྒྲིག་འབད་ཚུགསཔ་མ་ཚད་ དོན་དག་ཚུ་ཡང་རྟ་གོ་ཚུགསཔ་ཅིན།

One of the objectives of NEA 2021 is to set a minimum proficiency level in Dzongkha Reading Literacy at grade III. After a series of extensive reviews and deliberations among education stakeholders in the country, it has been decided that students are expected to reach at least Level 2 at the end of grade III. Thus, students with their scores falling between Level 2 to Level 4 (and above in future NEAs) would be considered to meet the minimum proficiency level of grade III.

In NEA 2021, 84 percent of the students were found to meet the minimum proficiency level of grade III, consisting of 29 percent in Level 2, 29 percent in Level 3 and 25 percent in Level 4. However, 16 percent of the students failed to meet the minimum level with their scores falling at Level 1. Considering the fact that NEA 2021 was conducted after the extensive challenges and changes caused by school closures due to the COVID-19 pandemic, the students' learning achievement in Dzongkha Reading Literacy in the country is fairly acceptable. However, despite having conducted online classes and arranged Self-Instructional Materials during the pandemic and having offered bridging courses in the beginning of the next academic year (2021) to cover learning loss, a 16 percent of students failing to meet the minimum proficiency level is a matter of concern. Therefore, it is recommended to pay special attention to students who fall behind to improve their learning and meet the minimum proficiency level.

Figure 2.3: Distribution of proficiency levels in Dzongkha Reading Literacy (in percent)



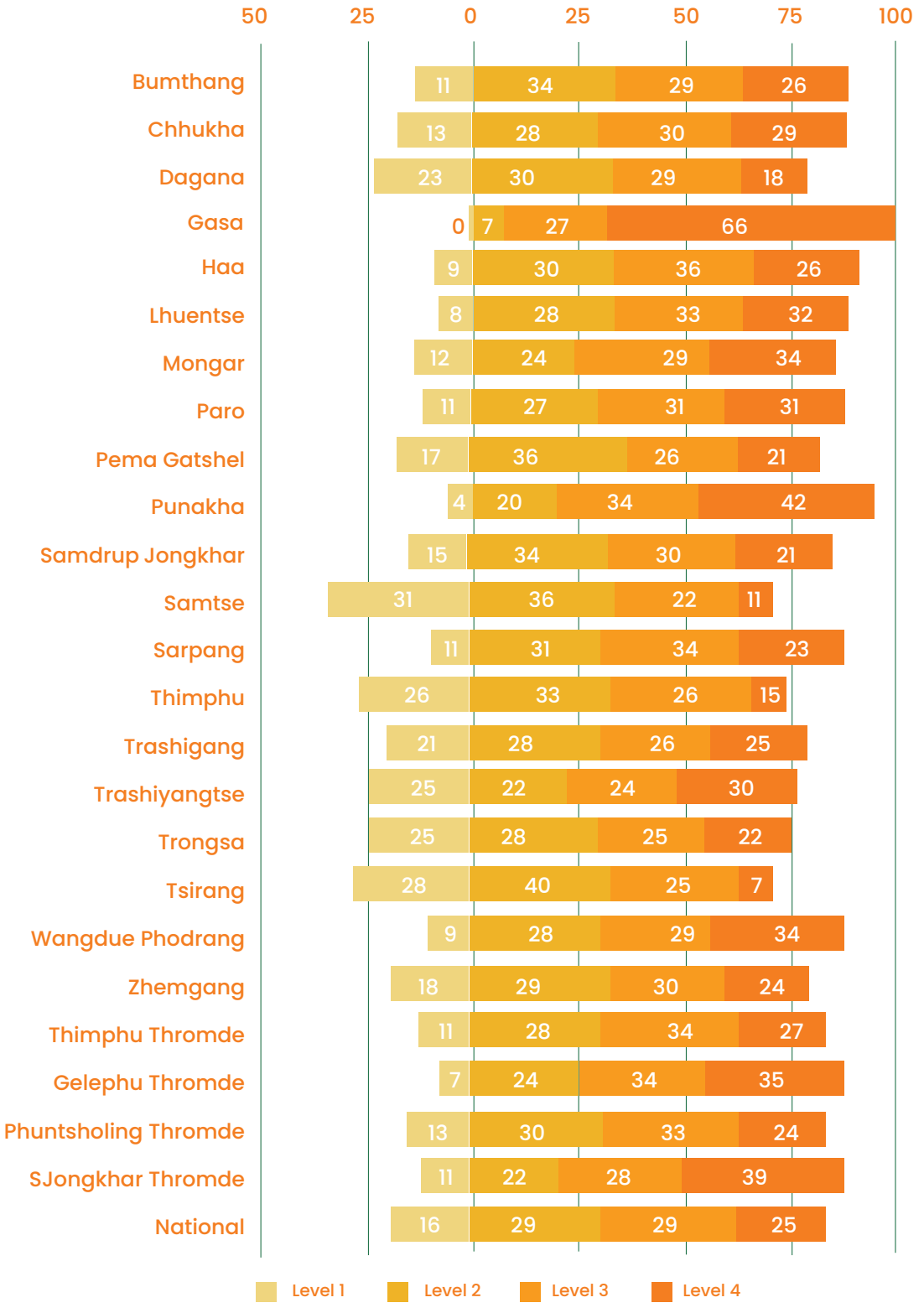
In NEA 2021, the proportion of students meeting the minimum Dzongkha Reading Literacy proficiency standard of grade III ranged from 69 to 100 percent among the districts. In Gasa, all students successfully met the minimum proficiency level in Dzongkha Reading Literacy. On the other hand, 69 percent of the students were above Level 1 in Samtse.

More than 20 percent of the students were at Level 1 in seven districts, Trashigang (21%), Dagana (23%), Trashiyangtse (25%), Trongsa (25%), Thimphu (26%), Tsirang (28%) and Samtse (31%). It is recommended to further investigate the reasons behind low performance in these districts and support them to improve student learning. The table and figure that follow illustrate the range of proficiency level distributions within and across the districts.

Table 2.6: Distribution of proficiency levels in Dzongkha Reading Literacy by district (in percent)

District	Level 1	Level 2	Level 3	Level 4	% min proficiency
Bumthang	11	34	29	26	89
Chhukha	13	28	30	29	87
Dagana	23	30	29	18	77
Gasa	0	7	27	66	100
Haa	9	30	36	26	91
Lhuentse	8	28	33	32	92
Mongar	12	24	29	34	88
Paro	11	27	31	31	89
Pema Gatshel	17	36	26	21	83
Punakha	4	20	34	42	96
Samdrup Jongkhar	15	34	30	21	85
Samtse	31	36	22	11	69
Sarpang	11	31	34	23	89
Thimphu	26	33	26	15	74
Trashigang	21	28	26	25	79
Trashiyangtse	25	22	24	30	75
Trongsa	25	28	25	22	75
Tsirang	28	40	25	7	72
Wangdue Phodrang	9	28	29	34	91
Zhemgang	18	29	30	24	82
Thimphu Thromde	11	28	34	27	89
Gelephu Thromde	7	24	34	35	93
Phuntsholing Thromde	13	30	33	24	87
SJongkhar Thromde	11	22	28	39	89
National	**16**	**29**	**29**	**25**	**84**

Figure 2.4: Distribution of proficiency levels in Dzongkha Reading Literacy by district (in percent)



2.2. Learning gaps in context

2.2.1. Student achievement by gender

In the NEA 2021 Dzongkha Reading Literacy test, the mean score of the girls (305) was higher than that of the boys (295) by 10 score points. However, the difference was not statistically significant, hence achievement gap was not reported. The table below shows the mean Dzongkha Reading Literacy scores achieved by boys and girls. It shows that no significant difference was detected in the average performance levels of the two groups.

Table 2.7: Student performance in Dzongkha Reading Literacy by gender

	Mean	SE	Confidence interval
Male	295	2.5	290-300
Female	305	4.5	296-314

The comparison of student performance is visually presented in the figure below.

Figure 2.5: Student performance in Dzongkha Reading Literacy by gender

2.2.2. Student achievement by location (rural vs. urban)

The table below compares mean Dzongkha Reading Literacy scores achieved by students in rural and urban areas. There was no significant performance difference between the performance of students from rural areas and those from urban areas. The mean score of the students studying in urban schools was higher than that of the students in rural areas. However, the difference was not statistically significant. The table and figure that follow presents the student performances in Dzongkha Reading Literacy by location.

Table 2.8: Student performance in Dzongkha Reading Literacy by location

	Mean	SE	Confidence interval
Urban	308	3.7	300 - 315
Rural	295	3.6	288 - 302

Figure 2.6 Student performance in Dzongkha Reading Literacy by location

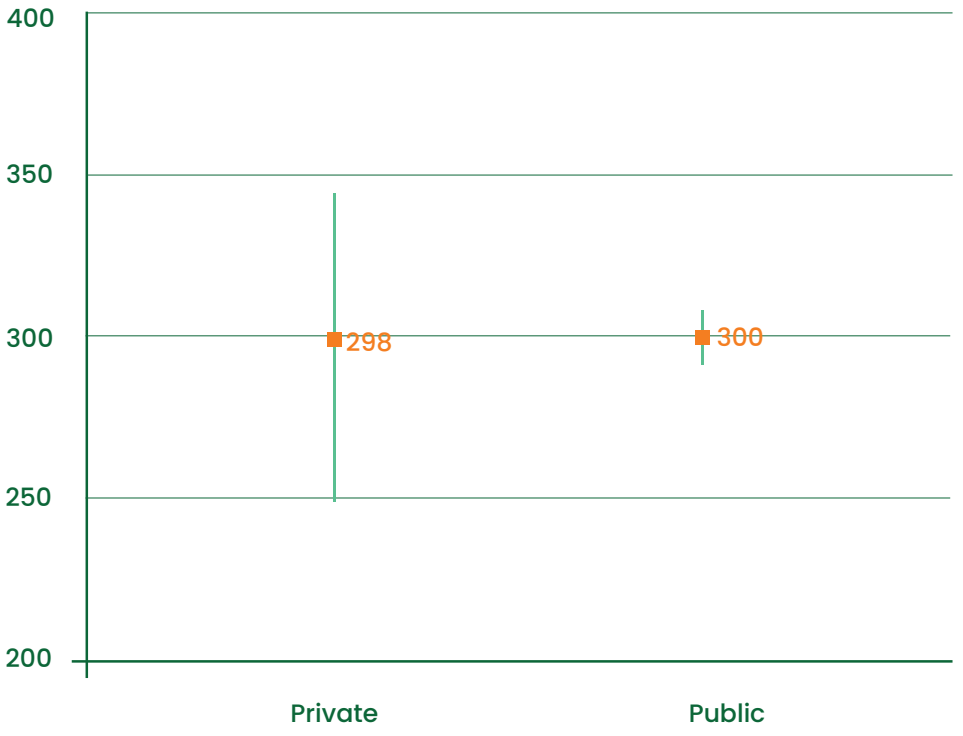
2.2.3. Student achievement by school management type

The results from NEA 2021 show that there was no significant performance difference between the students studying in private schools and public schools in Dzongkha Reading Literacy. The mean scores of the two groups were almost identical; the private school mean was 298 and the public school mean was 300. We can conclude that no difference was detected between public school students and private school students in terms of their performances in Dzongkha Reading Literacy. The table and figure below illustrate the student performances in Dzongkha Reading Literacy by school management type.

Table 2.9: Student performance in Dzongkh Reading Literacy by school management

	Mean	SE	Confidence interval
Private	298	26.3	246 - 349
Public	300	4.1	292 - 308

Figure 2.7: Student performance in Dzongkha Reading Literacy by school management



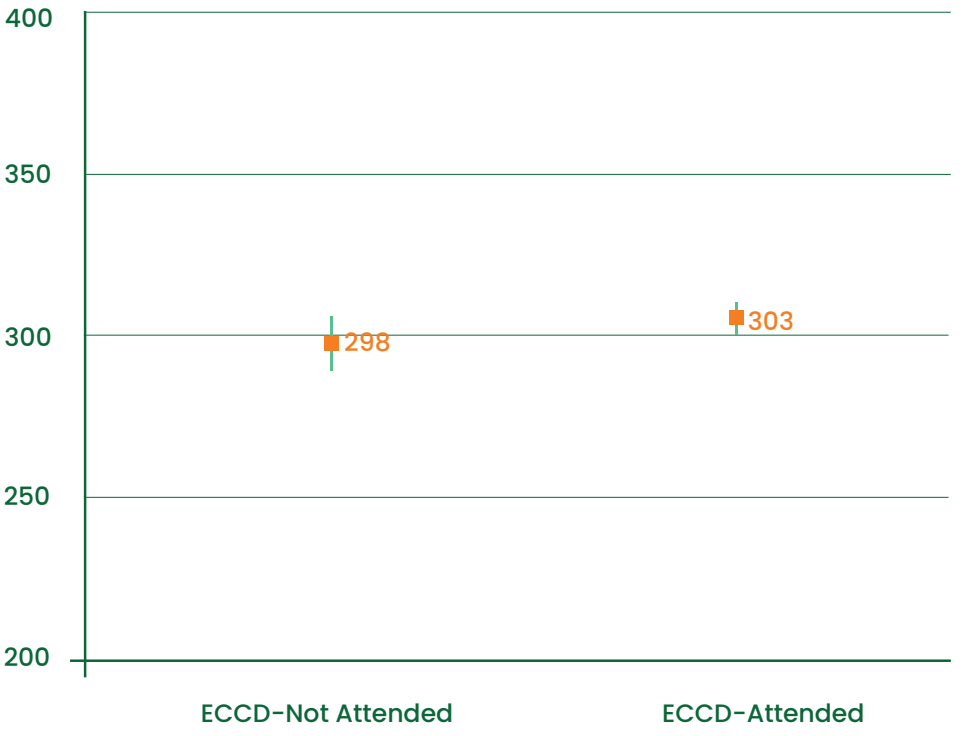
2.2.4. Student achievement by Early Childhood Care and Development programme participation

There was no significant difference between the Dzongkha Reading Literacy performance of students who attended the ECCD programme and those who did not. The mean score of the ECCD participants (303) was higher than that of the non-participants (298) only by a negligible amount, five score points, without any statistical significance. A probable explanation for this phenomenon might be that the ECCD programme in the country is focused on holistic development of the of young children through play-based approach and not through rigorous Dzongkha literacy efforts.

Table 2.10: Student performance in Dzongkha Reading Literacy by ECCD participation

	Mean	SE	Confidence interval
ECCD - Not Attended	298	4.5	289 - 307
ECCD - Attended	303	2.7	298 - 308

Figure 2.8: Student performance in Dzongkha Reading Literacy by ECCD participation



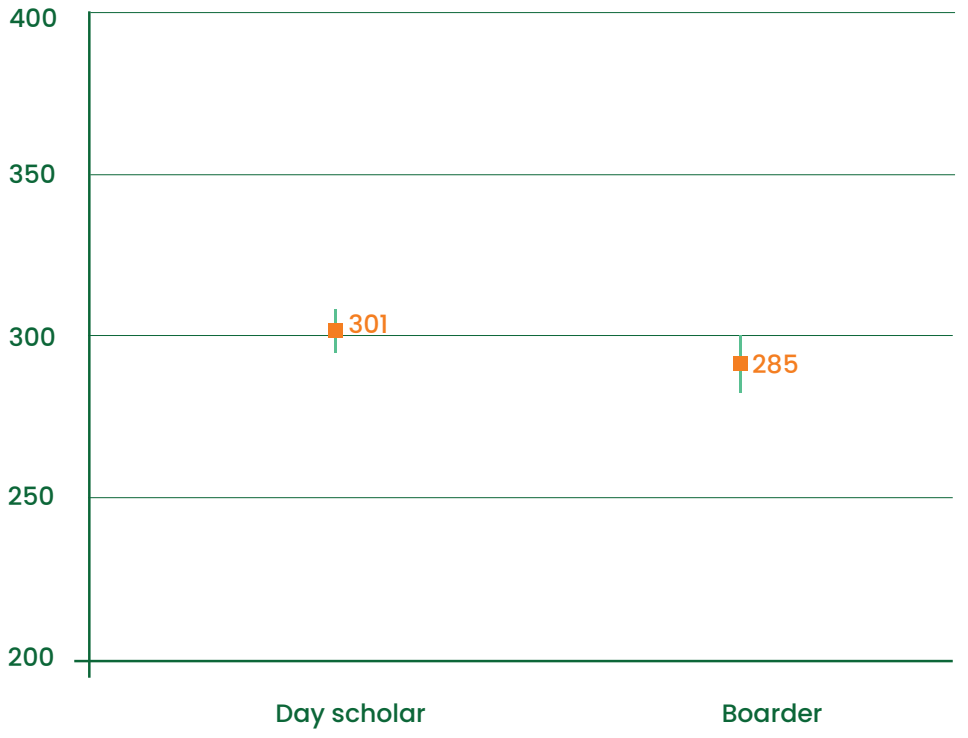
2.2.5. Student achievement by accommodation type

In the NEA 2021 Dzongkha Reading Literacy test, the mean score of day-scholars (301) was higher than that of boarders (285) by 16 score points. However, the difference was not statistically significant, hence achievement gap was not reported. The table below shows the mean Dzongkha Reading Literacy scores achieved by day-scholars and boarders. It shows that no significant difference was detected in the average performance levels of the two groups.

Table 2.11: Student performance in Dzongkha Reading Literacy by accommodation type

	Mean	SE	Confidence interval
Day scholar	301	3	296 - 307
Boarder	285	8	270 - 300

Figure 2.9: Student performance in Dzongkha Reading Literacy by accommodation type



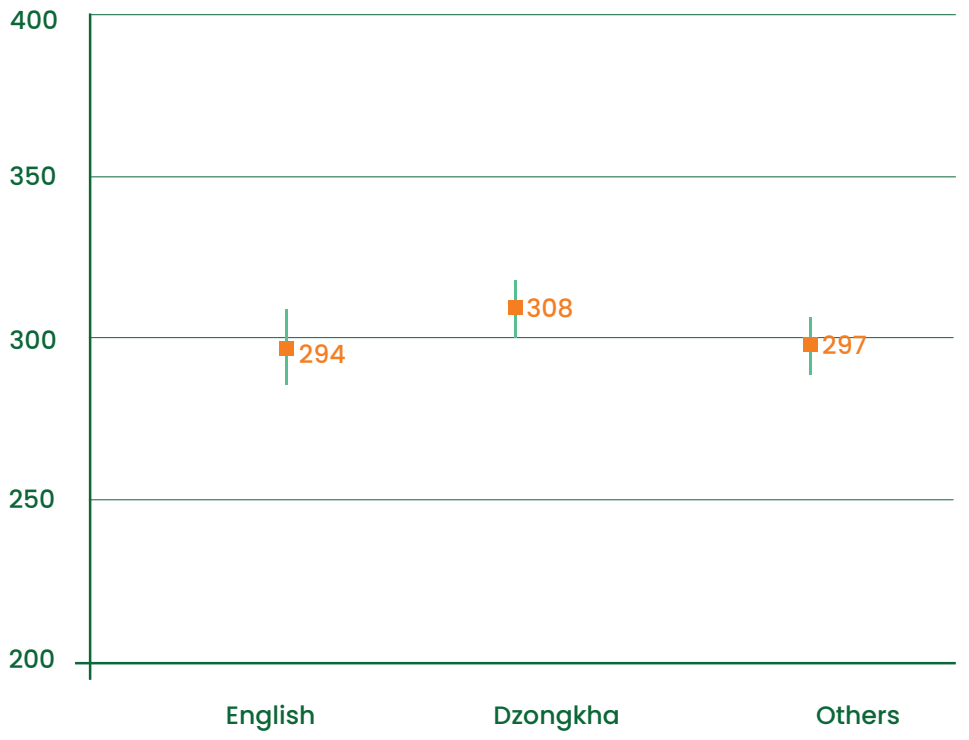
2.2.6. Student achievement by language spoken at home

The following table and figure compare the student performances based on the language spoken at home. The students were divided into groups by the languages spoken at home, as reported in the Student Questionnaire. The Dzongkha-speaking group of students had the highest mean score (308) in Dzongkha Reading Literacy followed by the group that speaks languages other than English and Dzongkha (297), followed by the English-speaking group (294). However, no significant difference was detected amongst these three groups when standard errors were considered.

Table 2.12: Student performance in Dzongkha Reading Literacy by home language

	Mean	SE	Confidence interval
English	294	9	276 - 313
Dzongkha	308	5	298 - 318
Others	297	6	285 - 308

Figure 2.10: Student performance in Dzongkha Reading Literacy by home language



2.2.7. Student achievement by socio-economic status

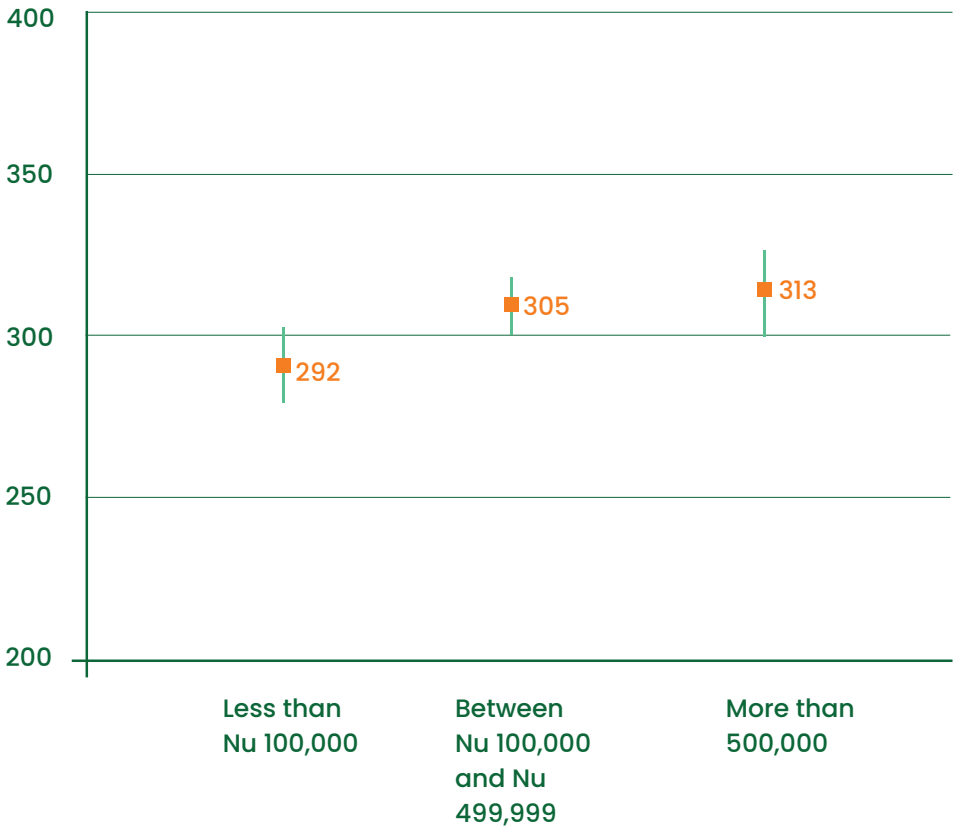
It is essential to investigate how student performances differ in various socio-economic groups. In NEA 2021, students' socio-economic status was collected through the Student Questionnaire. The following discussion focuses on average student performance by family income level and father's education level of students.

The family income of students was grouped in three ways - income less than Nu 100,000, between Nu 100,000 and Nu 499,999, and Nu 500,000 and above. The results from NEA 2021 showed that the students with higher family income level scored higher in Dzongkha Reading Literacy on average, but without statistical significance. Thus, the performance differences amongst the three income groups were not meaningful in Dzongkha Reading Literacy.

Table 2.13: Student performance in Dzongkha Reading Literacy by family income level

	Mean	SE	Confidence interval
Less than Nu 100,000	292	4.8	283 - 301
Between Nu 100,000 and Nu 499,999	305	2.5	301 - 310
More than 500,000	313	6.8	299 - 326

Figure 2.11: Student performance in Dzongkha Reading Literacy by family income level

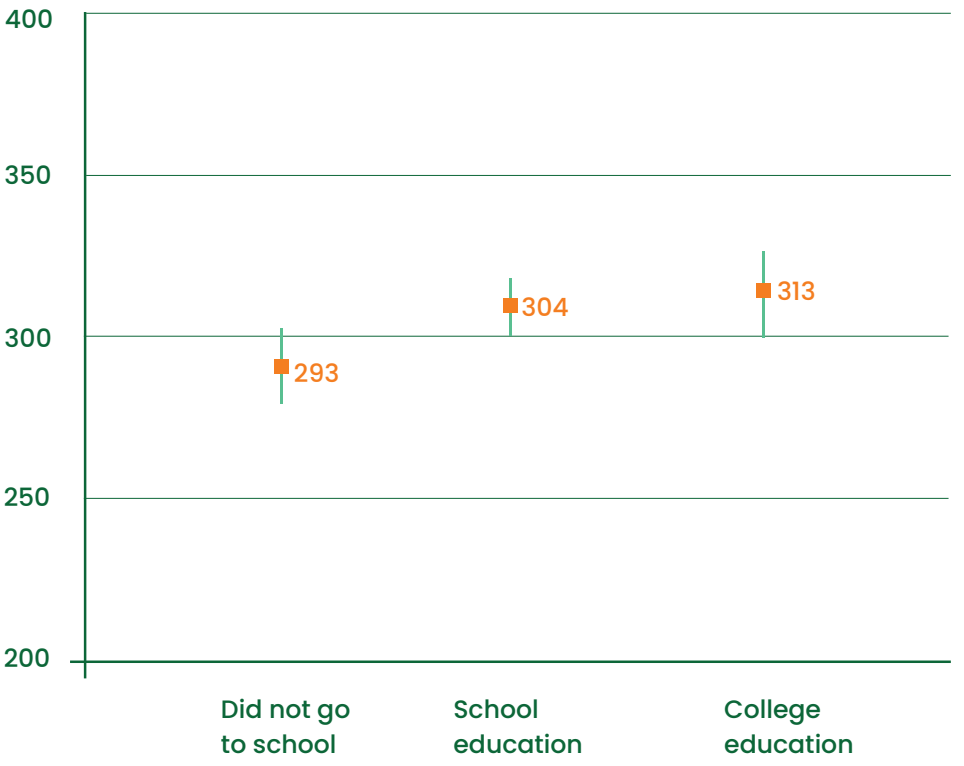


The same pattern emerged in the analysis of the impact of father's education level on student performances. The mean score differences were not statistically supported to be meaningful even though the scores increased as father's education level increased. Thus, the performance differences amongst the three groups were not meaningful in Dzongkha Reading Literacy. The table and figure below present the student performances in Dzongkha Reading Literacy by father's education level.

Table 2.14: Student performance in Dzongkha Reading Literacy by parental education level

	Mean	SE	Confidence interval
Did not go to school	293	5.3	282 - 303
School education	304	2.5	299 - 308
College education	313	7.6	298 - 328

Figure 2.12: Student performance in Dzongkha Reading Literacy by parental education level



2.2.8. Factors affecting Dzongkha Reading Literacy performances

A regression analysis was conducted to understand the factors affecting students' Dzongkha Reading Literacy performances in NEA 2021. Various independent variables were regressed on the dependent variable - scale score in Dzongkha Reading Literacy. The independent variables were mostly taken from the contextual information collected through the Student Questionnaire, with an exception of student values which were evaluated by teachers ('Teacher value' in the regression model below).

Some of the independent variables were used in an index format after conducting factor analysis. The index variables included:

- students' attitude towards learning ('Attitude towards learning' in the model)
- students' evaluation of classroom environment ('Classroom environment' in the model)
- students' evaluation of pedagogical practices ('Pedagogical practice' in the model)
- socio-economic status ('SES Economic' and 'SES Education' in the model)
- students' general health ('Student health' in the model)
- student value rating on the nine student attributes evaluated by their teachers ('Teacher value' in the model)
- students' evaluation of teaching and learning during COVID-19 ('Teach learn COVID-19' in the model)

The table below summarises results from the regression analysis. After controlling for all other factors in the model constant, we can conclude that the girls performed better than the boys, whereas the grade repeaters and the tuition takers performed lower compared with their counterparts. The impact of gender on Dzongkha Reading Literacy seen through the regression analysis is notable because no significant performance difference was detected in the group mean comparison analysis. It is to be interpreted that girls perform better than boys in Dzongkha Reading Literacy when all other conditions are equal between the two groups.

After controlling for all other variables constant, father's education level had a significant positive impact on the student performances in Dzongkha Reading Literacy. In addition, maintaining a good health helped the students do well in their Dzongkha Reading Literacy test as well. Teacher's evaluation of nine student attributes (Teacher value) showed that students who regard and value the nine attributes scored higher than students who do not.

R-square tells us how well data fit a regression model, also known as the goodness of fit. Ranging from 0 to 1, R-square indicates a proportion of variability observed in a dependent variable explained by a regression model. The NEA regression model with the independent variables explained thirteen percent of the total variance in the student Dzongkha Reading Literacy scores (R-square of 0.13).

The table below presents the results from the regression analysis.

Table 2.15: Regression analysis of students' Dzongkha Reading performances

Statistic/Variable	Coefficient	SE	Value
INTERCEPT	165.0*	58.2	2.8
Attitude towards learning	4.2	4.4	1.0
Classroom environment	-0.8	2.7	-0.3
ECCD	2.6	3.1	0.8
English at home	-10.3	16.8	-0.6
Female	5.6*	2.0	2.8
Grade repeater	-12.2*	2.2	-5.7
Pedagogical practice	0.1	3.3	0.0
Public schools	15.5	31.4	0.5
Location_Rural	-9.9	5.5	-1.8
SES Economic	1.6	2.3	0.7
SES Education	4.7*	2.0	2.4
Student health	2.1*	0.6	3.7
Teacher value	19.1*	2.5	7.7
Teach learn COVID19	1.3	1.1	1.2
Tuition	-7.0*	3.5	-2.0
R-SQUARE	0.13	0.0	5.6

* in the table indicates a statistical significance

2.3. Summary and conclusion

This chapter discussed the analysis of the NEA 2021 results in the Dzongkha Reading Literacy test. It can be concluded on the basis of the results that student performances in Dzongkha Reading Literacy were distributed around the set mean score of 300 in many of the districts. In two districts, Gasa and Punakha, the students performed better than their national counterparts in Dzongkha Reading Literacy. On the other hand, the students from three districts, Samtse (mean score = 273), Thimphu (mean score = 284) and Tsirang (mean score = 274), achieved lower than the national mean. Further research is recommended for the underperforming districts to improve student learning.

On the basis of group mean analysis, no significant difference was detected in the mean achievement levels of the two gender groups at the national level. In addition, gender gap in learning between boys and girls was hardly found in most of the districts. Girls had a clear lead in the mean score in only one district, Sarpang.

At the national level, 84 percent of the students were able to meet the minimum proficiency for grade III which is student scores placed between Level 2 to Level 4 as defined in the NEA proficiency scale. This means that the rest of the 16 percent students failed to meet the minimum level in Dzongkha Reading Literacy, as their scores were placed at Level 1. The failure to meet the minimum level of Dzongkha Reading proficiency can be attributed to obstructions in learning due to school closures in the COVID-19 period and other factors. However, it is hoped that proper remedial measures would be taken immediately to improve learning of students falling below the minimum proficiency level.

There were no clear gaps in the student performances by school location and management type. The analysis results did not show any significant performance gaps in Dzongkha Reading Literacy between the students from rural areas and urban areas. Similarly, there was no meaningful difference in the performance of the students in Dzongkha Reading Literacy in public and private schools.

In NEA 2021, students who attended the ECCD programme performed similar to those who did not, as no statistically significant difference was found. The same pattern appeared between the performances of day-scholars and boarders as no significant difference was detected between the two groups in terms of their Dzongkha Reading abilities. The results from NEA 2021 showed that there were no significant performance differences detected by the language spoken at home or socio-economic status.

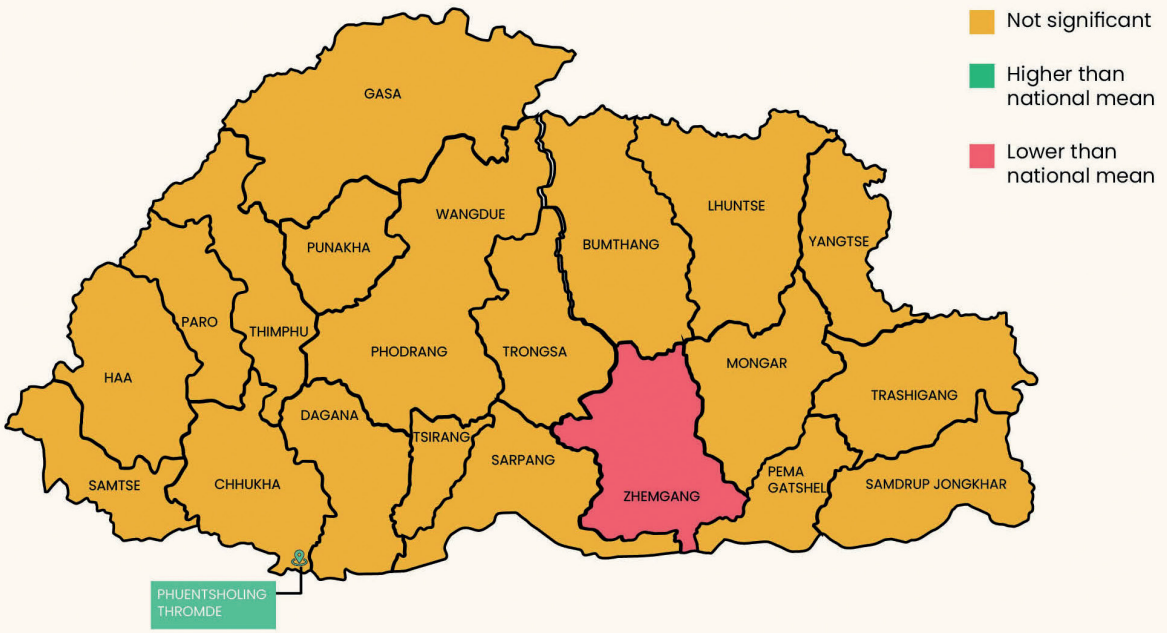
The regression analysis of the Dzongkha Reading Literacy scores captured a significant impact of contextual factors. After controlling for all other variables in the regression model, several factors were identified to be affecting student performance in Dzongkha Reading Literacy. Those factors explain that girls, non-grade repeaters, students with college-educated father, students with good health, non-tuition takers and students who regard the nine student attributes important would perform well in their Dzongkha Reading Literacy.

Researchers have reported that the socio-economic status of family has a major impact on student performance (Cheadle, 2008; Coleman et. al., 1966; Coleman, 1988; Hanushek et. al., 2022; Sirin, 2005). The results from NEA 2021 confirmed the impact of SES on student performance in Dzongkha Reading Literacy. However, a few other factors known for their impact on student performance, including ECCD (Cortázar, 2020; OECD, 2017; Smith, 2014) and location (Wu, 2013; Yang, 2006), did not show a clear relationship with Dzongkha scores of grade III students.

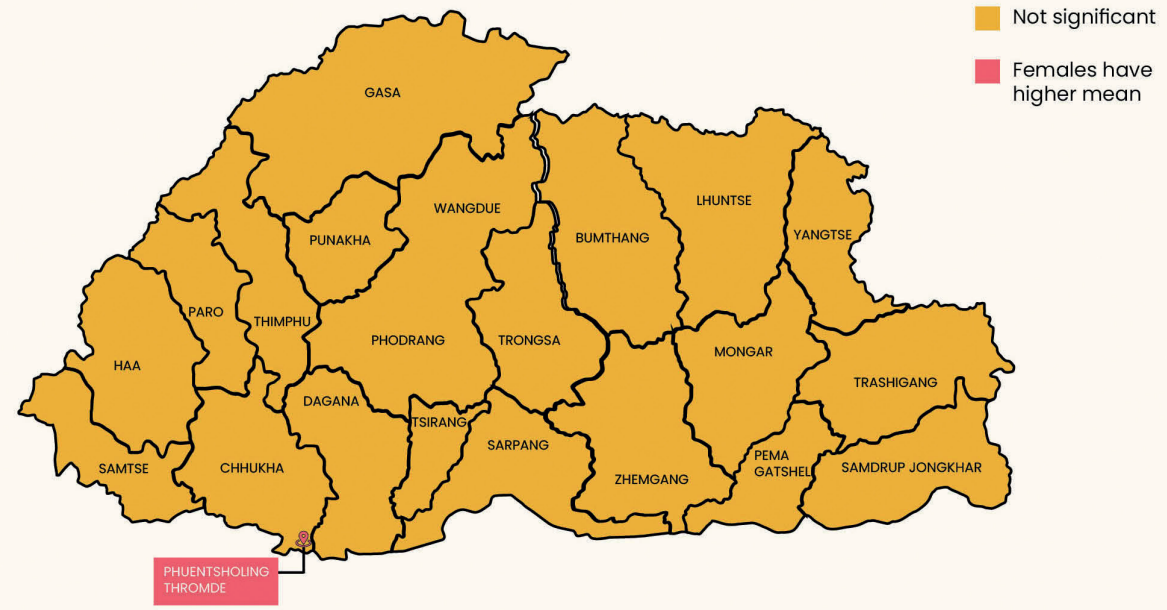
This chapter reported the results of the Dzongkha Reading Literacy test of NEA 2021. The findings provided information on the learning of grade III students and their sub-groups and the influence of various contextual factors on their learning levels. The evidence on contextual factors which significantly impact student performance can support decision-makers to address educational challenges for improving assessment outcomes.

Chapter 3. Achievement of grade III students in English Reading Literacy

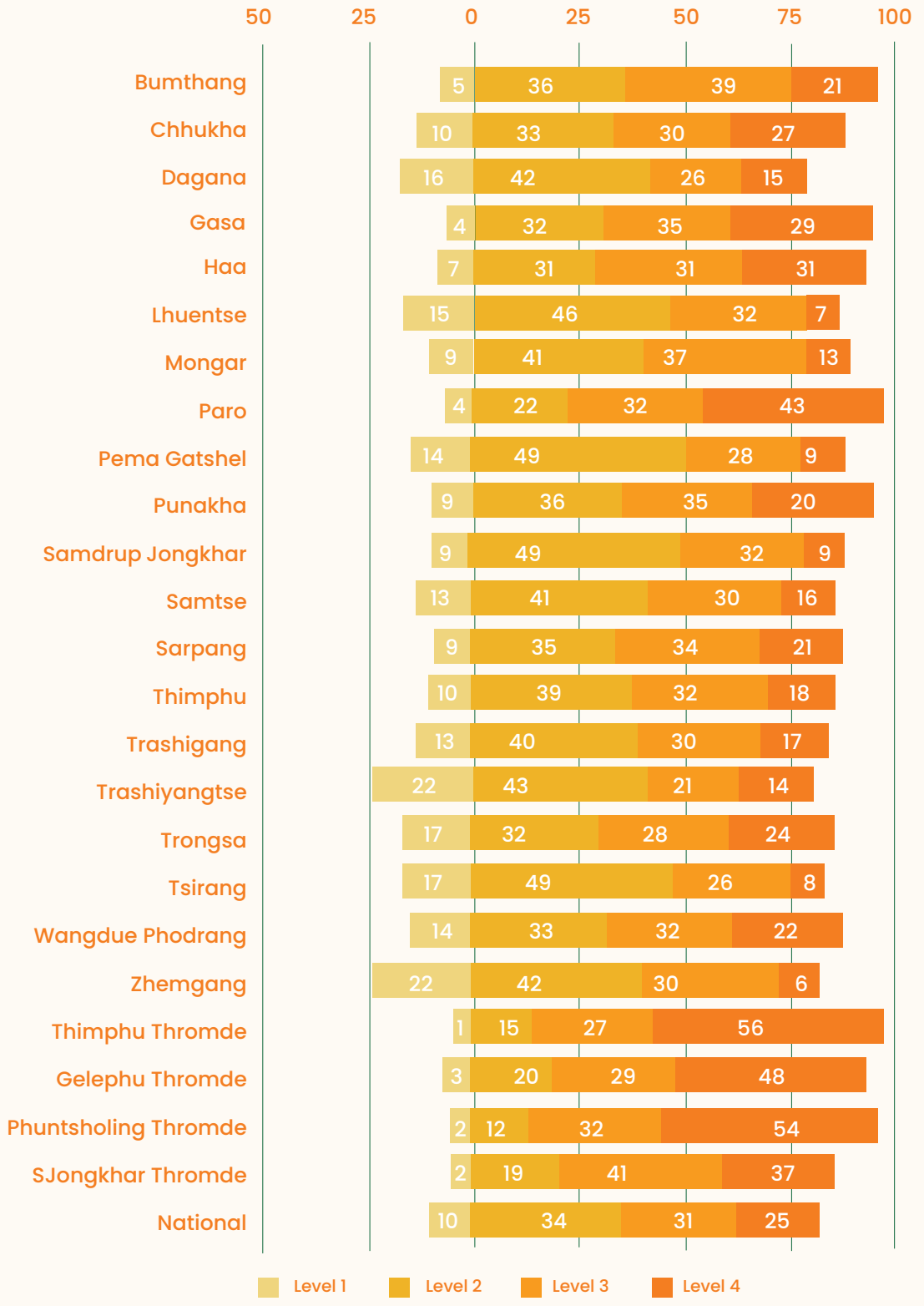
Box 1:
Student achievement in English Reading Literacy



Box 2:
Student achievement by gender in English Reading Literacy



Box 3:
Distribution of proficiency levels in English Reading Literacy by district (in percent)



3.1. Student achievement in English Reading Literacy

This chapter presents grade III student achievement in the English Reading Literacy test of NEA 2021. The discussion is focussed on the analysis of student mean scores, percentile distributions, proficiency levels, group differences, and contextual factors affecting student learning.

The table below presents mean scores of all the districts as well as the national mean. Along with the mean scores, associated standard errors and confidence intervals are also provided for statistical comparison. The results of t-tests comparing the national mean with each district's mean along with the corresponding t-values are provided in the table.

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Table 3.1: Mean scores of student achievement in English Reading Literacy

District	Mean	SE	CI	t value	Significance	
Bumthang	302	12.1	278-326	0.12	Not significant	
Chhukha	302	8.8	285-319	0.14	Not significant	
Dagana	285	6.5	272-298	-1.14	Not significant	
Gasa	307	2.5	302-312	0.60	Not significant	
Haa	305	60.7	186-424	0.08	Not significant	
Lhuentse	277	8.1	261-293	-1.64	Not significant	
Mongar	287	4.2	279-295	-1.07	Not significant	
Paro	323	6.9	309-337	1.73	Not significant	
Pema Gatshel	281	4.9	271-291	-1.53	Not significant	
Punakha	296	8.7	279-313	-0.28	Not significant	
Samdrup Jongkhar	285	2.5	280-290	-1.29	Not significant	
Samtse	287	5.3	277-297	-1.03	Not significant	
Sarpang	297	8.7	280-314	-0.21	Not significant	
Thimphu	291	9.1	273-309	-0.62	Not significant	
Trashigang	288	7.0	274-302	-0.90	Not significant	
Trashiyangtse	276	4.8	267-285	-1.94	Not significant	
Trongsa	294	14.0	267-321	-0.33	Not significant	
Tsirang	276	4.6	267-285	-1.95	Not significant	
Wangdue Phodrang	295	11.8	272-318	-0.30	Not significant	
Zhemgang	271	9.1	253-289	-1.99	Lower than national mean	▼
Thimpu Thromde	343	25.2	294-392	1.55	Not significant	
Gelephu Thromde	322	15.7	291-353	1.13	Not significant	
Phuntsholing Thromde	339	3.3	333-345	3.29	Higher than national mean	▲
SJongkhar Thromde	322	17.4	288-356	1.06	Not significant	
National	**300**	**11.4**	**278-322**			

Table 3.2: Mean scores of student achievement by gender in English Reading Literacy

District	Mean (male)	SE (male)	Mean (female)	SE (female)	Significance	
Bumthang	297	17.3	306	9.7	Not significant	
Chhukha	301	8.6	302	10.7	Not significant	
Dagana	275	9.0	296	6.4	Not significant	
Gasa	304	2.1	313	9.5	Not significant	
Haa	297	68.2	311	55.3	Not significant	
Lhuentse	276	9.1	277	7.8	Not significant	
Mongar	280	5.6	295	5.0	Not significant	
Paro	317	7.2	328	7.4	Not significant	
Pema Gatshel	282	8.3	280	7.4	Not significant	
Punakha	291	8.8	303	9.5	Not significant	
Samdrup Jongkhar	280	6.2	290	3.1	Not significant	
Samtse	287	5.6	288	5.8	Not significant	
Sarpang	293	8.6	302	9.5	Not significant	
Thimphu	290	8.8	292	10.3	Not significant	
Trashigang	282	7.1	295	8.6	Not significant	
Trashiyangtse	274	7.8	279	2.8	Not significant	
Trongsa	291	14.0	299	15.0	Not significant	
Tsirang	274	3.6	278	6.8	Not significant	
Wangdue Phodrang	292	11.8	297	12.6	Not significant	
Zhemgang	277	21.3	265	5.4	Not significant	
Thimpu Thromde	339	24.7	347	25.6	Not significant	
Gelephu Thromde	316	25.2	328	26.1	Not significant	
Phuntsholing Thromde	329	8.5	349	5.4	Females have higher mean	▼
SJongkhar Thromde	311	21.1	331	19.5	Not significant	
National	**296**	**10.1**	**304**	**12.6**		

3.1.1. Performance in English Reading Literacy

Percentiles

Percentile is a way of describing the level of performance in a group or groups of students and a statistic that reports relative standing of an observation within the group. It is used to know where an individual stands compared to the rest of the group. In case of NEA, a percentile indicates the value (of a scale score) below which a corresponding percentage of students fall. For example, the 10th percentile score in English Reading Literacy test denotes a score below which ten percent of the total students have scored.

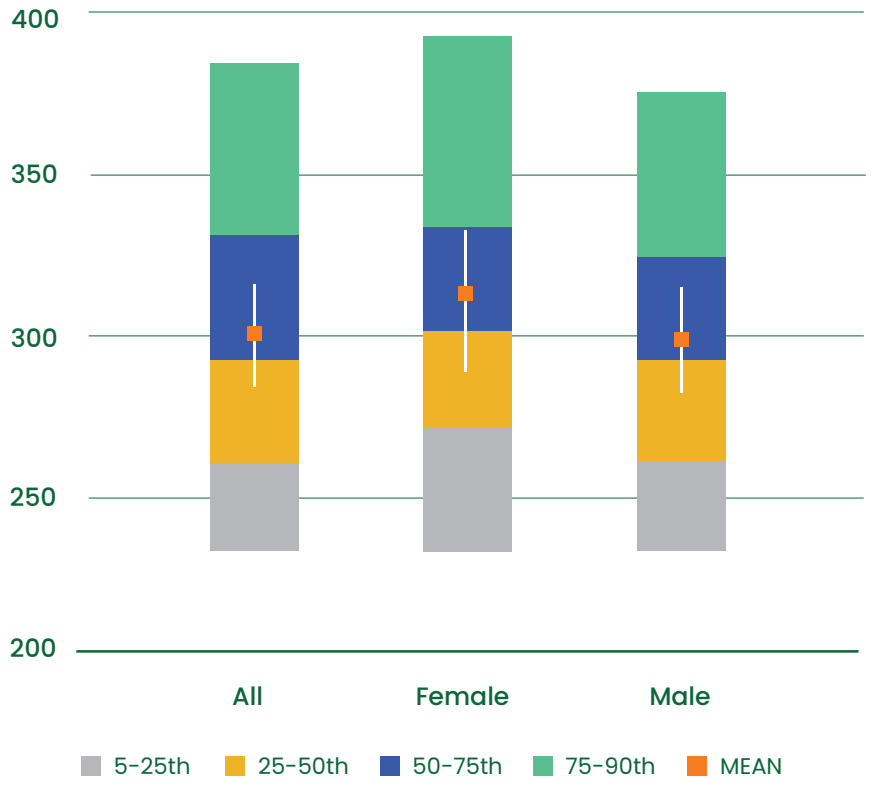
Percentiles inform readers about dispersion of student scores and the degree of homogeneity in terms of student abilities. For example, a range between 25th and 75th percentile (the inter-quartile range) represents performance of the middle half of students. Similarly, a difference between 5th and 95th percentiles covers 90 percent of the student scores. The wider this range, the wider is the ability gap among students in a test domain.

The table and the figure below show the percentile scores and the ranges in the percentile scores in the English Reading Literacy, NEA 2021. Half of the students lie between scores 266 and 329, with a score point difference of 63, and 90 percent of them lie between 228 and 395 with a range of 167 scores. The degree of homogeneity in student performance was more or less the same between girls and boys.

Table 3.3: Percentile scores in English Reading Literacy

	5th	25th	50th	75th	95th	Range 25th-75th	Range 5th-95th
National	228	266	294	329	395	63	167
Male	226	262	290	324	390	62	164
Female	232	269	298	332	399	63	167

Figure 3.1: Percentile scores in English Reading Literacy



The inter-quartile range (IQR) was highly variable across districts. For example, Lhuentse had an IQR of just 41 score-points whilst Thimphu Thromde had a corresponding value of 82. These values suggest that the grade III student population in Lhuentse was far more homogeneous in performance than Thimphu Thromde. In most districts, the range of performance for the middle half was found to be between 42 and 72 scale-score points. Performances at the 5th and 95th percentiles respectively show extremes in low and high achievement. The range between these two points, which includes 90 percent of the population, was found to be highly variable - ranging from 108 (Samdrup Jongkhar) to 180 (Trongsa).

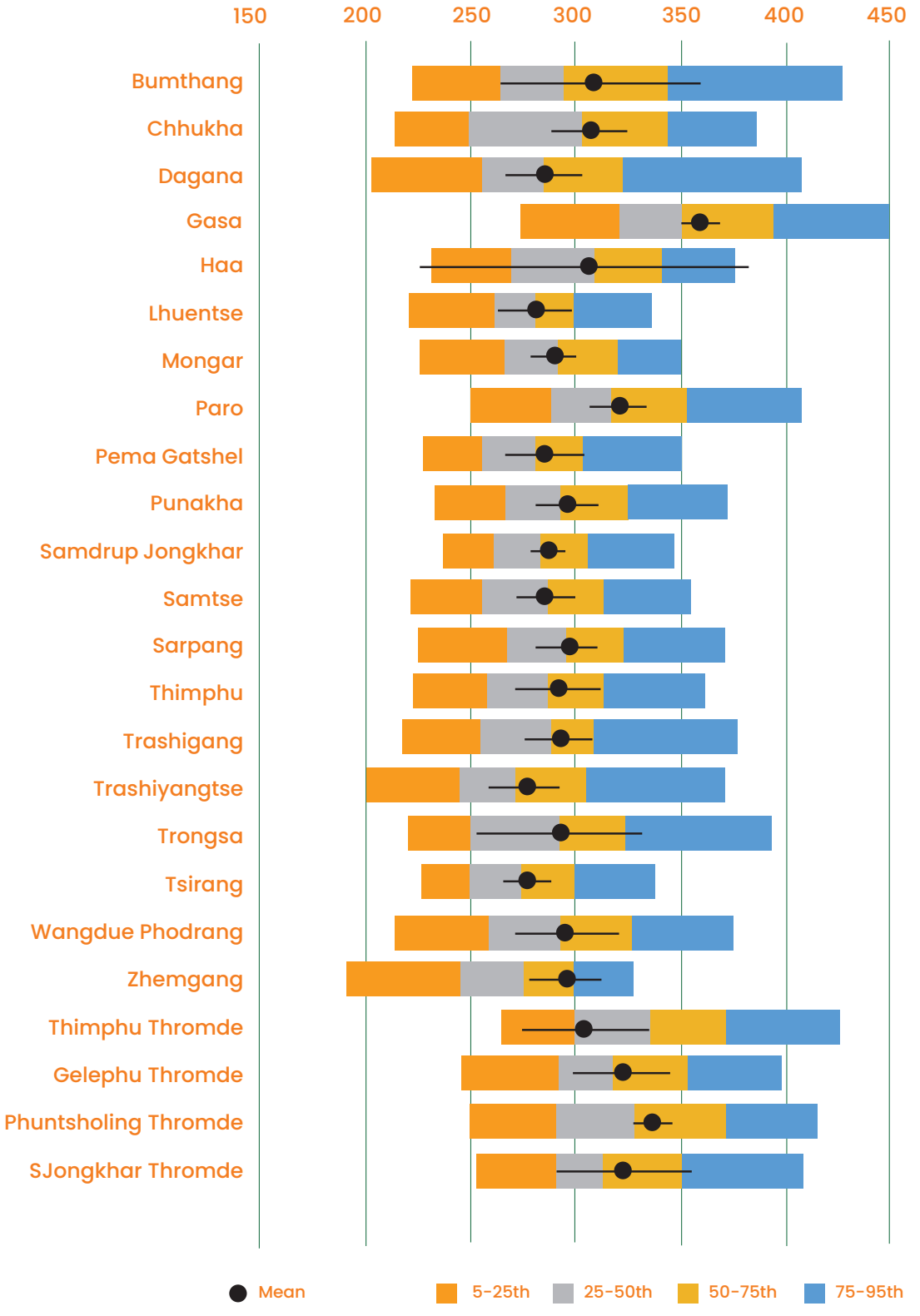
The percentiles provide additional information when comparing English Reading Literacy performance amongst districts. For example, when the districts are arranged in the order of average score, the difference between adjacent districts tend to be small. However, the range of scores may not be similar, hence there is high dispersion. For example, there was no significant difference between the median score (50th percentile) of Thimphu (289) and Trongsa (289). However, the IQRs were significantly different - Thimphu' IQR was 53 compared with Trongsa's IQR of 72. This indicates that whilst the average achievement was similar in the two districts, Thimphu had a more heterogeneous group of grade III students than Trongsa.

Table 3.4: Percentile scores in English Reading Literacy for districts

District	5th	25th	50th	75th	95th	Range 25th-75th	Range 5th-95th
Bumthang	243	273	298	324	385	51	142
Chhukha	228	268	295	332	391	64	163
Dagana	219	256	280	307	379	51	160
Gasa	230	275	299	340	407	65	177
Haa	235	273	303	336	381	63	146
Lhuentse	220	256	276	297	335	41	115
Mongar	230	262	287	311	349	49	119
Paro	248	287	317	355	417	68	169
Pema Gatshel	226	257	278	302	350	45	124
Punakha	233	265	292	319	380	54	147
Samdrup Jongkhar	235	261	281	303	343	42	108
Samtse	224	259	284	313	361	54	137
Sarpang	231	267	294	323	379	56	148
Thimphu	229	263	289	316	367	53	138
Trashigang	222	258	285	312	374	54	152
Trashiyangtse	200	244	271	303	371	59	171
Trongsa	210	254	289	326	390	72	180
Tsirang	226	251	273	298	336	47	110
Wangdue Phodrang	222	261	291	321	385	60	163
Zhemgang	195	245	272	300	332	55	137
Thimphu Thromde	262	301	339	383	431	82	169
Gelephu Thromde	248	290	321	354	393	64	145
Phuntsholing Thromde	262	305	333	375	424	70	162
SJongkhar Thromde	253	289	314	348	412	59	159
National	228	266	294	329	395	63	167

The figure below is an illustration of the percentile scores and the district mean scores with confidence interval

Figure 3.2: Percentile scores in English Reading Literacy for districts



3.1.2. Proficiency levels in English Reading Literacy

The following table shows the proficiency levels developed to describe student performances in English Reading Literacy. As the level goes up from Level 1 to Level 4, the abilities of students improve from low to high, indicating that the students at a higher level can comfortably demonstrate the skills and knowledge of the assigned level and the levels below it.

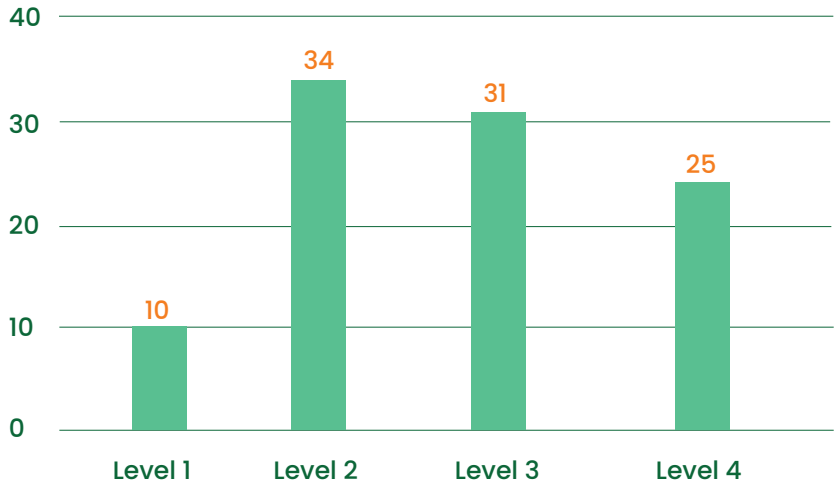
Table 3.5: Proficiency descriptions for English Reading Literacy

Proficiency level	Description
Level 4	Students at this level are typically able to read different genres of texts, including infor-mative texts that are slightly dense. They are able to locate explicitly stated information in texts and write them, even when they are not in a prominent position or even in the pres-ence of competing details. They make more complex interpretations such as those re-quiring linking a sentence to a previous one. Students are able to identify simple rhyming words. They are able to read texts to infer meanings at different levels of understanding using prior knowledge. They can reflect on a text to recog-nise the main theme or author's purpose in a text about a familiar topic.
Level 3	Students at this level are typically able to read longer texts of different types including non-continuous texts, narratives and poems. They can se-lect directly stated information using synonymous matches in different types of texts. They are able to interpret information by linking ideas from different parts of a text or to prior knowledge, paraphrasing information and deducing word meaning using clues in short texts. They also identify the main idea of a short non-continuous text even when it is implied. They can infer the traits of a character in narratives based on clues in the text.
Level 2	Students at this level are beginning to read short, simple texts of different types. They are able to identify simple details which are explicitly stated and are a direct match to the words in the task, in very short simple texts. They interpret basic conventions to retrieve details. They begin to make simple connections between the information in the text and common, eve-ryday knowledge.
Level 1	Students at this level are able to match words to simple illustration of a familiar object. They are also able interpret basic actions and phrases that are familiar from everyday life. They can recognise information about con-crete and/or familiar objects, animals, etc.

One of the objectives of NEA 2021 is to set a minimum proficiency level in English Reading Literacy at grade III. After a series of extensive reviews and deliberations among education stakeholders in the country, it has been decided that students are expected to reach at least Level 2 at the end of grade III. Thus, students scoring between Level 2 to Level 4 (and above in future NEAs) would be considered to have met the minimum proficiency level of grade III.

In NEA 2021, 90 percent of the students were found to meet the minimum proficiency level of grade III, consisting of 34 percent in Level 2, 31 percent in Level 3 and 25 percent in Level 4. However, 10 percent of the students failed to meet the minimum level with their scores falling at Level 1. Given the educational challenges faced by students during the COVID-19 pandemic, students' learning achievement in English Reading in the country is commendable.

Figure 3.3: Distribution of proficiency levels in English Reading Literacy (in percent)

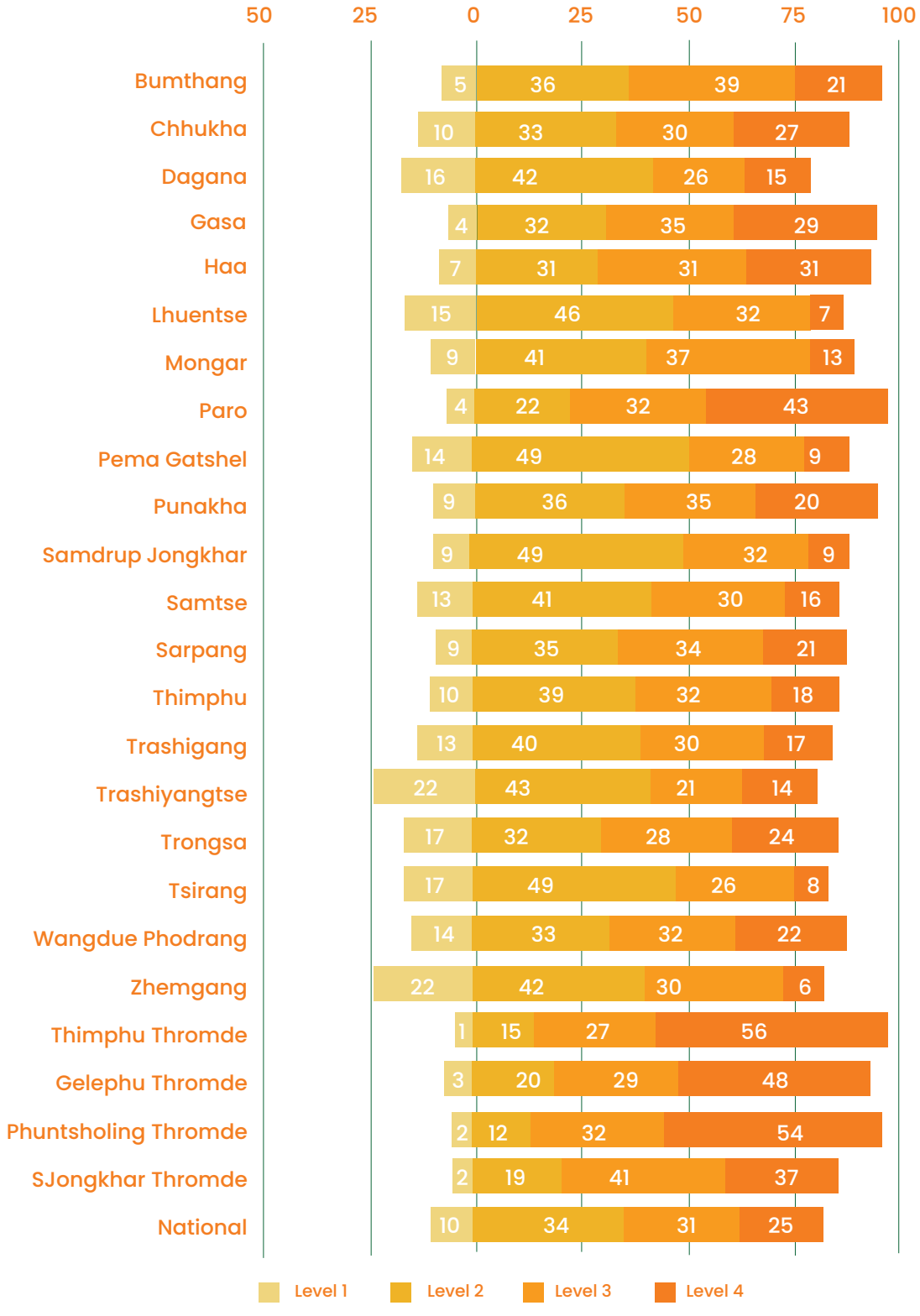


In NEA 2021, the proportion of students meeting the minimum proficiency standard of grade III ranged from 78 to 98 percent among the districts. Almost all districts had more than 80 percent of the students meeting the minimum proficiency standard of grade III, except for Trashiyangtse (78%) and Zhemgang (78%). In thirteen out of the 24 districts, the proportion of students with English Reading Literacy scores at Level 2 or above exceeded 90 percent. Seven districts had more than 95 percent students at Level 2 or above, including Thimphu Thromde (99%), Phuntsholing Thromde (98%), Samdrup Jongkhar Thromde (98%), Gelephu Thromde (97%), Paro (96%), Gasa (96%), and Bumthang (95%). More than 20 percent of the students were at Level 1 in Trashiyangtse (22%) and Zhemgang (22%). It is recommended to further investigate the reasons behind low performance in these districts and support them to improve student learning. The table and figure that follow illustrate the range of proficiency level distributions within and across the districts.

Table 3.6 Distribution of proficiency levels in English Reading Literacy by district (in percent)

District	Level 1	Level 2	Level 3	Level 4	% min proficiency
Bumthang	5	36	39	21	95
Chhukha	10	33	30	27	90
Dagana	16	42	26	15	84
Gasa	4	32	35	29	96
Haa	7	31	31	31	93
Lhuentse	15	46	32	7	85
Mongar	9	41	37	13	91
Paro	4	22	32	43	96
Pema Gatshel	14	49	28	9	86
Punakha	9	36	35	20	91
Samdrup Jongkhar	9	49	32	9	91
Samtse	13	41	30	16	87
Sarpang	9	35	34	21	91
Thimphu	10	39	32	18	90
Trashigang	13	40	30	17	87
Trashiyangtse	22	43	21	14	78
Trongsa	17	32	28	24	83
Tsirang	17	49	26	8	83
Wangdue Phodrang	14	33	32	22	86
Zhemgang	22	42	30	6	78
Thimphu Thromde	1	15	27	56	99
Gelephu Thromde	3	20	29	48	97
Phuntsholing Thromde	2	12	32	54	98
SJongkhar Thromde	2	19	41	37	98
National	10	34	31	25	90

Figure 3.4: Distribution of proficiency levels in English Reading Literacy by district (in percent)



3.2. Learning gaps in context

3.2.1. Student achievement by gender

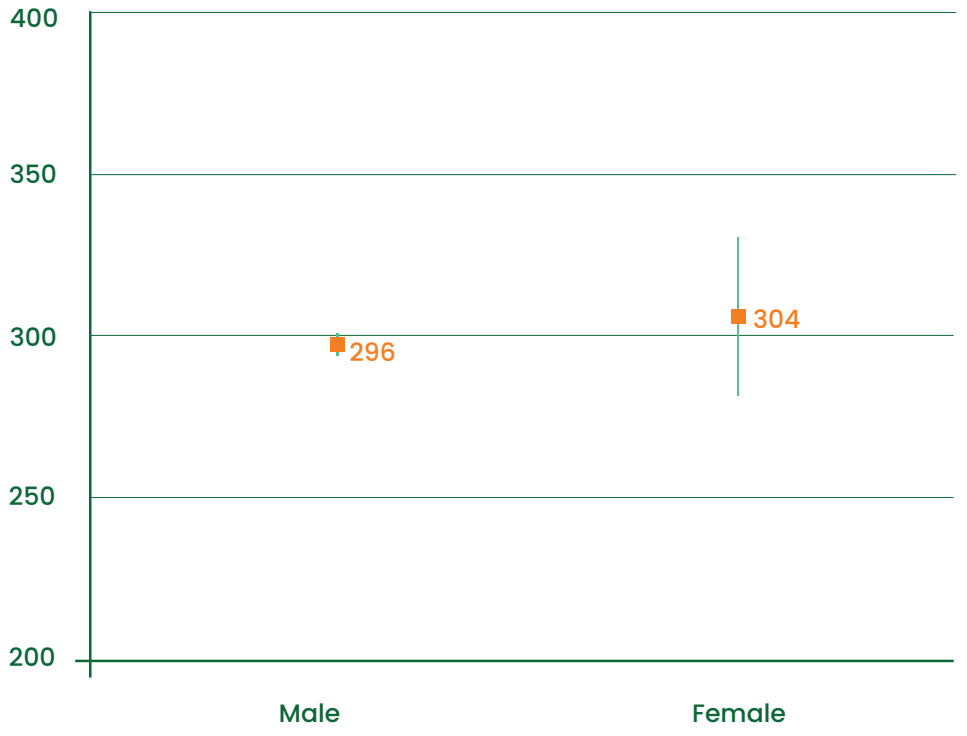
In the NEA 2021 English Reading Literacy test, the mean score of the girls (304) was higher than that of the boys (296) by nearly 10 score points. However, the difference was not statistically significant, hence the gap has not been reported. The table below shows mean English Reading scores achieved by boys and girls. It shows that no significant difference was detected in the average performance levels of the two gender groups.

Table 3.7: Student performance in English Reading Literacy by gender

	Mean	SE	Confidence interval
Male	296	10.1	276-316
Female	304	12.6	279-328

The comparison of student performance is visually presented in the figure below.

Figure 3.5: Student performance in English Reading Literacy by gender



3.2.2. Student achievement by location (rural vs. urban)

The table below compares mean English Reading Literacy scores achieved by students in the rural and urban areas. It shows that a significant difference was detected in the average performance levels of the two groups. The students studying in urban areas (324) outperformed the students in rural areas (284) by 40 score points. This is a notable gap in student learning. On the basis of this evidence, RGoB is expected to design an appropriate policy response to close the learning gap between these groups in the near future.

Table 3.8: Student performance in English Reading Literacy by location

	Mean	SE	Confidence interval
Urban	324	11.4	302 - 347
Rural	284	3.1	278 - 290

Figure 2.6 Student performance in Dzongkha Reading Literacy by location

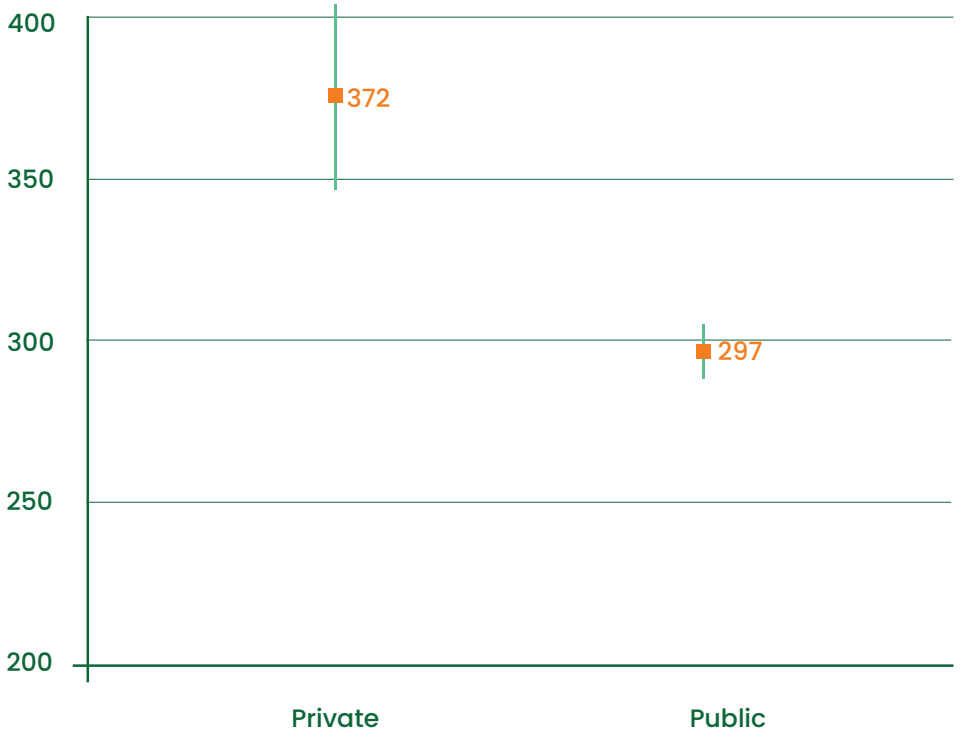
3.2.3. Student achievement by school management type

The results from NEA 2021 show a clear performance difference between students studying in public schools and those studying in private schools. The mean score of private school students was 372, more than one standard deviation above the national mean of 300. On the other hand, the public school students recorded 297 as their average score. The difference between the two groups is a phenomenal 1.5 times of standard deviation (75 score points). Hence, it is imperative from a policy standpoint to enhance the quality of education in public schools.

Table 3.9: Student performance in English Reading Literacy by school management

	Mean	SE	Confidence interval
Private	372	16	341 - 404
Public	297	6	285 - 309

Figure 3.7: Student performance in English Reading Literacy by school management



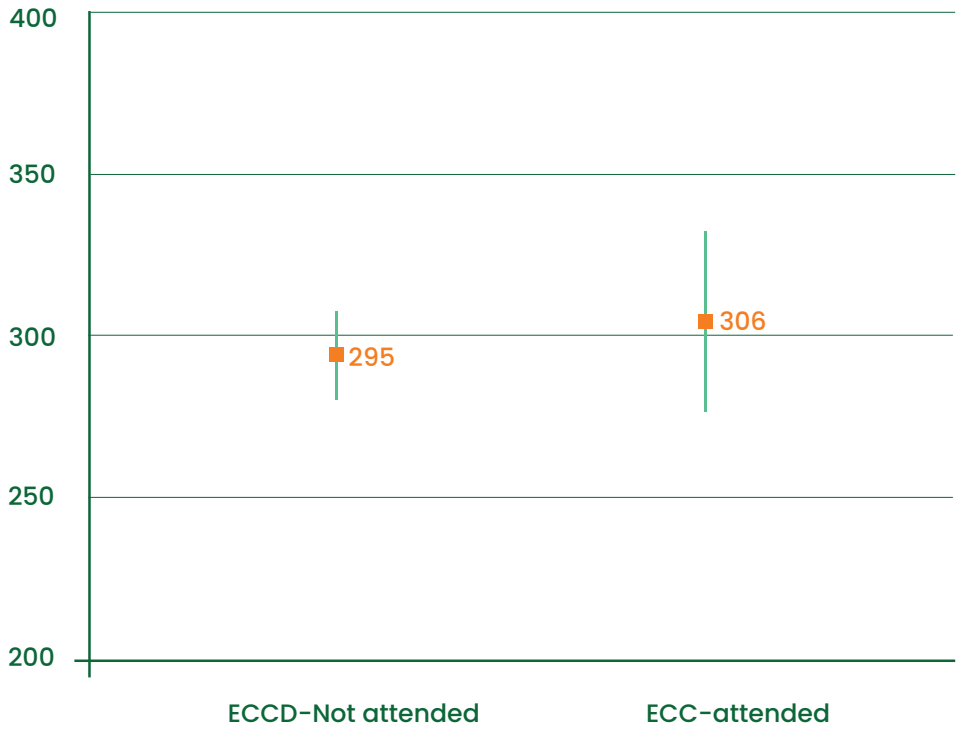
3.2.4. Student achievement by Early Childhood Care and Development programme participation

There was no significant performance difference between the performance of students who attended ECCD programme and those who did not. The mean score of the ECCD participants was higher than that of the non-participants by eleven score points. However, the difference was not statistically significant. A probable explanation for this phenomenon might be that the ECCD programme in the country is focused on holistic development of the of young children through play-based approach and not through rigorous English literacy efforts.

Table 3.10: Student performance in English Reading Literacy by ECCD participation

	Mean	SE	Confidence interval
ECCD - Not Attended	295	8.8	278 - 313
ECCD - Attended	306	14.4	277 - 334

Figure 3.8: Student performance in English Reading Literacy by ECCD participation



3.2.5. Student achievement by accommodation type

In the NEA 2021 English Reading Literacy test, the mean score of day-scholars (302) was higher than that of boarders (279) by 13 score points. However, the difference was not statistically significant, hence no meaningful conclusions on the difference in learning among day scholars and boarders can be made. The table below shows the mean English Reading Literacy scores achieved by day-scholars and boarders. It shows no significant difference in the average performance levels of the two groups.

Table 3.11: Student performance in English Reading Literacy by accommodation type

	Mean	SE	Confidence interval
Day scholar	302	12	279 - 325
Boarder	279	4	271 - 286

Figure 3.9: Student performance in English Reading Literacy by accommodation type

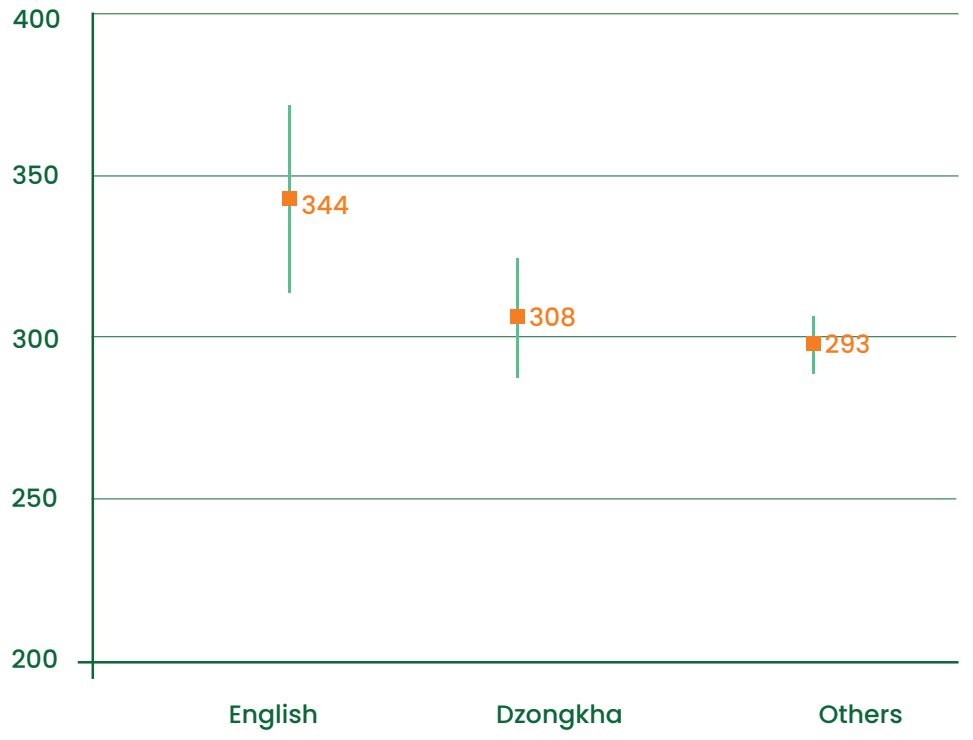
3.2.6. Student achievement by language spoken at home

The following table and figure compare student performances based on the language spoken at home. The students were divided into groups by the language spoken at home, as reported in the Student Questionnaire. The English-speaking group of students had the highest mean score (344) followed by the Dzongkha-speaking group (308), further followed by the group that speaks a language other than English and Dzongkha (293). However, no significant difference was detected among these three groups when standard errors were considered.

Table 3.12: Student performance in English Reading Literacy by home language

	Mean	SE	Confidence interval
English	344	18	309 - 379
Dzongkha	308	9	290 - 326
Others	293	9	276 - 311

Figure 3.10: Student performance in English Reading Literacy by home language



3.2.7. Student achievement by socio-economic status

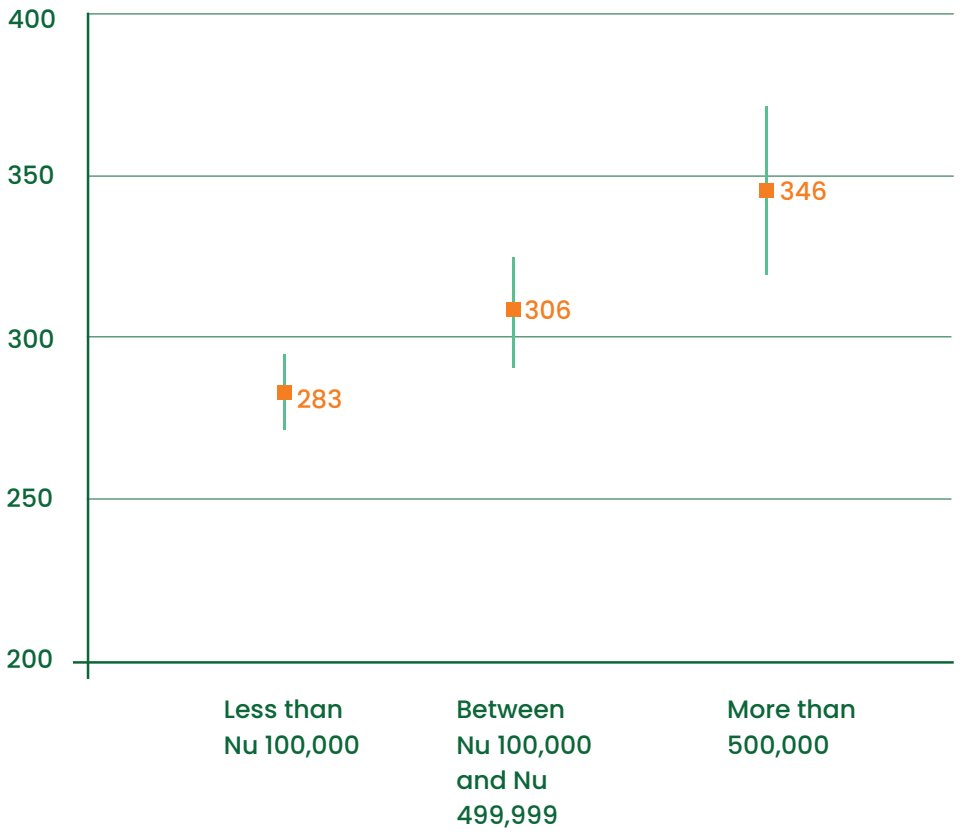
It is essential to investigate how student performances differ in various socio-economic groups. In NEA 2021, data on students' socio-economic status were collected through the Student Questionnaire. The following discussion focuses on average student performance by family income level and father's education level of the students.

Family income of students was grouped in three ways - income less than Nu 100,000, between Nu 100,000 and Nu 499,999, and Nu 500,000 and above. The results from NEA 2021 showed that the students with higher family income level scored higher in English Reading Literacy on average. The mean score difference between the highest income group (346) - Nu 500,000 and above, and the lowest income group (283) - less than Nu 100,000 was 63 score points and it is statistically significant. This suggests that family income is one of the important factors affecting student learning in English in the country.

Table 3.13: Student performance in English Reading Literacy by family income level

	Mean	SE	Confidence interval
Less than Nu 100,000	283	4.9	273 - 293
Between Nu 100,000 and Nu 499,999	306	8.9	288 - 323
Nu 500,000 and above	346	18.7	309 - 383

Figure 3.11: Student performance in English Reading Literacy by family income level

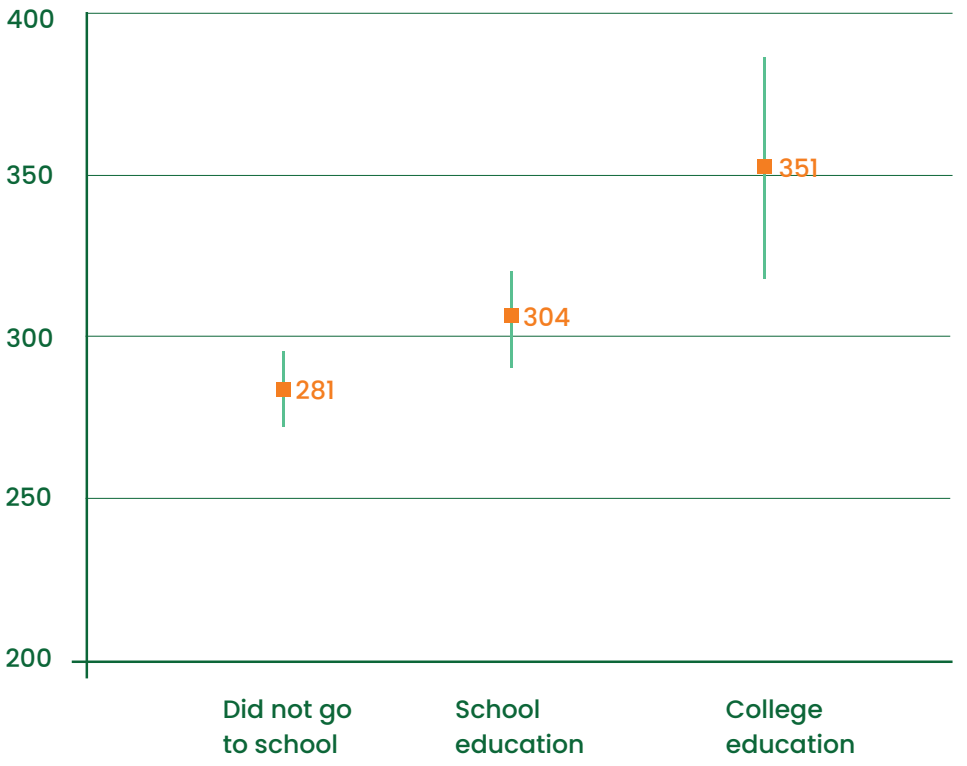


The same pattern emerged in the analysis of parental education level and student performances. The students with college-educated fathers (351) scored 47 score points higher than the students having a school educated father but no college degree (304). The students whose father had a college education performed better (351) than the students whose father had no educational experience (281). The score difference was 70 and it was statistically significant.

Table 3.14: Student performance in English Reading Literacy by parental education level

	Mean	SE	Confidence interval
Did not go to school	281	4.9	272 - 291
School education	304	7	290 - 318
College education	351	15.8	320 - 382

Figure 3.12: Student performance in English Reading Literacy by parental education level



3.2.8. Factors affecting English Reading Literacy performances

A regression analysis was conducted to explain the factors affecting students' English Reading Literacy performances in NEA 2021. Various independent variables were regressed on the dependent variable - scale score in English Reading Literacy. The independent variables were mostly taken from the contextual information collected through the Student Questionnaire, with an exception of student values which were evaluated by teachers ('Teacher value' in the regression model below).

Some of the independent variables were used in an index format after conducting factor analysis. The index variables included:

- students' attitude towards learning ('Attitude towards learning' in the model)
- students' evaluation of classroom environment ('Classroom environment' in the model)
- students' evaluation of pedagogical practices ('Pedagogical practice' in the model)
- socio-economic status ('SES Economic' and 'SES Education' in the model)
- students' general health ('Student health' in the model)
- student value rating on the nine student attributes evaluated by their teacher ('Teacher value' in the model)
- student's evaluation of teaching and learning during COVID-19 ('Teach learn COVID-19' in the model)

The table below summarises results from the regression analysis. After controlling for all other factors in the model constant, we can conclude that the girls performed better than the boys, whereas the grade repeaters, public school students and students studying in rural areas performed lower compared with their counterparts. The impact of gender on English Reading Literacy seen through the regression analysis is interesting because no significant performance difference was detected in the group mean comparison analysis. It is to be interpreted that girls perform better than boys by around five score points in English Reading Literacy when all other conditions are equal between the two groups.

As expected, socio-economic status, both economic and educational, played an important role in the student performances. It was found that higher the socio-economic status of students, the greater the student English Reading Literacy score. In addition, maintaining good health helped the students do well in their English Reading Literacy test as well. Teacher's evaluation of nine student attributes (Teacher value) showed that students who regard and value the nine student attributes scored higher than students who do not.

R-square tells us how well data fit a regression model, also known as the goodness of fit. Ranging from 0 to 1, R-square indicates a proportion of variability observed in a dependent variable explained by a regression model. The NEA regression model with the independent variables explained 36 percent of the variance in the student English Reading scores (R-square of 0.36).

The table below presents the results from the regression analysis.

Table 3.15: Regression analysis of students' English Reading Literacy performances

Statistic/Variable	Coefficient	SE	Value
INTERCEPT	256.5*	14.8	17.3
Attitude towards learning	0.1	0.2	0.5
Classroom environment	-0.8	1.7	-0.5
ECCD	1.6	1.7	0.9
English at home	11.7	6.5	1.8
Female	5.2*	1.5	3.6
Grade repeater	-10.9*	3.4	-3.2
Pedagogical practice	0.2	0.9	0.3
Public schools	-27.1*	7.7	-3.5
Location_Rural	-22.8*	6.9	-3.3
SES Economic	8.2*	2.6	3.2
SES Education	15.6*	1.6	9.7
Student health	1.8*	0.6	2.9
Teacher value	13.7*	3.5	3.9
Teac learn COVID19	1.2	0.7	1.7
Tuition	-4.6	2.6	-1.7
R-SQUARE	0.36	0.1	2.6

* in the table indicates a statistical significance

3.3. Summary and conclusion

This chapter discussed the analysis of the NEA 2021 results in the English Reading Literacy test. It can be concluded on the basis of the results that student performances in English Reading Literacy were more or less equally distributed around the set mean score of 300 across the 24 districts. There was only one district /city (Phuntsholing Thromde) where students outperformed the rest of the country with a mean score of 339 and only one district (Zhemgang) that underperformed with a mean score of 271. Further research is recommended for the underperforming district to improve student learning. On the basis of group mean analysis, a gender gap between boys and girls was barely found in most of the districts. Girls had a clear lead in the mean score in only one district.

At the national level, 90 percent of the students were able to meet the minimum proficiency for grade III, placing their performances in Level 2 to Level 4 as defined in the NEA scale. This means that the rest of the 10 percent students failed to meet the minimum level in English Reading Literacy, placing their scores at Level 1. It is commendable for the country to record a high proportion of students meeting the minimum level of English Reading Literacy proficiency, even after experiencing obstructions in learning due to school closures during the COVID-19 pandemic. However, remedial measures would be required to improve the learning of students falling below the minimum proficiency level.

There were clear performance gaps in student performances by school location and management type. The students studying in urban areas outperformed the students in rural areas in the English Reading Literacy test. Even though there are relatively small number of private schools in the country, the mean English Reading Literacy score of the private school students was higher by a huge margin of 75 score points as compared with the public school students). It is recommended to prioritise education policies to address these gaps at the earliest.

In NEA 2021, students who attended the ECCD programme performed similar to those who did not, as no statistically significant difference was found. The same pattern was observed in the performances of day-scholars and boarders as no significant difference was detected between the two groups in terms of their English Reading abilities.

A group of research findings suggest that socio-economic status of family plays a critical role in student learning (Cheadle 2008; Coleman et. al. 1966; Coleman 1988; Hanushek et. al. 2022; Sirin 2005). The results from NEA 2021 showed that socio-economic status affected student learning in both the mean score analysis and the regression analysis. The students from higher-income household (Nu 500,000 and above) had better English Reading abilities than the students coming from the lowest-income group (less than Nu 100,000). The group of students coming from households where fathers have a college degree outperformed the students in the other categories, including households where the fathers have achieved school education or no education.

The regression analysis confirmed most of the English Reading Literacy results discussed earlier. After controlling for all other variables in the regression model, several factors were identified to be affecting student performance in English Reading Literacy. Those factors explain that girls, non-grade repeaters, private school students, students studying in urban location, students from higher family income group, students with college-educated father, students with good health and students who regard the nine student attributes important perform well in English Reading Literacy.

Girls showed better performances than boys in English Reading Literacy when all other factors were controlled in the regression analysis of NEA 2021. However, this finding was not detected statistically when compared only the group means of girls and boys. International literature has reported a trend that girls are more likely to outperform boys in literacy and boys are more likely to

do so in numeracy (World Bank, 2018, J-PAL, 2022). The analysis of the NEA data confirmed that grade III girls achieved higher English Reading Literacy scores than grade III boys when all other conditions remained the same.

The findings from this chapter on the performance of grade III students in English Reading Literacy provide information on their learning and their sub-groups against various contextual factors. It is expected that these evidences of contextual factors that impact student performance will contribute to making evidence-based decisions in national education policies.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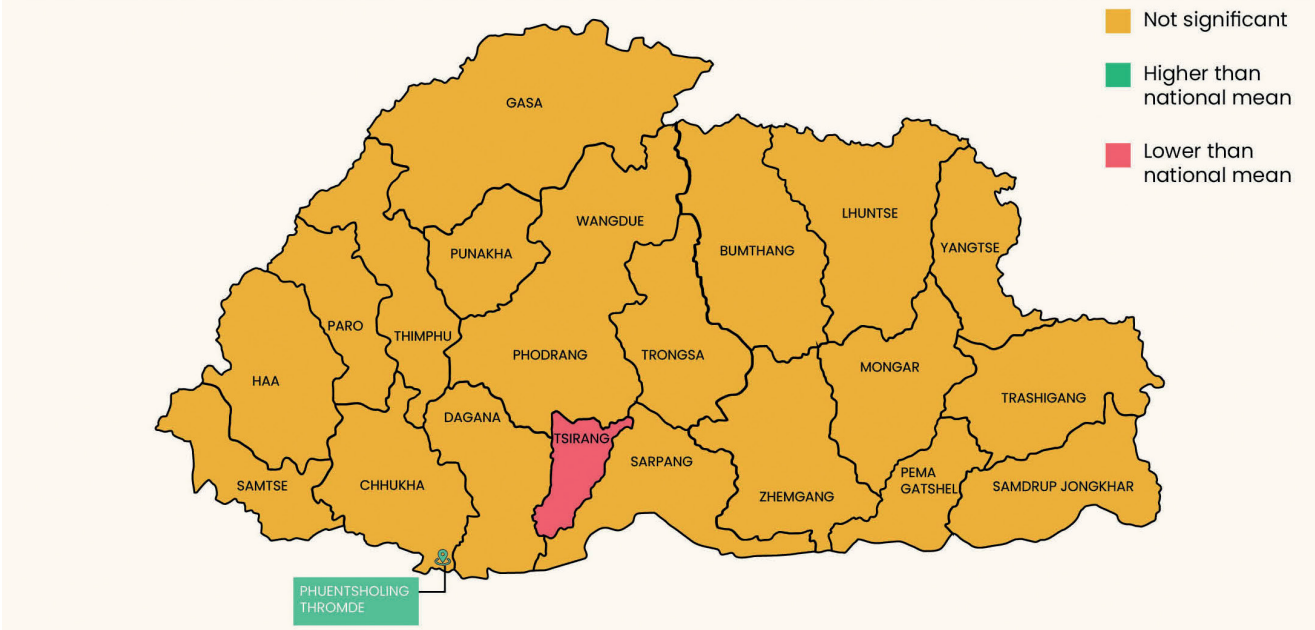
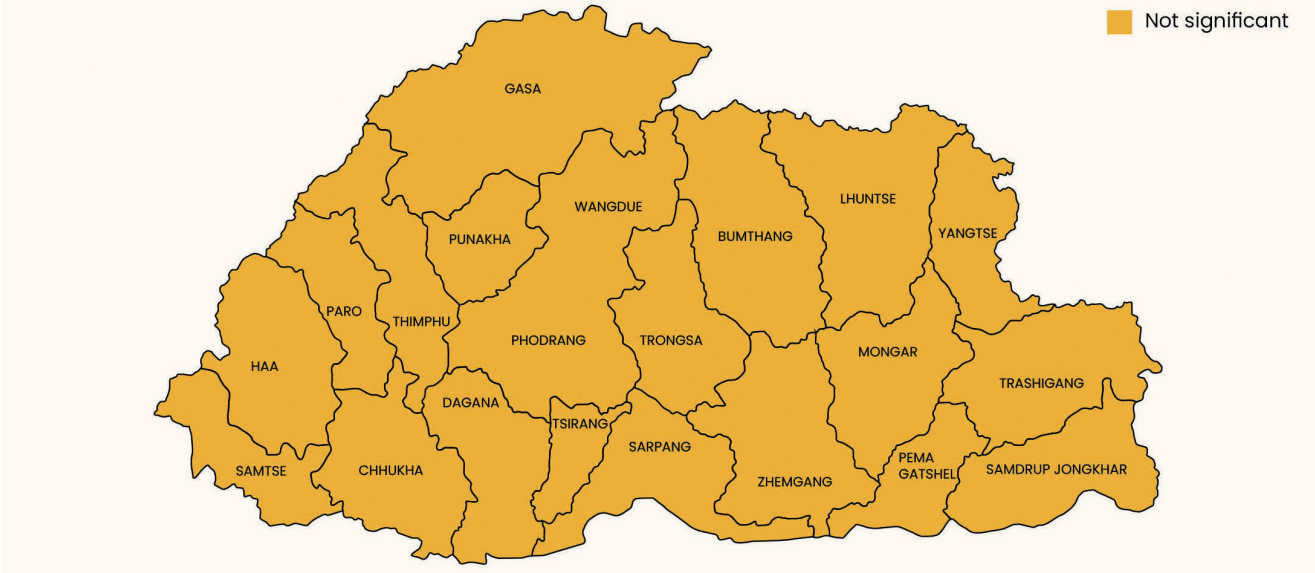
Chapter 4. Achievement of grade III students in Mathematical Literacy

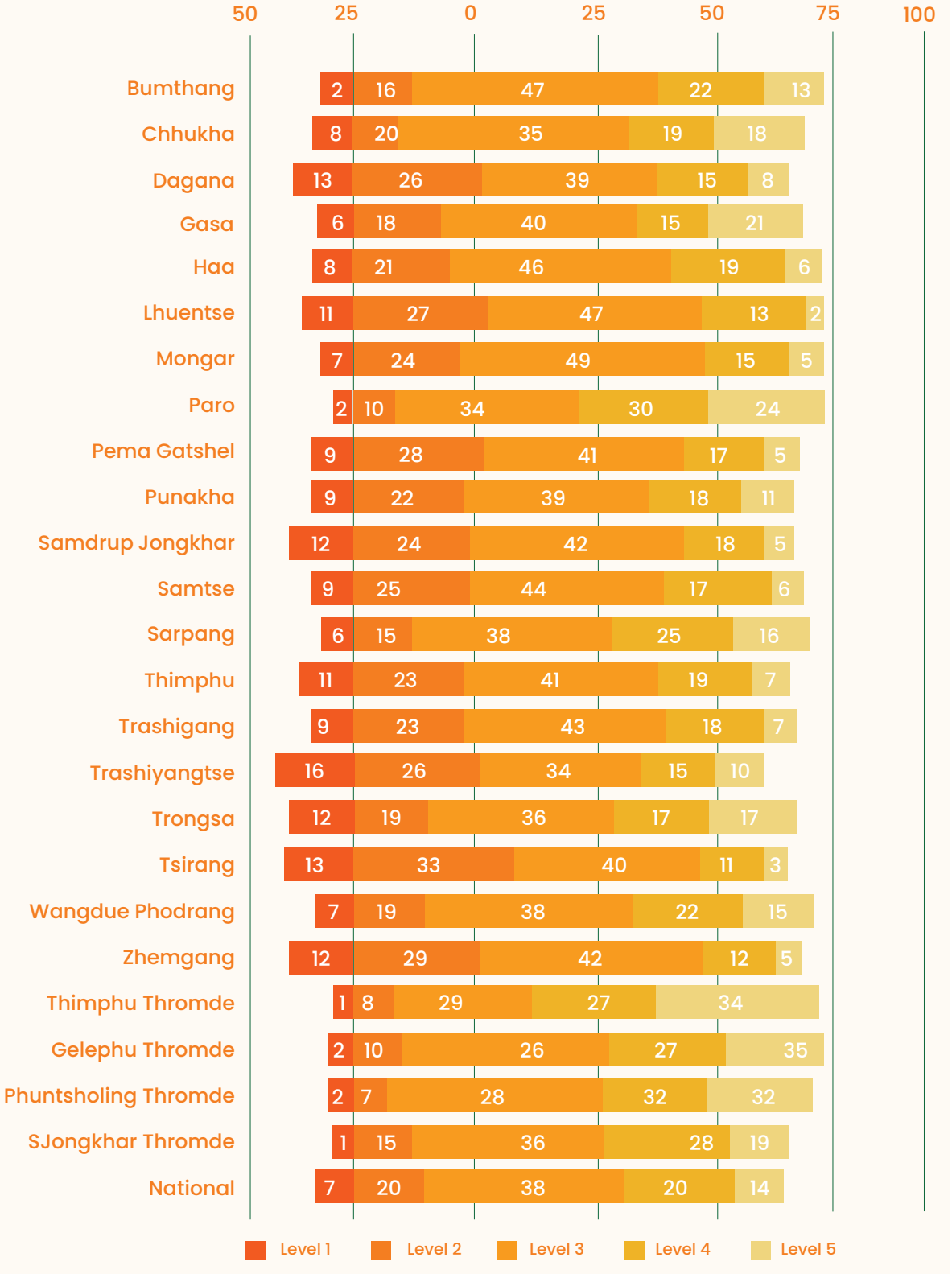
Box 1:
Student achievement in Mathematical Literacy



Box 2:
Student achievement by gender in Mathematical Literacy



Box 3:
Distribution of proficiency levels in Mathematical Literacy by district (in percent)



4.1. Student achievement in Mathematical Literacy

This chapter presents grade III student achievement in the Mathematical Literacy test of NEA 2021. The discussion is focussed on the analysis of student mean scores, percentile distributions, proficiency levels, group differences, and contextual factors affecting student learning.

The table below presents mean scores of all the districts as well as the national mean. Along with the mean scores, associated standard errors and confidence intervals are also provided for statistical comparison. The results of t-tests comparing the national mean with each district's mean along with the corresponding t-values are provided in the table.

In NEA 2021, the students from Phuntsholing Thromde (mean score = 334) performed better than the national cohort (national mean score = 300) by 34 scale scores on average. On the other hand, the mean score of Tsirang (275) was found to be significantly lower than the national mean by 25 scale scores.

Table 4.1: Mean scores of student achievement in Mathematical Literacy

District	Mean	SE	Confidence level	t value	Significance	
Bumthang	305	7.4	290-320	0.41	Not significant	
Chhukha	303	9.2	285-321	0.22	Not significant	
Dagana	285	6.6	272-298	-1.28	Not significant	
Gasa	308	4.2	300-316	0.76	Not significant	
Haa	291	44.1	205-377	-0.20	Not significant	
Lhuentse	279	5.8	268-290	-1.86	Not significant	
Mongar	286	4.3	278-294	-1.32	Not significant	
Paro	322	6.7	309-335	1.87	Not significant	
Pema Gatshel	284	10.6	263-305	-1.11	Not significant	
Punakha	295	9.7	276-314	-0.36	Not significant	
Samdrup Jongkhar	283	6.1	271-295	-1.48	Not significant	
Samtse	287	4.9	277-297	-1.20	Not significant	
Sarpang	307	9.2	289-325	0.52	Not significant	
Thimphu	287	2.9	281-293	-1.28	Not significant	
Trashigang	288	7.2	274-302	-0.99	Not significant	
Trashiyangtse	283	4.6	274-292	-1.58	Not significant	
Trongsa	299	18.2	263-335	-0.05	Not significant	
Tsirang	275	4.9	265-285	-2.30	Lower than national mean	▼
Wangdue Phodrang	302	9.1	284-320	0.15	Not significant	
Zhemgang	280	11.2	258-302	-1.35	Not significant	
Thimpu Thromde	333	16.8	300-366	1.70	Not significant	
Gelephu Thromde	331	28.3	276-386	1.04	Not significant	
Phuntsholing Thromde	334	8.1	318-350	2.69	Higher than national mean	▲
SJongkhar Thromde	316	8.6	299-333	1.23	Not significant	
National	**300**	**9.7**	**281-319**			

The table below compares the mean Mathematical Literacy scores achieved by boys with that of girls. It shows no significant difference in the mean achievement levels of the two groups at the national level. There was no significant difference found between the mean performance of boys and girls in any of the districts. This means that boys and girls were performing equally well at the district level as well.

Table 4.2: Mean scores of student achievement by gender in Mathematical Literacy

District	Mean (male)	SE (male)	Mean (female)	SE (female)	Significance	
Bumthang	306	11.3	304	5.9	Not significant	
Chhukha	302	8.4	304	11.6	Not significant	
Dagana	276	10.9	294	4.8	Not significant	
Gasa	305	3.2	313	9.5	Not significant	
Haa	294	73.0	289	21.4	Not significant	
Lhuentse	273	7.7	282	7.4	Not significant	
Mongar	287	5.7	284	4.6	Not significant	
Paro	321	6.0	324	7.7	Not significant	
Pema Gatshel	284	10.6	283	10.8	Not significant	
Punakha	294	7.5	295	14.0	Not significant	
Samdrup Jongkhar	285	6.9	282	8.0	Not significant	
Samtse	288	5.8	286	6.0	Not significant	
Sarpang	305	9.7	310	9.8	Not significant	
Thimphu	289	2.7	284	5.4	Not significant	
Trashigang	288	7.6	289	7.4	Not significant	
Trashiyangtse	284	6.9	283	3.9	Not significant	
Trongsa	288	18.7	311	17.9	Not significant	
Tsirang	276	5.5	273	6.9	Not significant	
Wangdue Phodrang	302	10.2	302	9.3	Not significant	
Zhemgang	287	24.0	274	6.1	Not significant	
Thimpu Thromde	332	17.6	334	16.2	Not significant	
Gelephu Thromde	328	43.2	334	21.5	Not significant	
Phuntsholing Thromde	328	12.4	340	5.1	Not significant	
SJongkhar Thromde	311	13.7	320	8.2	Not significant	
National	**296**	**10.1**	**304**	**12.6**	Not significant	

4.1.1. Performance in Mathematical Literacy

Percentiles

Percentile is a way of describing the level of performance in a group or groups of students and a statistic that reports relative standing of an observation within the group. It is used to know where someone stands compared to the rest of the group. In case of NEA, a percentile indicates the value (of a scale score) below which a corresponding percentage of students fall. For example, the 10th percentile score in Mathematical Literacy test denotes a score below which ten percent of the total students have scored.

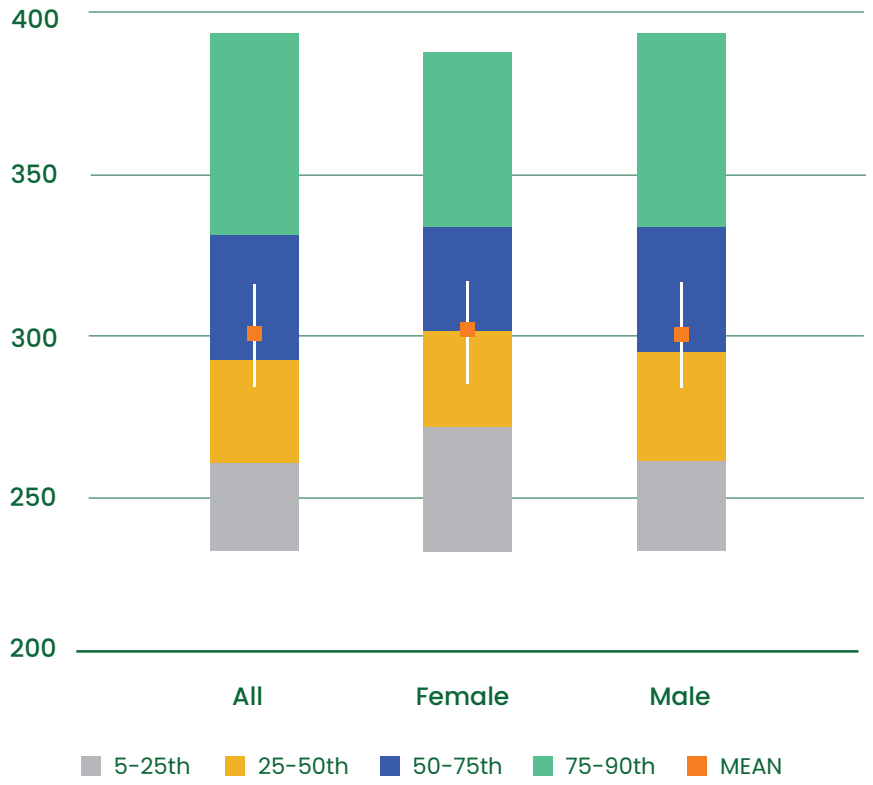
Percentiles inform readers about dispersion of student scores and the degree of homogeneity in terms of student abilities. For example, a range between 25th and 75th percentile (the inter-quartile range) represents performance of the middle half of students. Similarly, a difference between 5th and 95th percentiles covers 90 percent of the student scores. The wider this range, the wider is the ability gap among students in a test domain.

The table and the figure below show the percentile scores and the ranges in the percentiles scores in the Mathematical Literacy test of NEA 2021. Half of the students lie between scores 265 and 329, with a score point difference of 64, and 90 percent of them lie between 228 and 395 with a range of 167 scores. The degree of homogeneity in student performance was more or less the same between the girls and the boys.

Table 4.3: Percentile scores in Mathematical Literacy

	5th	25th	50th	75th	95th	Range 25th-75th	Range 5th-95th
National	228	265	294	329	395	64	167
Male	226	264	293	328	397	64	171
Female	230	266	295	330	393	64	163

Figure 4.1: Percentile scores in Mathematical Literacy



The inter-quartile range (IQR) was fairly variable across districts. For example, Lhuentse had an IQR of just 45 score-points whilst Gasa had a corresponding value of 80. These values suggest that the grade III student population in Lhuentse was far more homogeneous in performance than Gasa. In most districts, the range of performance for the middle half was found to be between 46 and 78 scale-score points. Performances at the 5th and 95th percentiles respectively show extremes in low and high achievement. The range between these two points, which includes 90 percent of the population, was found to be highly variable - ranging from 112 (Lhuentse) to 189 (Gasa).

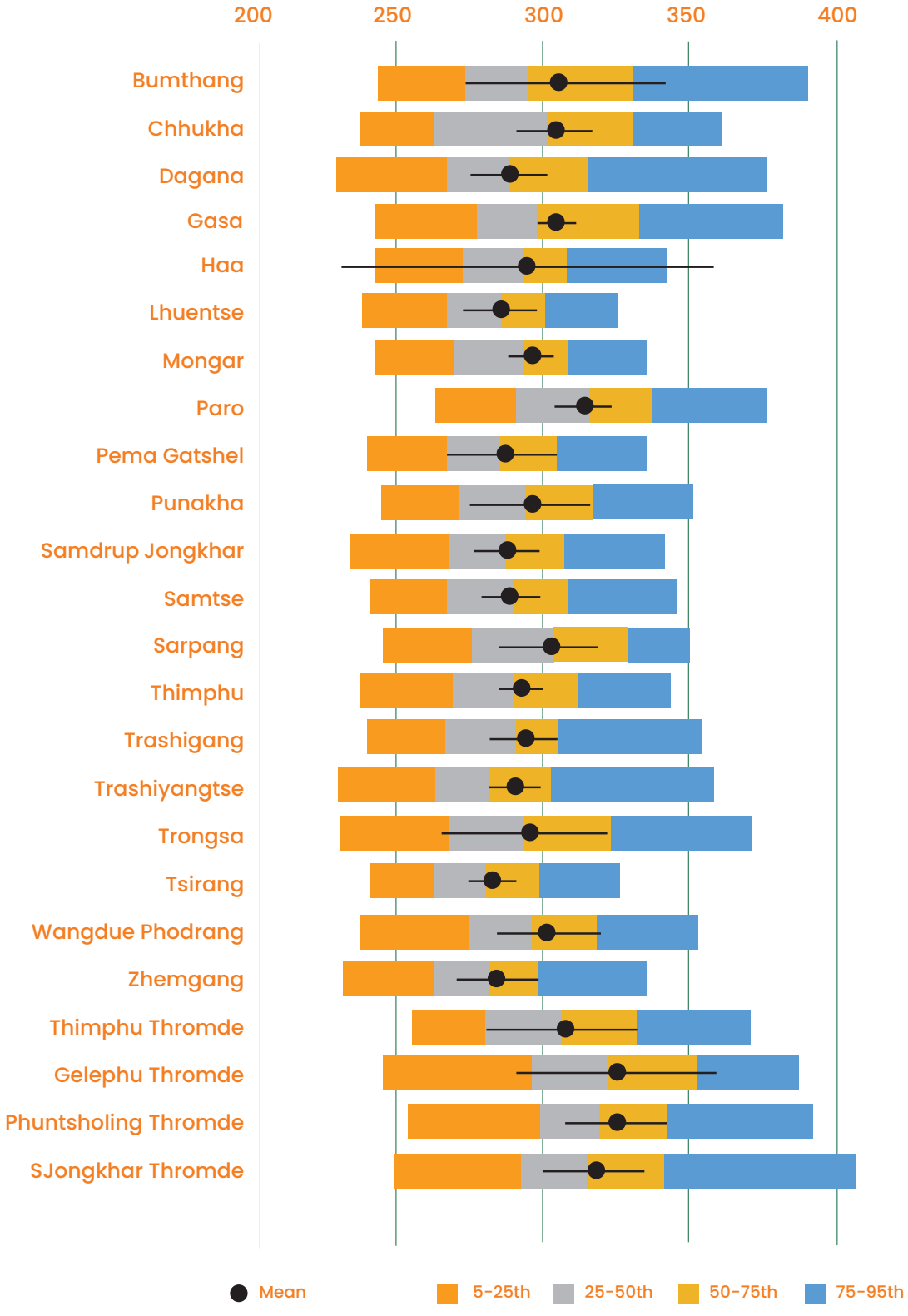
The percentiles provide additional information when comparing Mathematical Literacy performance amongst districts. For example, when the districts are arranged in the order of average score, the difference between adjacent districts tend to be small. However, the range of scores may not be similar, hence there is high dispersion. For example, there was no practical difference between the median score (50th percentile) of Bumthang (298) and Gasa (300). However, the IQRs were significantly different – Bumthang's IQR was 47 compared with Gasa's IQR of 80. This indicates that whilst average achievement was very similar in the two districts, Gasa had a more heterogeneous group of grade III students, with a wider distribution of student scores, than Bumthang.

Table 4.4: Percentile scores in Mathematical Literacy for districts

Disctrict	5th	25th	50th	75th	95th	Range 25th-75th	Range 5th-95th
Bumthang	245	277	298	324	393	47	148
Chhukha	227	263	295	337	405	74	178
Dagana	218	252	280	310	371	58	153
Gasa	228	267	300	347	417	80	189
Haa	227	264	290	315	363	51	136
Lhuentse	225	256	279	301	337	45	112
Mongar	229	261	282	307	351	46	122
Paro	252	289	318	352	412	63	160
Pema Gatshel	223	254	283	308	351	54	128
Punakha	227	261	289	323	385	62	158
Samdrup Jongkhar	214	257	281	308	352	51	138
Samtse	223	259	284	310	359	51	136
Sarpang	232	273	304	337	400	64	168
Thimphu	219	259	286	313	359	54	140
Trashigang	223	260	283	313	364	53	141
Trashiyangtse	212	250	276	312	378	62	166
Trongsa	212	260	294	336	401	76	189
Tsirang	218	250	271	297	338	47	120
Wangdue Phodrang	227	267	297	333	393	66	166
Zhemgang	220	251	278	300	352	49	132
Thimphu Thromde	255	295	329	369	424	74	169
Gelephu Thromde	247	293	327	371	416	78	169
Phuntsholing Thromde	255	300	330	366	423	66	168
SJongkhar Thromde	250	284	311	344	404	60	154

The figure below is an illustration of the percentile scores and the district mean scores with confidence interval.

Figure 4.2: Percentile scores in Mathematical Literacy for districts



4.1.2. Proficiency levels in Mathematical Literacy

The following table shows the proficiency levels developed to describe student performances in Mathematical Literacy. As the level goes up from Level 1 to Level 5, the abilities of students improve from low to high, indicating that the students at a higher level can comfortably demonstrate the skills and knowledge of the assigned level and the levels below it.

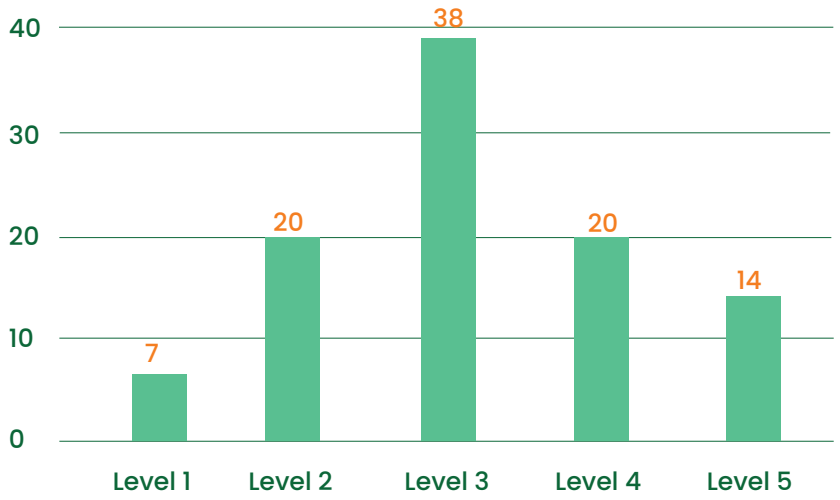
Table 4.5: Proficiency descriptions for Mathematical Literacy

Proficiency level	Description
Level 5	Applies the concept of place values to solve simple problems in familiar situations; relates repeated addition and multiplication; multiplies 2-digit numbers by 1-digit numbers and divides 2-digit numbers by 1-digit numbers; recognises growing patterns with shapes; identifies a single operation rule in numerical patterns and finds the missing term; interprets different representations of time on an analogue clock to solve simple problems in familiar situations; aligns the corresponding faces of an object and its net; uses data in bar graphs to solve simple problems in familiar situations
Level 4	Recognises odd and even numbers in familiar situations; relates multiplication and division; selects and applies multiple strategies for solving problems involving addition and subtraction up to 3-digit numbers; performs basic multiplication and division (2-digit by 1-digit) to solve simple problems in familiar situations; connects and converts between decimals (up to tenths) and fractions (unit fractions); converts minutes to hour; identifies angles as greater than, less than or equal to a right angle; uses data in pictographs to solve simple problems in familiar situations
Level 3	Adds and subtracts up to 3-digit numbers to solve simple problems in familiar situations; recognises that different wholes can be divided to show the same fractional parts; recognises repeating patterns with shapes; measures, compares and estimates length and mass using formal units; converts between formal units of measurement; calculates elapsed time; classifies simple geometrical shapes based on their attributes; identifies basic transformation (turns and flips); uses data from a tally chart to solve simple problems in familiar situations; uses a calendar to solve simple problems in familiar situations
Level 2	Compares up to 5-digit numbers; subtracts up to 2-digit numbers by regrouping; recognises unit fraction and decimals up to tenth digit; represents familiar situations using number sentence; recognises patterns involving skip counting; reads time to the hour, half-hour and quarter-hour on analogue clocks; recognises parallel, perpendicular lines and line of symmetry; reads data from a tally chart to solve simple problems in familiar situations
Level 1	Recognises up to 4-digit numbers; performs addition and subtraction on up to 2-digit numbers without regrouping; uses multiple non-standard units to measure length, mass or capacity; identifies and classifies 2-D and 3-D shapes; retrieves information from a tally chart

One of the objectives of NEA 2021 is to set a minimum proficiency level in Mathematical Literacy at grade III. After a series of extensive reviews and deliberations among education stakeholders in the country, it has been decided that students are expected to reach at least Level 2 at the end of grade III. Thus, students with their scores falling between Level 2 to Level 5 (and above in future NEAs) are considered to have met the minimum proficiency level of grade III.

In NEA 2021, 93 percent of the students have met the minimum proficiency level (Level 2) of grade III, with 20 percent students in Level 2, 38 percent in Level 3, 20 percent in Level 4, and 14 percent in Level 5. However, seven percent of the students failed to meet the minimum level with their scores falling at Level 1. Considering the fact that NEA 2021 was conducted after COVID-19 school closures, students' learning achievements in Mathematical Literacy in the country are commendable.

Figure 4.3: Distribution of proficiency levels in Mathematical Literacy (in percent)

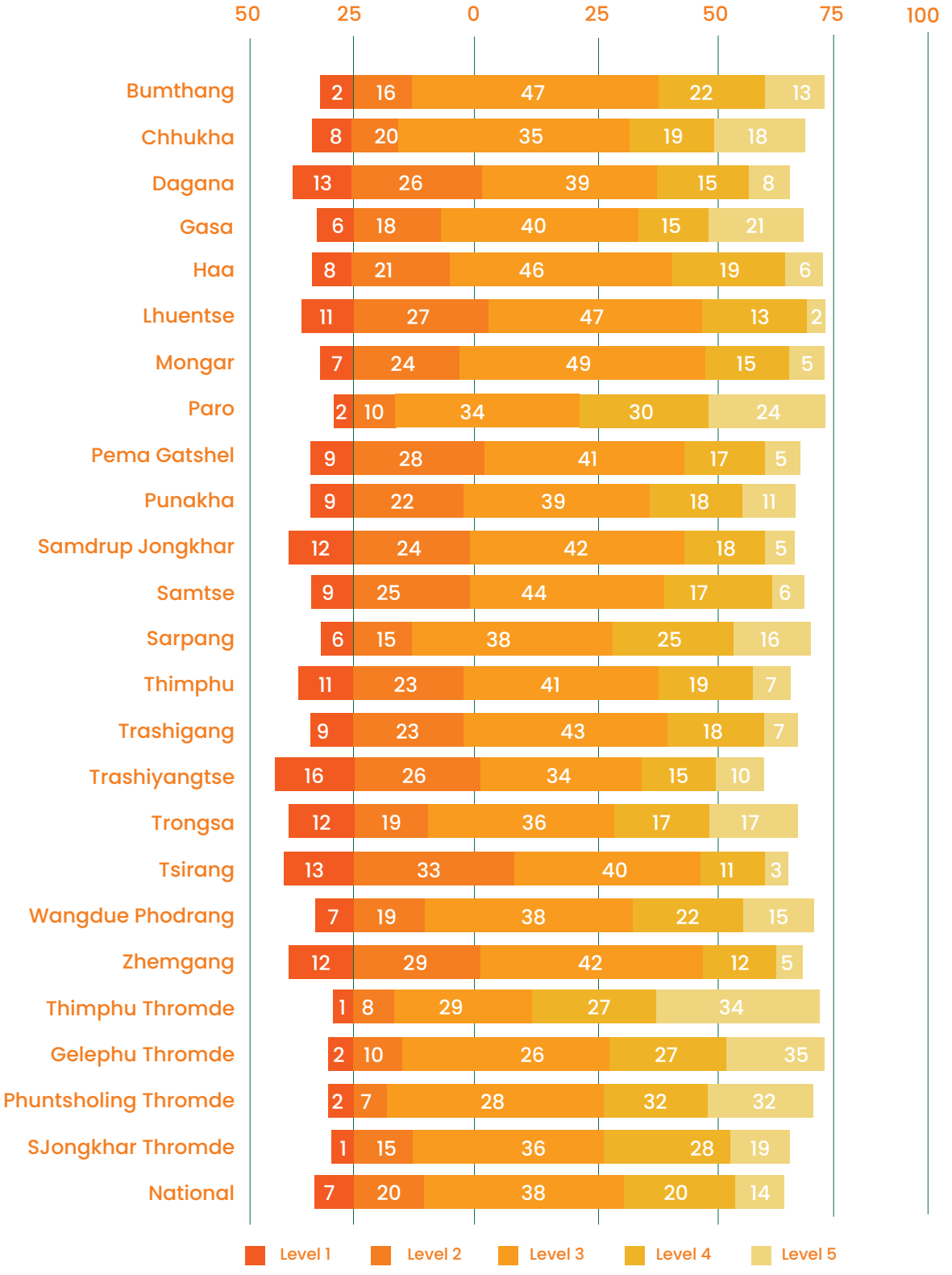


In NEA 2021, the proportion of students meeting the minimum proficiency standard of grade III ranged from 85 to 99 percent amongst the districts. All the districts had more than 80 percent of the students meeting the minimum proficiency standard of grade III. In 16 out of the 24 districts, the proportion of students with Mathematical Literacy scores at Level 2 or above exceeded 90 percent. More than 15 percent of the students were at Level 1 in Trashiyangtse (16%). It is recommended to further investigate the reasons behind low performance in these districts and support them to improve student learning. The table and figure that follow illustrate the range of proficiency level distributions within and across the districts.

Table 4.6: Distribution of proficiency levels in Mathematical Literacy by district (in percent)

District	Level 1	Level 2	Level 3	Level 4	Level 5	% min proficiency
Bumthang	2	16	47	22	13	98
Chhukha	8	20	35	19	18	92
Dagana	13	26	39	15	8	88
Gasa	6	18	40	15	21	94
Haa	8	21	46	19	6	92
Lhuentse	11	27	47	13	2	89
Mongar	7	24	49	15	5	93
Paro	2	10	34	30	24	98
Pema Gatshel	9	28	41	17	5	91
Punakha	9	22	39	18	11	90
Samdrup Jongkhar	12	24	42	18	5	89
Samtse	9	25	44	17	6	92
Sarpang	6	15	38	25	16	94
Thimphu	11	23	41	19	7	90
Trashigang	9	23	43	18	7	91
Trashiyangtse	16	26	34	15	10	85
Trongsa	12	19	36	17	17	89
Tsirang	13	33	40	11	3	87
Wangdue Phodrang	7	19	38	22	15	94
Zhemgang	12	29	42	12	5	88
Thimphu Thromde	1	8	29	27	34	98
Gelephu Thromde	2	10	26	27	35	98
Phuntsholing Thromde	2	7	28	32	32	99
SJongkhar Thromde	1	15	36	28	19	98
National	**7**	**20**	**38**	**20**	**14**	**93**

Figure 4.4: Distribution of proficiency levels in Mathematical Literacy by district (in percent)



4.2. Learning gaps in context

4.2.1. Student achievement by gender

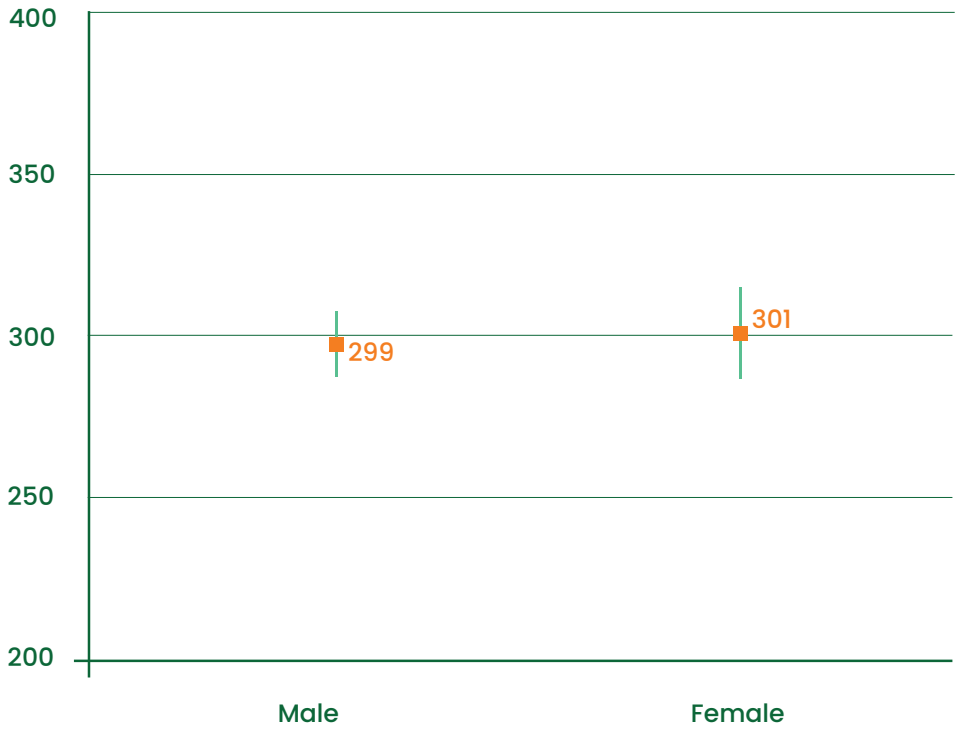
In the NEA 2021 Mathematical Literacy test, there was practically no difference in the mean scores of the boys (mean score = 299) and the girls (mean score = 301). The statistical test also shows no significant difference in the average performance levels of the two gender groups.

Table 4.7: Student performance in Mathematical Literacy by gender

	Mean	SE	Confidence interval
Male	299	9.3	281-317
Female	301	10.1	281-321

The comparison of student performance is visually presented in the figure below.

Figure 4.5: Student performance in English Reading Literacy by gender



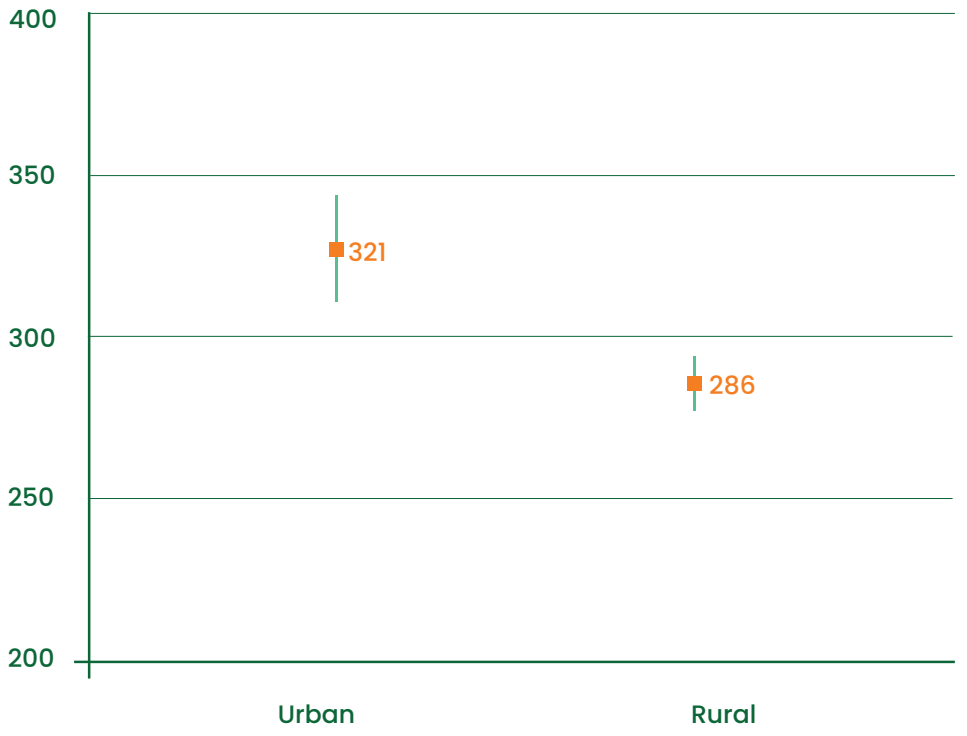
4.2.2. Student achievement by location (rural vs. urban)

The table below compares mean Mathematical Literacy scores achieved by students in the rural and urban location. It shows that a significant difference was detected in the average performance levels of the two groups. The students studying in urban areas (321) outperformed the students in rural location (286) by 35 score points. This gap in student learning is worth noticing. On the basis of this evidence, RGoB is expected to design an appropriate policy response to close the learning gap between these groups in the near future.

Table 4.8: Student performance in Mathematical Literacy by location

	Mean	SE	Confidence interval
Urban	321	8.7	304 - 338
Rural	286	2.9	280 - 292

Figure 4.6: Student performance in Mathematical Literacy by location



4.2.3. Student achievement by school management type

The results from NEA 2021 showed a clear performance difference between students studying in public schools and those studying in private schools. The mean score of private school students was 355, more than one standard deviation above the national mean of 300. On the other hand, the public school students recorded 298 as their average score. The difference between the two groups is a remarkable 57 score points, showing more than a standard deviation gap. Hence, it is imperative from a policy standpoint to enhance the standard of education in public schools.

Table 4.9: Student performance in Mathematical Literacy by school management

	Mean	SE	Confidence interval
Private	355	6.3	342 - 367
Public	298	5.9	286 - 309

Figure 4.7: Student performance in Mathematical Literacy by school management

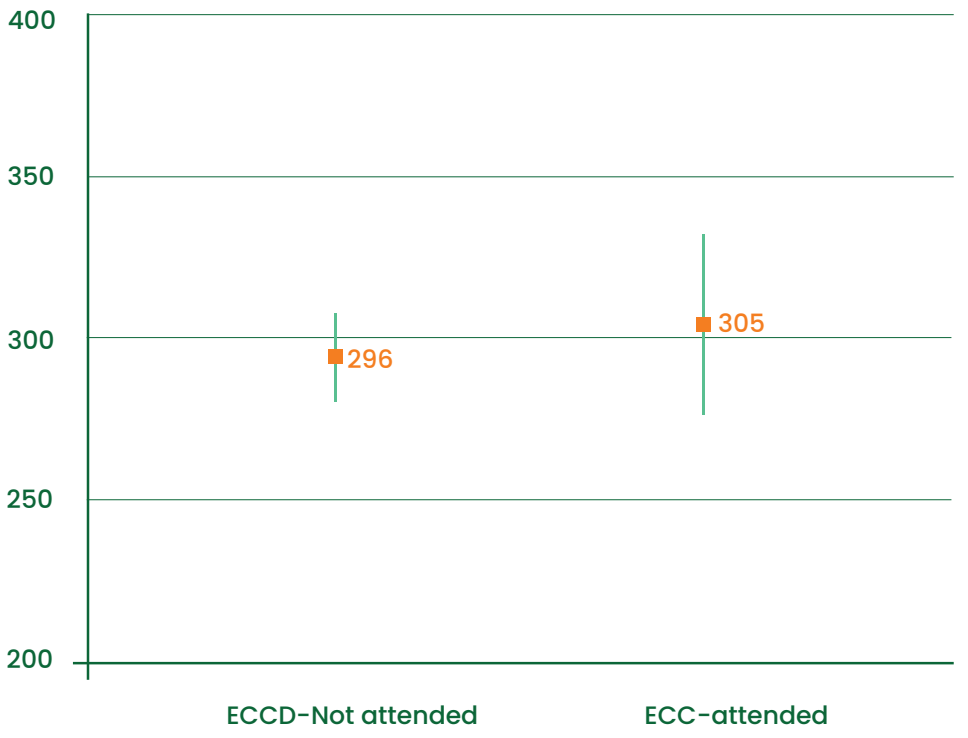
4.2.4. Student achievement by Early Childhood Care and Development programme participation

There was no significant performance difference between the performance of students who attended the ECCD programme and those who did not. The mean score of the ECCD participants was higher than that of the non-participants by nine score points. However, the difference was not statistically significant. A probable explanation for this phenomenon might be that the ECCD programme in the country is focused on holistic development of the of young children through play-based approach and not through rigorous literacy efforts..

Table 4.10: Student performance in Mathematical Literacy by ECCD participation

	Mean	SE	Confidence interval
ECCD - Not Attended	296	8	280 - 311
ECCD - Attended	305	11.7	282 - 328

Figure 4.8: Student performance in Mathematical Literacy by ECCD participation



4.2.5. Student achievement by accommodation type

In the NEA 2021 Mathematical Literacy test, the mean score of day-scholars (302) was higher than that of boarders (275) by 27 score points. This difference was statistically significant, hence the gap can be concluded as meaningful. The day scholars outperformed the boarder students in Mathematical Literacy. The pattern in the group mean analysis of accommodation type is contrasting with the other two test domains earlier. The performance gaps were not statistically significant in Dzongkha and English Reading Literacy.

The table below shows the mean Mathematical Literacy scores achieved by day-scholars and boarders. It shows that a significant difference was detected in the average performance levels of the two groups.

Table 4.11: Student performance in Mathematical Literacy by accommodation type

	Mean	SE	Confidence interval
Day scholar	302	10	283 - 322
Boarder	275	3	269 - 281

Figure 4.9: Student performance in Mathematical Literacy by accommodation type

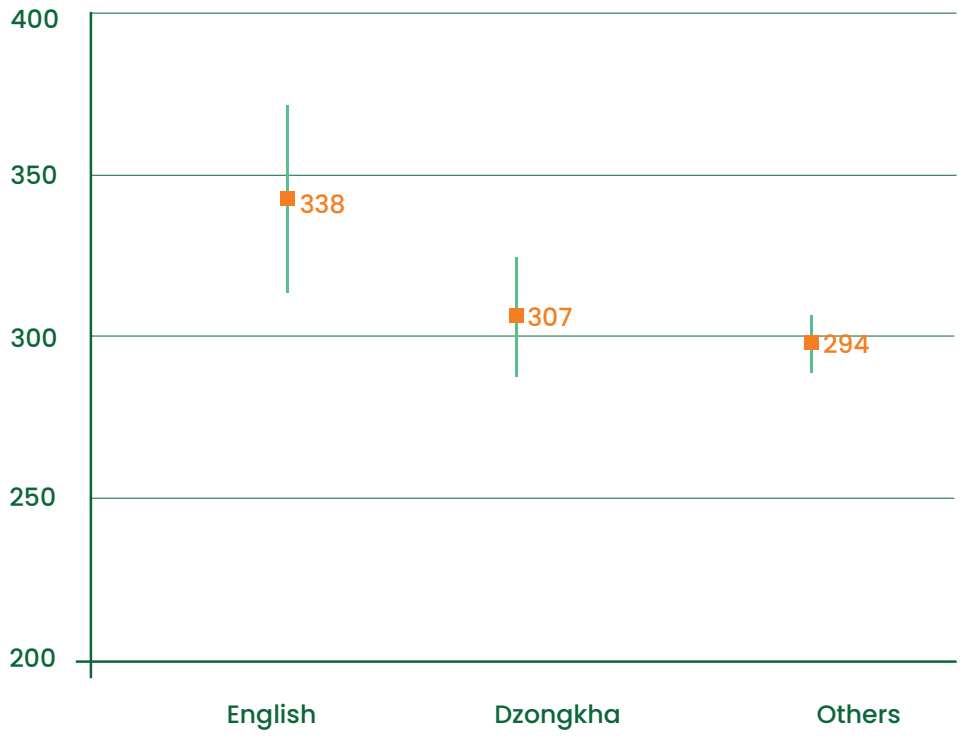
4.2.6. Student achievement by language spoken at home

The following table and figure compare the student performances based on the language spoken at home. The students were divided into groups by the language spoken at home, as reported in the Student Questionnaire. The English-speaking group of students had the highest mean score (338) followed by the Dzongkha-speaking group (307), further followed by the group that speaks a language other than English and Dzongkha (294). However, no significant difference was detected among these three groups when standard errors were considered.

Table 4.12: Student performance in Mathematical Literacy by home language

	Mean	SE	Confidence interval
English	338	14	310 - 366
Dzongkha	307	7	293 - 321
Others	294	8	278 - 310

Figure 4.10: Student performance in Mathematical Literacy by home language



4.2.7. Student achievement by socio-economic status

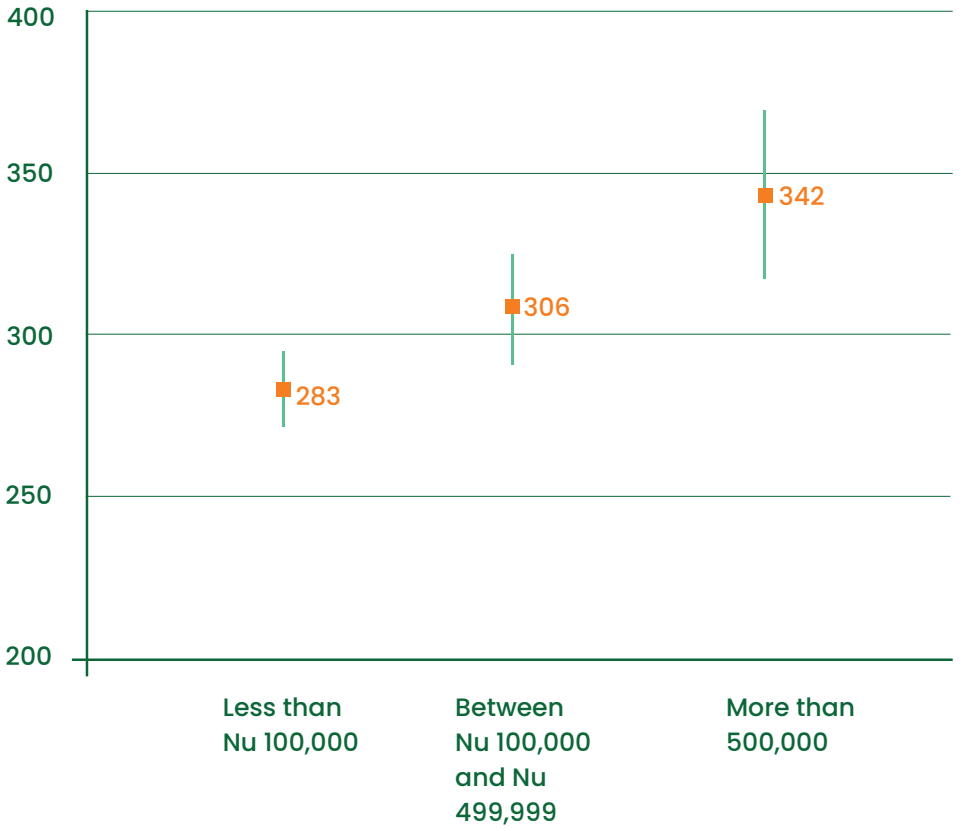
It is essential to investigate how student performances differ among students from various socio-economic groups. In NEA 2021, students' socio-economic status was collected through the Student Questionnaire. The following discussion focuses on the average student performance by family income level and father's education level of the students.

Family income of students was grouped in three ways - income less than Nu 100,000, between Nu 100,000 and Nu 499,999, and Nu 500,000 and above. The results from NEA 2021 showed that the students with higher family income level scored higher in Mathematical Literacy on average. The mean score difference between the highest income group (342) - Nu 500,000 and above and the lowest income group (283) - less than Nu 100,000, was 59 score points and it is statistically significant. This implies that family income is one of the important factors affecting student learning in Mathematics in the country.

Table 4.13: Student performance in Mathematical Literacy by family income level

	Mean	SE	Confidence interval
Less than Nu 100,000	283	5.8	272 - 295
Between Nu 100,000 and Nu 499,999	306	5.3	296 - 317
More than 500,000	342	17	309 - 375

Figure 4.11: Student performance in Mathematical Literacy by family income level



A similar pattern emerged in the analysis of parental education level and student performances. In NEA 2021, as father's education level improved from no education to school education and then to college education, the mean Mathematical Literacy score increased by a significant margin.

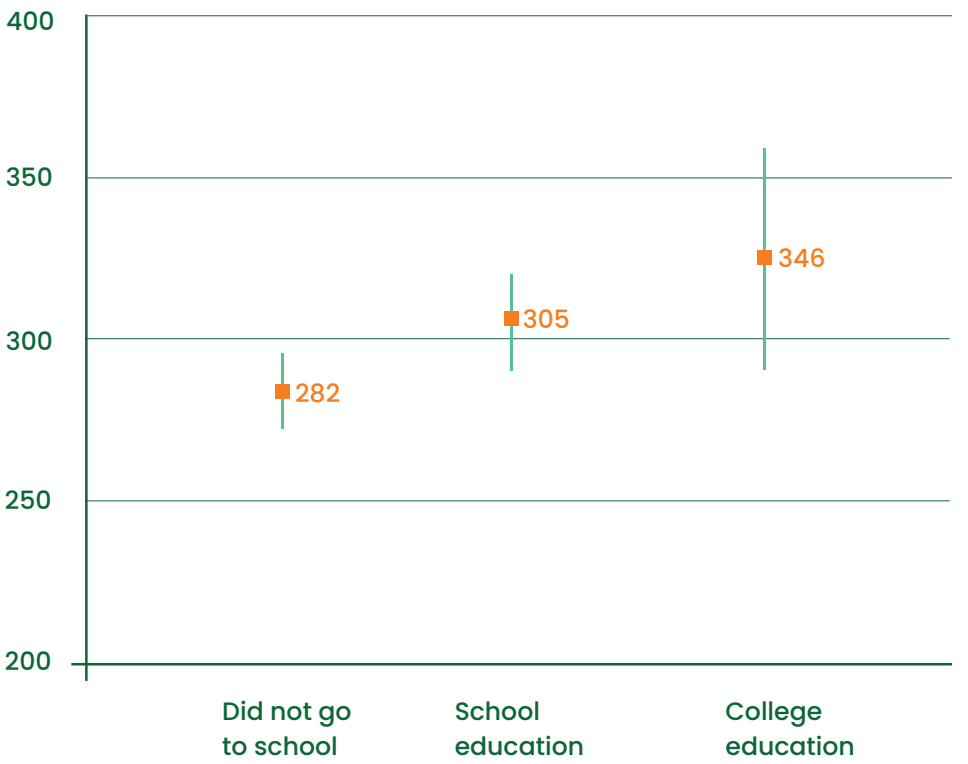
The students with college-educated father (346) scored 41 score points higher than the students having father with school education but no college degree (305). The same student group (mean score = 346) outperformed the students having father with school education (mean score = 305) by 41 scale scores.

The students whose father had a college education performed better (346) than the students whose father had no educational experience (282). The score difference was 64 and it was statistically significant. These results suggest that father's education is a factor which can explain variances in student performances in Mathematical Literacy. The higher the father's education level, the better the students' performance in Mathematical Literacy.

Table 4.14: Student performance in Mathematical Literacy by parental education level

	Mean	SE	Confidence interval
Did not go to school	282	4.4	274 - 291
School education	305	6.9	291 - 318
College education	346	9	328 - 364

Figure 4.12: Student performance in Mathematical Literacy by parental education level



4.2.8. Factors affecting Mathematical Literacy performances

A regression analysis was conducted to explain the factors affecting students' Mathematical Literacy performances in NEA 2021. Various independent variables were regressed on the dependent variable - scale score in Mathematical Literacy. The independent variables were mostly taken from the contextual information collected through the Student Questionnaire, with an exception of student values which were evaluated by teachers ('Teacher value' in the regression model below).

Some of the independent variables were used in an index format after conducting factor analysis. The index variables included:

- students' attitude towards learning ('Attitude towards learning' in the model)
- students' evaluation of classroom environment ('Classroom environment' in the model)
- students' evaluation of pedagogical practices ('Pedagogical practice' in the model)
- socio-economic status ('SES Economic' and 'SES Education' in the model)
- students' general health ('Student health' in the model)
- student value rating on the nine student attributes evaluated by their teachers ('Teacher value' in the model)
- students' evaluation of teaching and learning during COVID-19 ('Teach learn COVID-19' in the model)

The table below summarises the results from the regression analysis. The impact of gender on Mathematical Literacy seen through the regression analysis and group mean comparison analysis is interesting because no significant performance difference was detected in both the methods unlike the cases in the two other test domains. After controlling all other factors in the model the same, we can conclude that the gender gap was not significant in Mathematical Literacy, unlike the cases in Dzongkha and English Reading Literacy. This means that the boys and girls performed equally well in the NEA 2021 in Mathematical Literacy test.

The grade repeaters and students studying in rural areas tend to perform poorly compared with their counterparts. Socio-economic status, both economic and educational, played an important role in the student performances. The higher the socio-economic status students have, the greater the student's Mathematical Literacy score was. In addition, maintaining a good health helped the students do well in their Mathematical Literacy test as well. Teacher's evaluation of nine student attributes (Teacher value) showed that students who regard and value the nine student attributes scored higher than students who do not.

R-square tells us how well data fit a regression model, also known as the goodness of fit. Ranging from 0 to 1, R-square indicates a proportion of variability observed in a dependent variable explained by a regression model. The regression model with the set of the independent variables explained 31 percent of the variance in the student Mathematical Literacy scores (R-square of 0.31).

These factors affecting student performances identified by NEA 2021 will be helpful in making evidence-based policy decisions in the country. The table below presents the results from the regression analysis.

Table 4.15: Regression analysis of students' Mathematical Literacy performances

Statistic/Variable	Coefficient	SE	Value
INTERCEPT	229.7*	19.2	12.0
Attitude towards learning	0.9	2.9	0.3
Classroom environment	0.0	2.9	0.0
ECCD	1.5	2.6	0.6
English at home	10.3*	5.2	2.0
Female	-1.2	1.9	-0.7
Grade repeater	-14.9*	4.4	-3.4
Pedagogical practice	-0.9	1.2	-0.7
Public schools	-11.4	9.0	-1.3
Location_Rural	-20.3*	5.2	-3.9
SES Economic	7.2*	1.8	4.0
SES Education	14.9*	1.5	10.2
Student health	2.3*	0.7	3.4
Teacher value	15.1*	2.1	7.2
Teach learn COVID19	1.4	0.9	1.5
Tuition	-2.8	3.5	-0.8
R-SQUARE	0.31	0.1	4.8

* in the table indicates a statistical significance

4.3. Summary and conclusion

This chapter discussed the analysis of the NEA 2021 results in the Mathematical Literacy test. It can be concluded on the basis of the results that student performances in Mathematical Literacy were more or less equally distributed around the set mean score of 300 across the 24 districts. There was only one district/city (Phuntsholi Thromde) where students outperformed the rest of the country with a mean score of 334 and only one district (Tsirang) that underperformed with a mean score of 275. Further research is recommended for the underperforming district to improve student learning.

At the national level, 93 percent of the students were able to meet the minimum

proficiency level for grade III, with their performances placed in Level 2 to Level 5 as defined in the NEA scale. This means that the rest of the seven percent students failed to meet the minimum level in Mathematical Literacy with their scores placed at Level 1. It is commendable for the country to record a high proportion of students meeting the minimum level of Mathematical Literacy proficiency, even after experiencing obstructions in learning due to school closures in the COVID-19 time. However, it is hoped that proper remedial measures would be taken to improve learning of students falling below the minimum proficiency level.

On the basis of group mean analysis and regression analysis, a gender gap between boys and girls was barely found at the national level as well as district level in Mathematical Literacy. On the contrary to the English Reading Literacy, this result does not confirm the international research on student performances by gender difference discussed earlier in Chapter 3. There is a body of literature supporting that boys are more likely to perform better in mathematics than girls (World Bank, 2018, J-PAL, 2022). However, from the NEA 2021 data, it is difficult to conclude that there is a clear gender gap in Mathematical Literacy favouring boys at grade III level.

There were clear performance gaps in the student performances by school location and management type. The students studying in urban areas outperformed the students in rural areas in the Mathematical Literacy test. Even though there are relatively small number of private schools in the country, the mean Mathematical Literacy score of the private school students was higher by a huge margin of 75 score points as compared with the public school students. It is recommended to prioritise education policies to address these gaps as soon as possible.

In NEA 2021, the students who attended the ECCD programme performed similar to those who did not, as no statistically significant difference was found. The same pattern as in the analysis of ECCD programme appeared between the performances of day-scholars and boarders as no significant difference was detected between the two groups in terms of their Mathematical Literacy abilities.

As seen in other international research (Cheadle, 2008; Coleman et. al., 1966; Coleman, 1988; Hanushek et. al., 2022; Sirin, 2005), the results from NEA 2021 showed that socio-economic status affected student learning. The students from highest-income household (Nu 500,000 and above) had better Mathematical Literacy abilities than the students coming from the lowest-income group (less than Nu 100,000). The group of students coming from households where fathers have a college degree outperformed the students in the other categories, including households where the fathers have achieved school education or received no education.

The regression analysis confirmed most of the Mathematical Literacy results discussed earlier. After controlling for all other variables in the regression model constant, several factors were identified to be affecting student performance in Mathematical Literacy. Those factors explain that students who speak English at home, non-grade repeaters, private school students, students studying in urban areas, students from higher family income group, students with college-educated father, students with good health

and students who regard the nine student attributes important would perform well in their Mathematical Literacy.

The findings from this chapter provided information on the learning of grade III students in Mathematical Literacy and their sub-groups by the various contextual factors. These evidences of contextual factors that impact student performance are expected to contribute to evidence-based decisions in national education policies.


Chapter Review
Q.1 What are the following numbers?
$\frac{2}{5}, \frac{5}{10}, \frac{3}{5}$
Q.2 What is the fraction name of
$\frac{2}{5}, \frac{5}{10}$
Q.4 What are the decimal name of
0.2, 0.3, 0.5
Q.5 Describe the shaded portion

Chapter 5. Wellbeing and values of grade III students

Box 1:
Positive school environment

- teachers take care of sick students
- most of essential facilities are available in school
- students feel happy and safe in their school
- some students experience bullying sometimes

Box 2:
Healthy family interactions (Students)

- have meals with their parents or family members several times a week
- have conversations about their education and schools with their family members
- participate in family activities including visiting temples and attending Tshechus together
- receive support from their families in various ways

Box 3:
Positive attitudes towards learning (Students)

- agree to the importance of learning and aspire to get a job and to do well in their lives and to gain knowledge
- maintain good habits of self-study, read, and play after school

Box 4:
Activities outside school

- Watching TV and using a mobile phone were among the popular activities

Box 5:
Students nurture the nine student attributes.

Going to the school, listening to teachers, staying clean, and taking care of the school property are among the highest rated items by students.

Education communities around the world have recognised the importance of social and emotional learning in school education for achieving sustainable development. Researchers have found that social and emotional wellbeing has a positive impact on students' academic and life successes, including educational achievements (Adi et al., 2007; CASEL, 2003; Davies et al., 2021; Durak et al., 2011; Malecki and Elliot, 2002).

In this chapter, findings from the Student Questionnaire are discussed. The analysis of student responses is focused on student wellbeing and values around the nine student attributes.

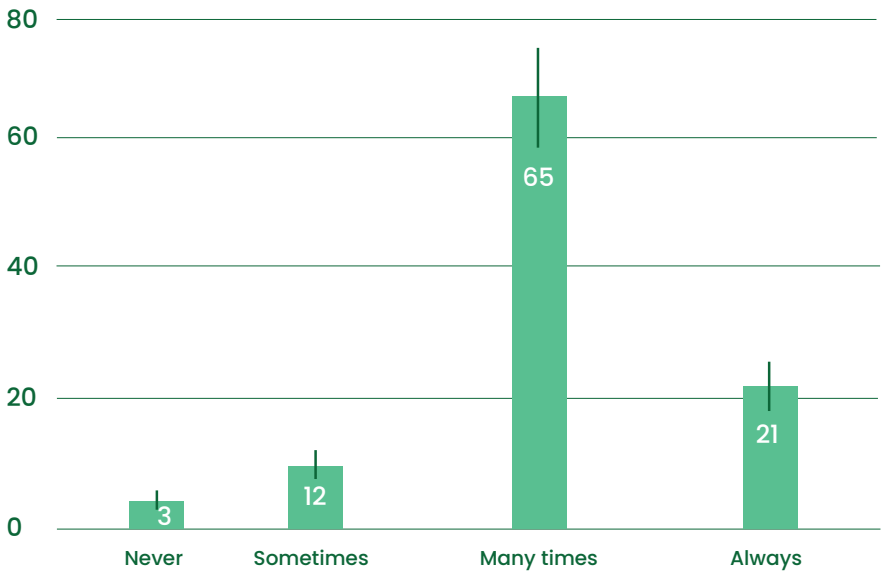
5.1. Physical and emotional wellbeing of grade III students

This section reports the physical and emotional wellbeing of grade III students based on self-rating provided by the participants.

5.1.1. Self-rating on health and the experience of health problems

During the NEA 2021 data collection, many students reported that they had been sick. More than 80 percent of the students reported they were sick many times (65%) or were always sick (21%) in the last one year. Only three percent of the students said they were never sick in the last one year. These are worrisome data as students' health affects learning achievements, as we have seen in the analysis of NEA 2021. The results from the regression analysis confirmed that students with good health performed better in all three test domains.[8]

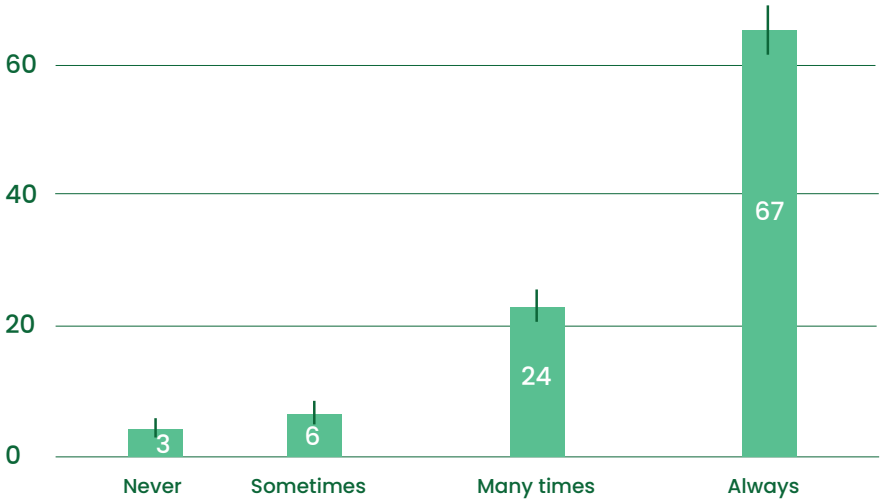
Figure 5.1: Student health: In the last one year, I have been sick (%)



[8] During the pandemic, there was a circular and consistent reminder from the government to refrain from visiting hospitals in order to prevent oneself from getting exposed to the COVID-19 virus. To avoid crowding at hospitals, flu centres at various strategic places were established. Students with flu like symptoms were asked to visit hospital and stay at home.

To elaborate further, a surprisingly high proportion of students stated they visited a hospital due to sickness in the last year. Almost 70 percent of them (67%) said they visited a hospital all the time and nearly one quarter of them (24%) reported that they did so frequently. It is not unusual to see a high number of young children visiting a hospital due to sickness. However, the results indicate that the frequencies of hospital visits of students participating in the study are more than expected. It is recommended that policy makers prioritise the improvement of students' health.

Figure 5.2: Student health: In the last one year, I have visited a hospital



Many students missed classes due to poor health in the last one year. More than half of the students (52%) completing the survey reported that they missed classes many times and 34 percent of them said always.

Figure 5.3: Student health: In the last one year, I have missed classes because of my sickness (%)

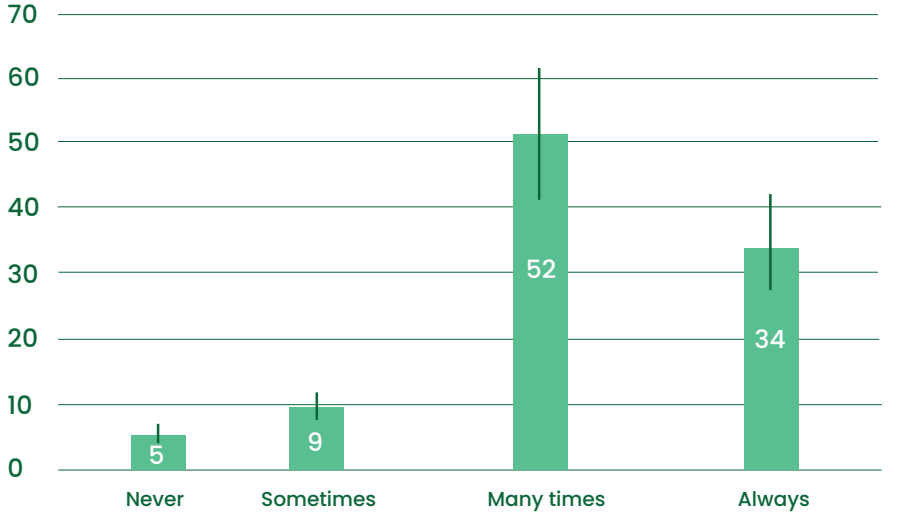
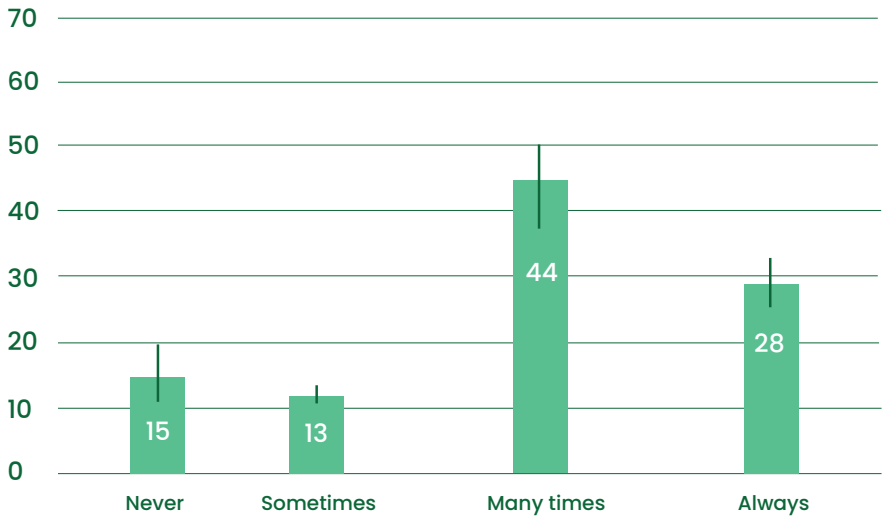


Figure 5.4: Student health: In the last one year, I have got help from my school when I was sick (%)

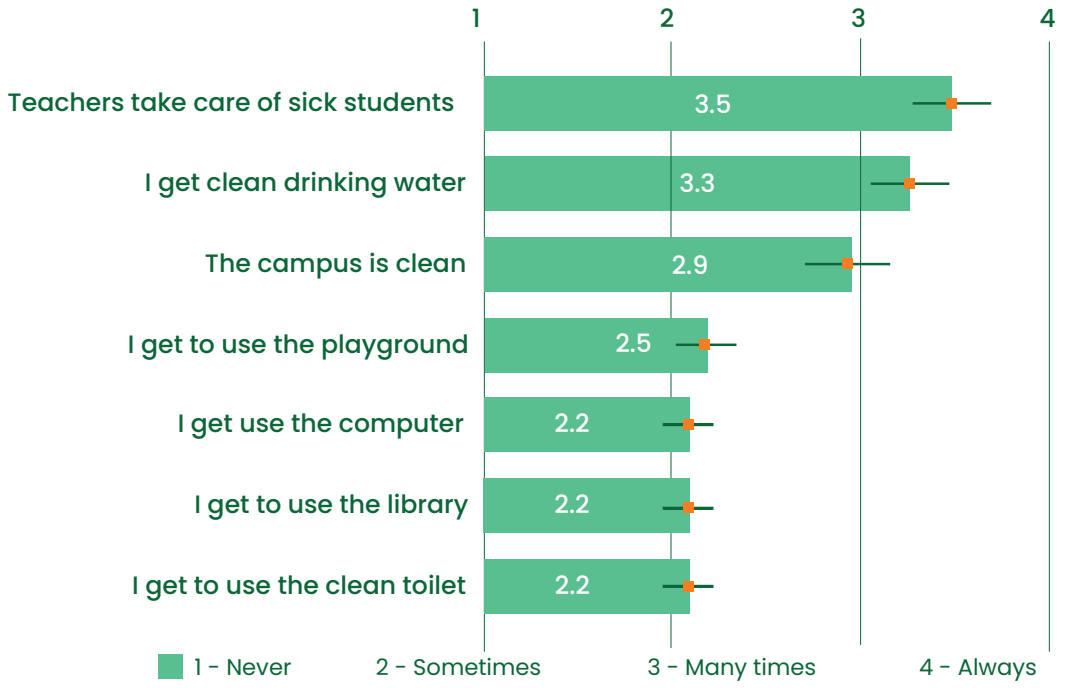


5.1.2. Physical, social and emotional wellbeing

In the Student Questionnaire, students were asked to rate the school environment on a scale of 1 to 4 where 1 represented 'never'; 2 'sometimes'; 3 'many times'; and 4 'always'. The questions regarding the school environment were mainly concerned with the use and availability of essential facilities.

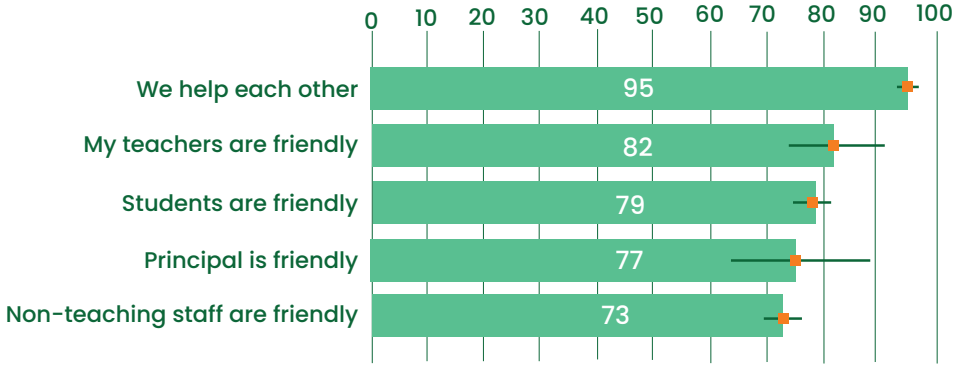
On average, students expressed that most facilities in their schools were available and used by providing a rating of more than 2 (sometimes) and lower than 3 (many times). The parameters for rating included having a clean campus and the availability of playgrounds, computers, libraries, and clean toilets. They rated high on teachers' care for sick students and clean drinking water between 3 (many times) and 4 (always).

Figure 5.5: Physical environment of school



Students strongly felt that they helped each other at school (95%). Close to four out of five students agreed that their teachers were friendly (82%), other students were friendly (79%), and their principals were friendly (77%). More than 70 percent of students responded that their non-teaching staff were friendly.

Figure 5.6: Social and emotional environment of school (%)

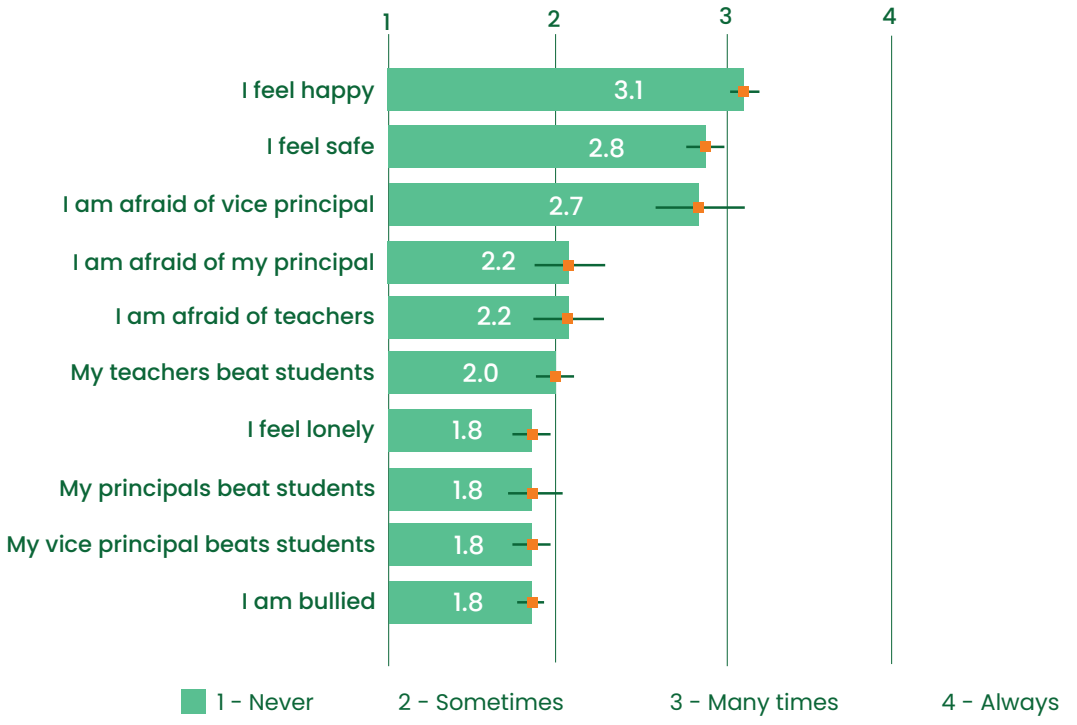


Students felt happy many times (3.1) and safe in school (2.8). Likewise, students rated low on the statements that they felt lonely (1.8) and were bullied sometimes (1.8). On average, students rated between 2 (sometimes) and 3 (many times) on the questions asking if they were afraid of the principal (2.2), vice principal (2.7) or teachers (2.2).

It is also reported that students experienced beating by the principal (1.8), vice principal (1.8) or teachers (2.0) in their schools. An earlier survey also found evidence of corporal punishment in schools.

According to the report published by the National Commission for Women and Children (NCWC) and UNICEF Bhutan in 2016, 64 percent of children aged 13-17 reported that they had experienced physical violence, mostly in the form of corporal punishment, in their lifetime. Around two thirds (67%) of the children who experienced physical violence identified school as the location of physical violence. Practices of corporal punishments bring only negative effects on the development and learning of children. The United Nations has included the elimination of violence against children in several SDGs and therefore it is imperative to take action that prohibits corporal punishment in schools.

Figure 5.7: Social and emotional environment of school

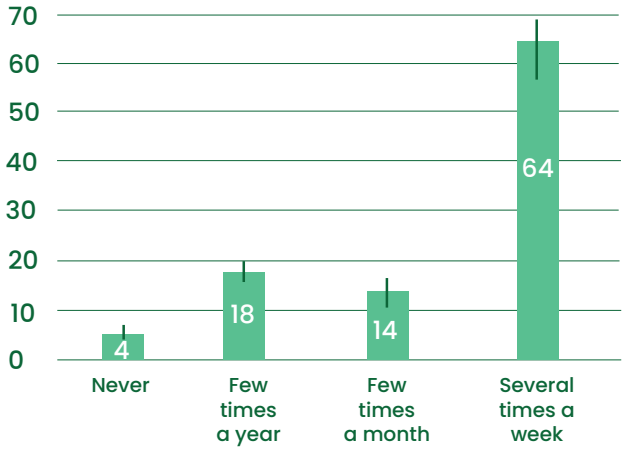


[9] Key facts, Corporal punishment and health, World Health Organization, retrieved from https://www.who.int/news-room/fact-sheets/detail/corporal-punishment-and-health on 15 November 2022.

5.1.3. Family support

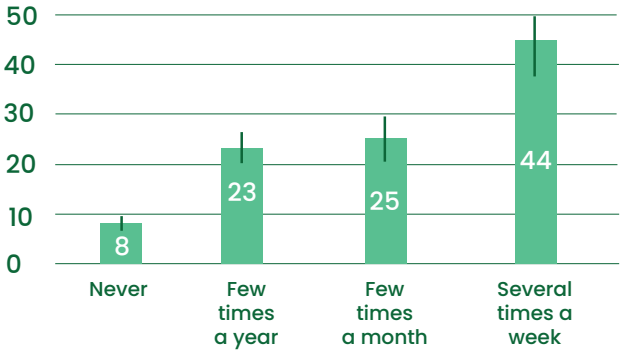
Almost two thirds of students (64%) participating in the survey said their parents or family members ate meals with them several times a week. Nearly one third of them (32%) had fewer chances of having meals with their parents or family members. However, four percent of students reported that they did not have any chance to do so.

Figure 5.8: Family activities: Your parents or someone in your family eat meals with you (%)



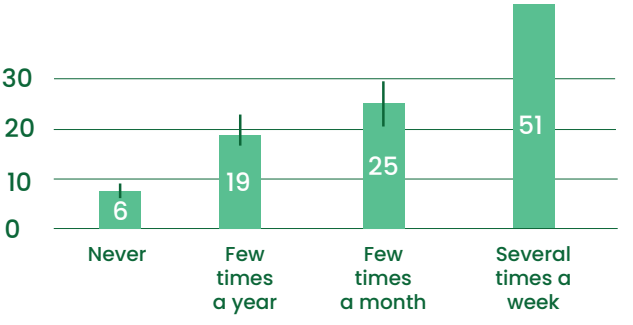
More than 40 percent of students (44%) informed that their family members spent time talking to them several times a week, while nearly half of them (48%) reported their parents did so a few times in a month or a year. About ten percent of them (8%) expressed that their family members did not spend time talking to them. Limited communication with family members in the early years has negative consequences on students' wellbeing (Bireda & Pilley, 2018).

Figure 5.9: Family activities: Your parents or someone in your family spend time just talking to you (%)



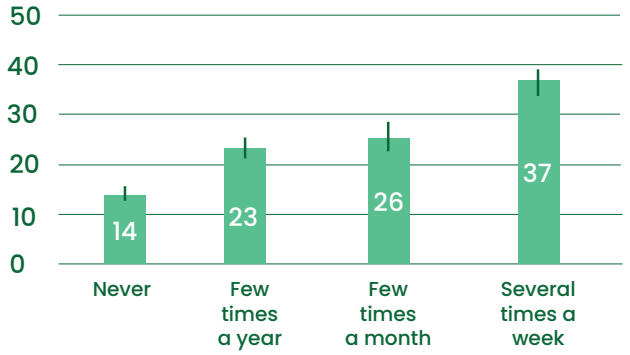
More than 90 percent of students (94%) were reminded by family members of the importance of education. Around half of the students (51%) responding to the survey pointed out that family members stressed the importance of education several times a week.

Figure 5.10: Family activities: Your parents or someone in your family talk to you about the importance of education (%)



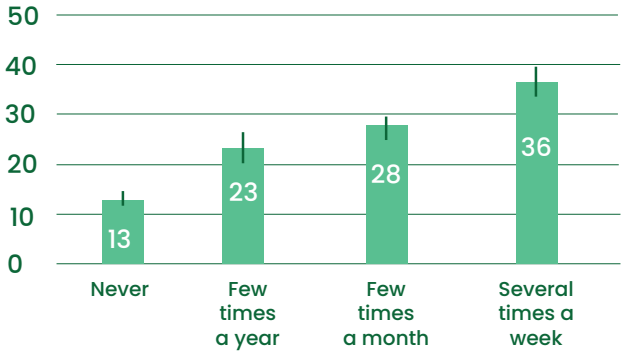
In general, family members were concerned about any problems their children might be facing at the school. More than 80 percent of students (86%) reported that their family members talked to them about any possible problems at the school.

Figure 5.11: Family activities: Your parents or someone in your family talk to you about any problems you may have at school (%).



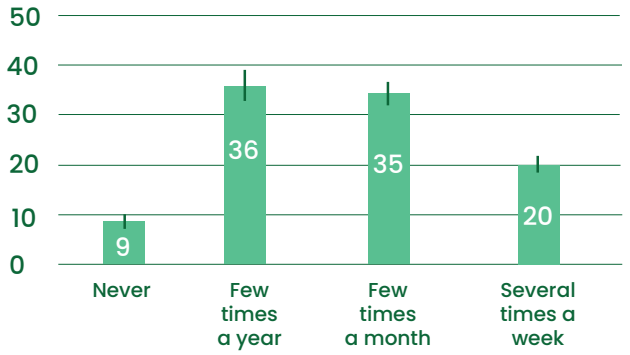
A significant proportion of students (87%) responded that their family members were interested in knowing how they were getting along with other students. More than one-third of them (36%) were asked questions by family members about their interactions with peers several times a week.

Figure 5.12: Family activities: Your parents or someone in your family ask you about how you are getting along with other students at school (%)



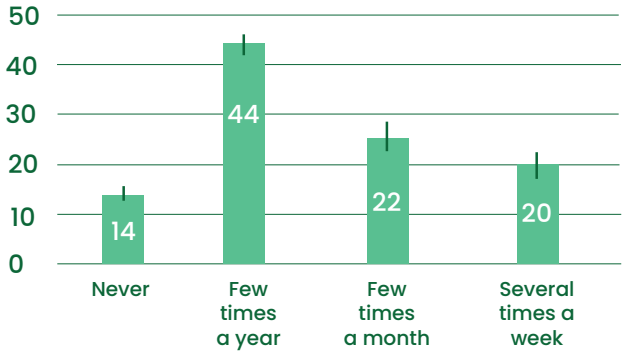
More than 90 percent of students (91%) answered that their family members visited temples with them at least a few times in a year.

Figure 5.13: Family activities: Your parents or someone in your family visit temples with you (%)



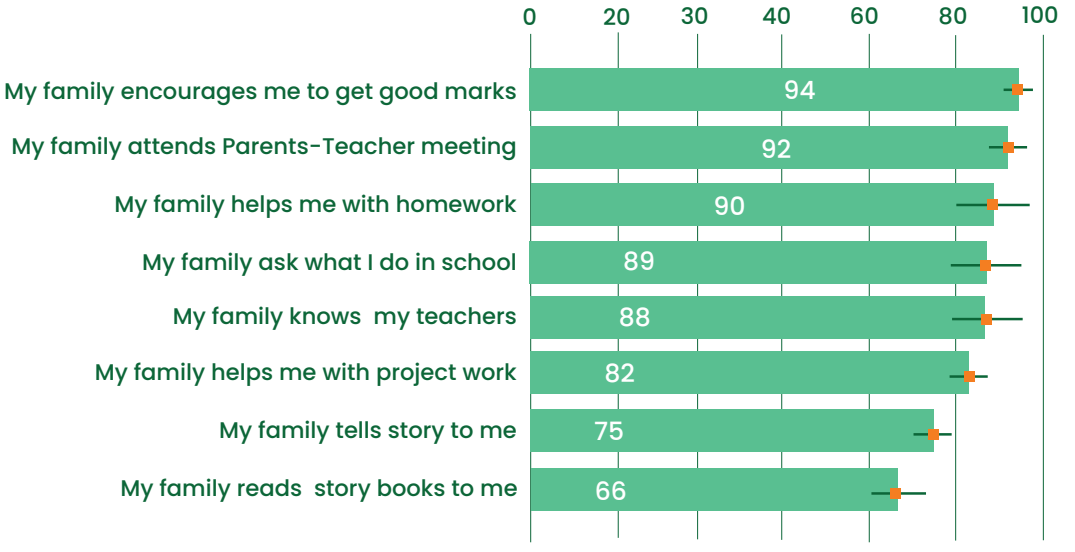
For a majority of the students participating in the survey, the Bhutanese tradition and culture are imbedded in their family life. Eighty six percent of students reported that their family members attended Tshechu with them at least a few times in a year. The figure below shows the student responses to the question.

Figure 5.14: Family activities: Your parents or someone in your family attend Tshechu with you (%)



The Student Questionnaire further asked if family members supported students in their studies. More than 90 percent of students reported that their families encouraged them to get good marks (94%) and attended parent-teacher meetings (92%). Ninety percent of students received help from their families in doing homework, whereas eighty two percent were supported in doing project work. Most of the students stated that their families asked about their school lives (89%) and knew their teachers (88%). However, the proportion of students whose families read story books to them (66%) or told stories to them (75%) was relatively smaller.

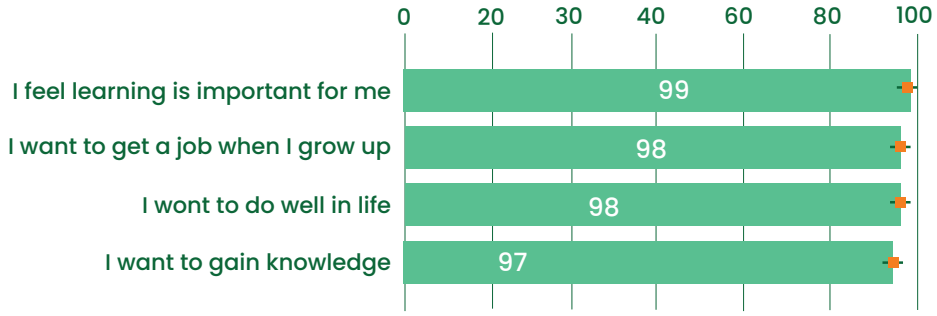
Figure 5.15: Support from family (%)



5.1.4. Attitudes towards learning

From the results of NEA 2021, it is concluded that grade III students have positive attitudes towards learning. Nearly all students (99%) agreed that they felt learning is important and almost all students wanted to get a job when they grow up (98%), to do well in life (98%), and to gain knowledge (97%).

Figure 5.16: Students' attitudes towards learning (%)



Students chose Mathematics (41%) as their favourite subject, followed by English (33%) and Dzongkha (26%) from the test domains of NEA 2021. This choice was further confirmed when students were asked to tell about their least favourite subject. More than 40 percent of students (44%) picked Dzongkha as their least favourite subject. English (30%) and Mathematics (26%) came at the second and the third place respectively.

Figure 5.17: Favourite subject (%)

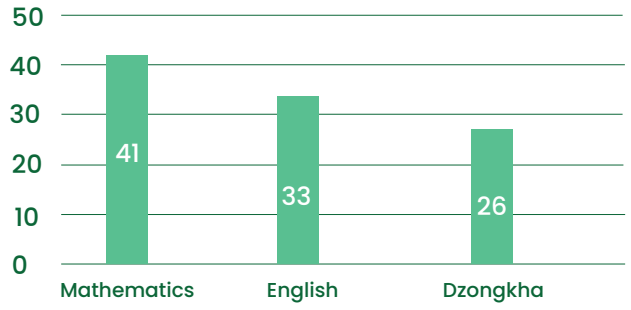
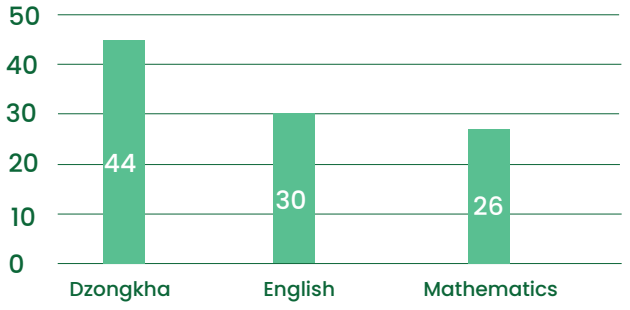
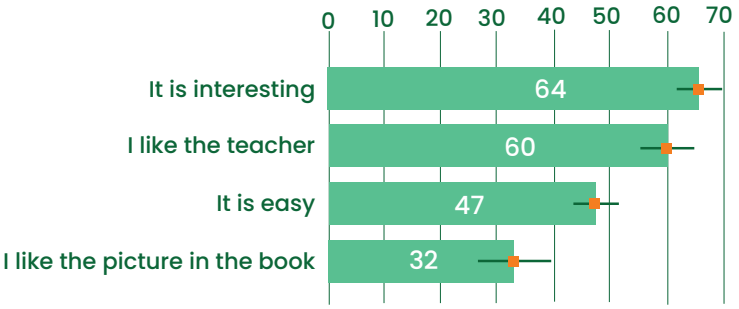


Figure 5.18: Least favourite subject (%)



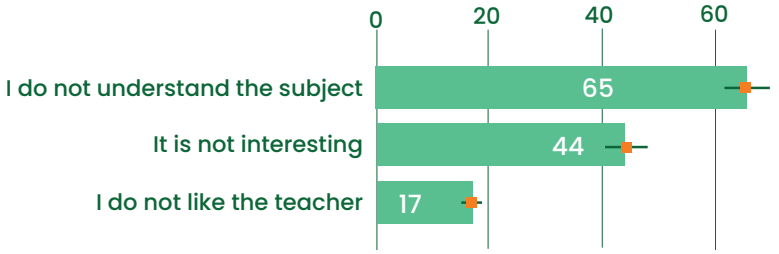
Students reported that they like their favourite subject because it was interesting (64%) and they liked the subject teacher (60%). Less than half of the students agreed that they liked the subject because it was easy (47%).

Figure 5.19: Reason for liking the favourite subject (%)



Students reported that they like their favourite subject because it was interesting (64%) and they liked the subject teacher (60%). Less than half of the students agreed that they liked the subject because it was easy (47%).

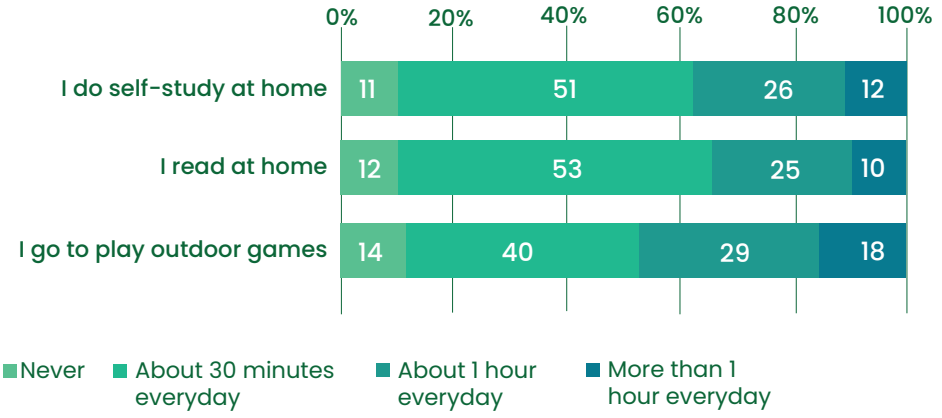
Figure 5.20: Reason for not liking the least favourite subject (%)



5.1.5. Student activities outside school

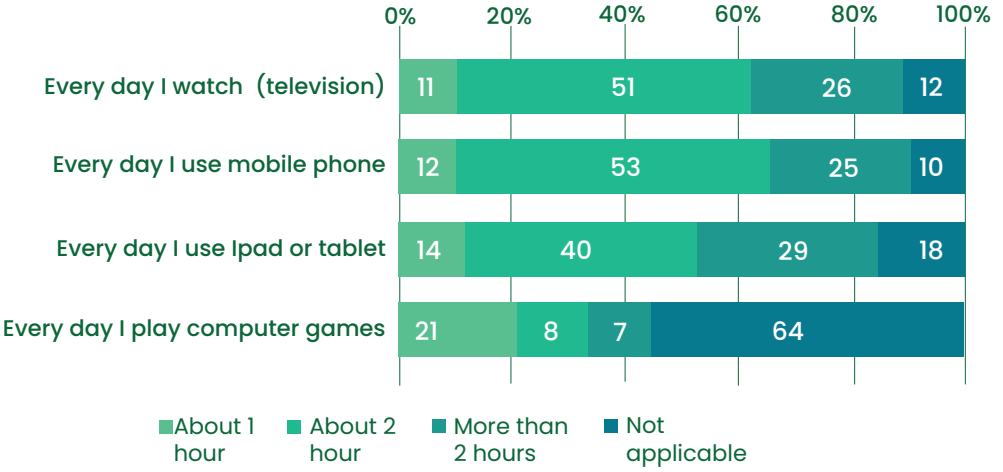
The Student Questionnaire asked some questions to see what activities students do outside school. Almost 90 percent of students (89%) did self-study and read (88%) at home at least half an hour every day. More than 85 percent students (86%) reported that they spent at least half an hour every day for playing outdoor games.

Figure 5.21: Activities at home (%)



The figure below lists the activities students do outside the school. The responses from students show that watching TV and using a mobile phone were among the popular activities students do outside school. Almost 80 percent of students (79%) watched TV every day for at least one hour. However, more students (84%) used a mobile phone every day. On the contrary, using an iPad or tablet PC and playing computer games were not popular among students probably due to the unavailability of devices. More than one third of students (36%) played computer games at least one hour every day and a quarter of them used an iPad or tablet every day.

Figure 5.22: Activities outside school every day (%)



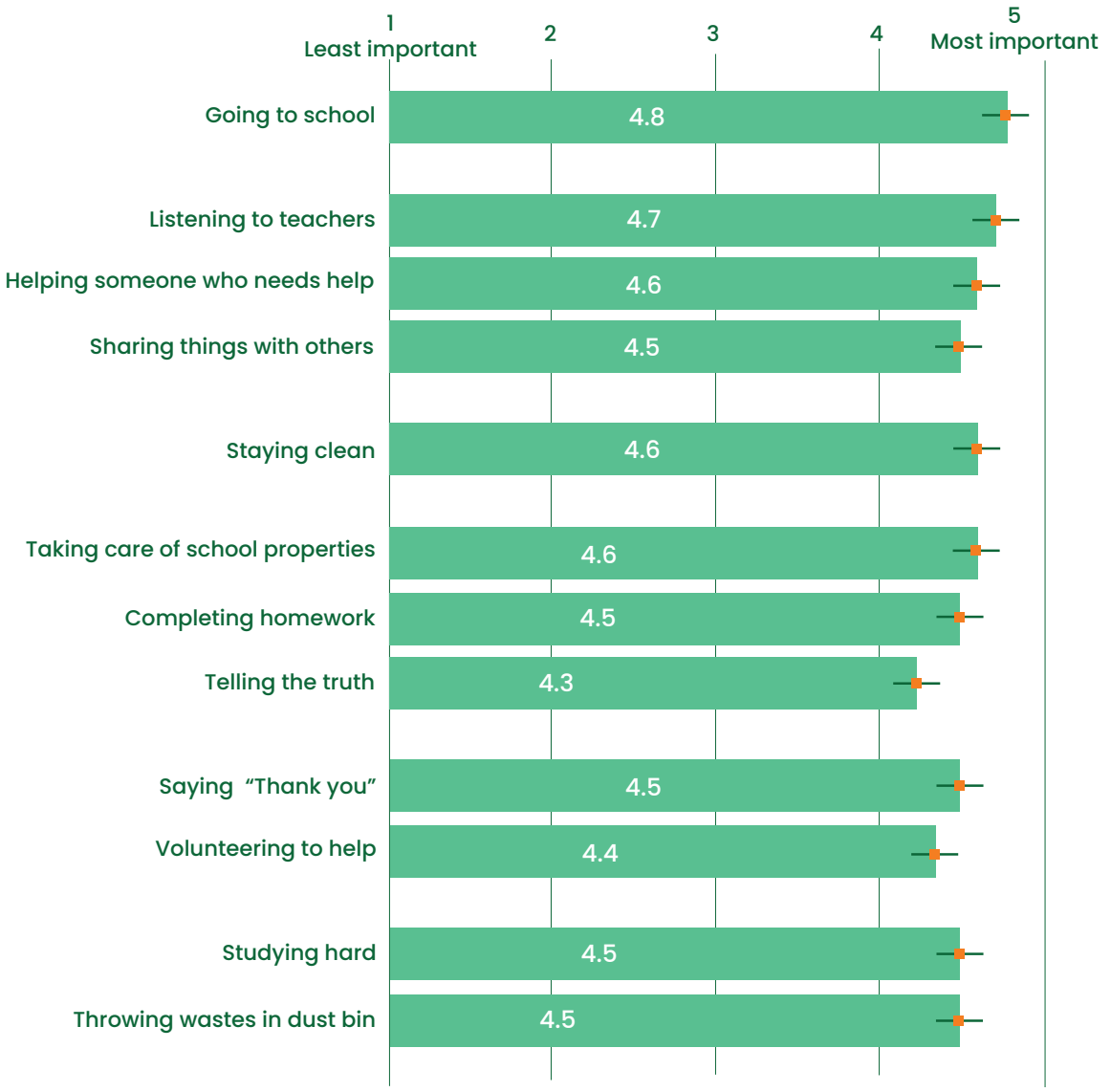
5.2. Values of grade III students

Students were asked to participate in the Value Questionnaire which assessed the nine student attributes classified into six categories. A total of 12 statements were given to the students to rate on a scale of 1 (least important) to 5 (most important). The six categories and 12 statements were:

- **Leadership competence** – by asking to rate 'Telling the truth (honesty)', 'Taking care of school things (respecting public property)', and 'Completing homework (responsibility)'
- **Family, community and national values** – by asking to rate 'Saying Thank you (gratitude)' and 'Volunteering to help (kindness)'
- **Spirituality and character** – by asking to rate 'Listening to teachers (respect)', Helping someone who needs help (empathy)', and 'Sharing things with others (sharing)'
- **World readiness** – by asking to rate 'Going to school (achievement)'
- **Physical wellbeing** – by asking to rate 'Staying clean (cleanliness)'
- **Enduring habits of lifelong learning** – by asking to rate 'Throwing wastes in dust bin (waste management)' and 'Studying hard (perseverance)'

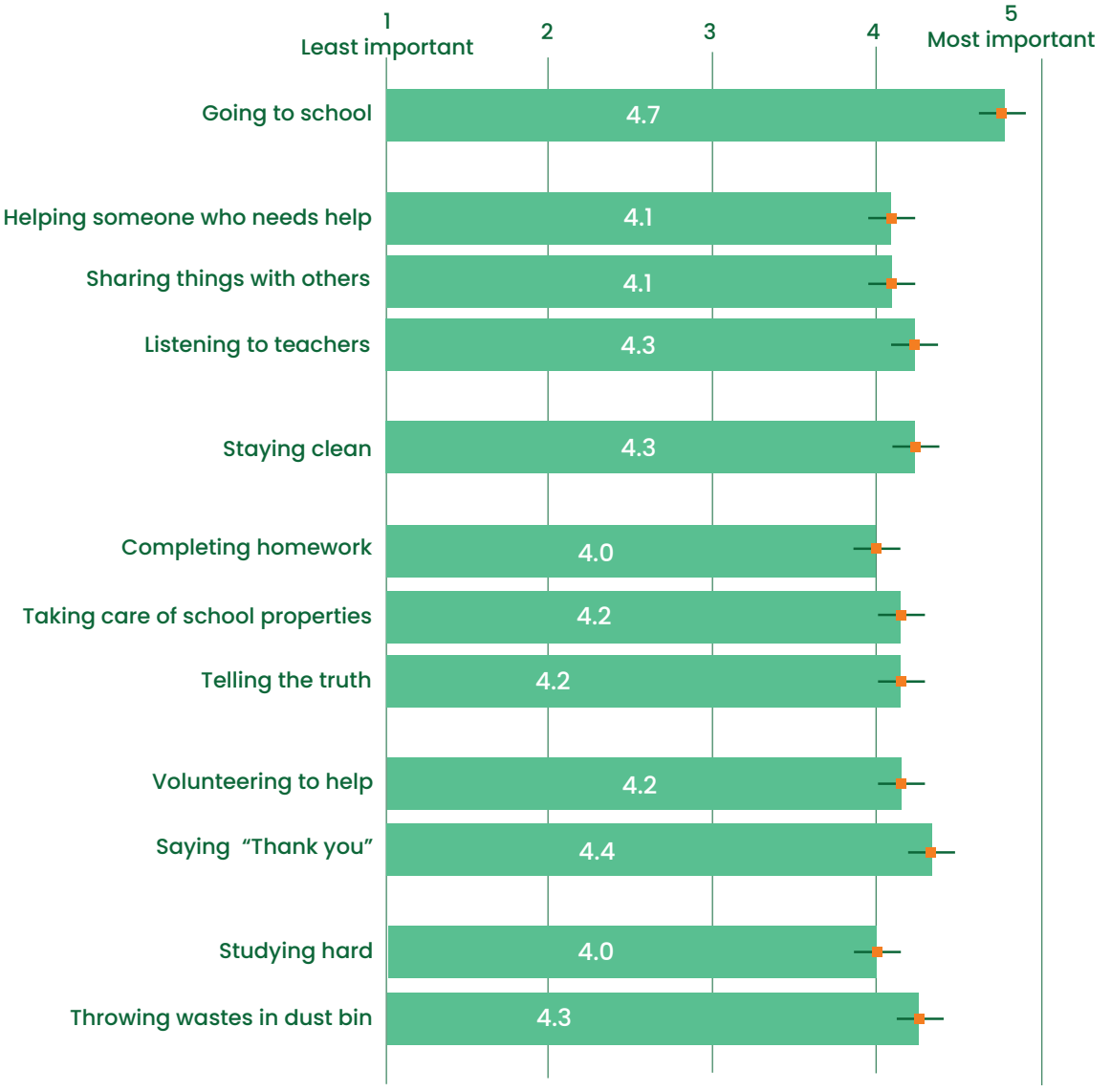
The figure below displays the responses from students to the 12 statements grouped by the six categories. Ratings by students ranged from 4.3 to 4.8 on average, showing that students highly valued all the statements given. Going to school (4.8), representing the value of 'leadership competence,' and listening to teachers (4.7), representing the value of 'spirituality and character,' were among the highest rated items. However, all the other questions were highly rated, meaning that students considered the values important to them.

Figure 5.23: Self-rated student values



The same set of statements were given to the class teachers to evaluate each participating student in their nine student attributes. The figure below demonstrates the results from student responses to the 12 statements grouped by the six categories. The teachers rated their students highly in observing the attributes, giving students 4.0 to 4.7 ratings to all the items on average. Teachers evaluated that going to school (4.7), representing 'world readiness' was most important to their students. The ratings on the rest of the statements by the teachers were slightly lower than those by the students.

Figure 5.24: Teacher-rated student values



5.3. Summary and conclusion

The results from the Student Questionnaire provided with updated information on the physical, social, and emotional wellbeing of students, family support, student attitudes towards learning, and values of the grade III students. It can be concluded that some of the findings were encouraging and some areas require more attention from policy makers.

Regarding the school environment, students agreed that their teachers took care of sick students. Students evaluated that essential facilities in their schools were available and used by giving a rating between 2.2 and 3.3 on a scale of 1 to 4 (1-never, 2-sometimes, 3-many times, 4-always). The facilities included clean drinking water (3.3), a clean campus (2.9), a playground (2.5), computers (2.2), a library (2.2) and clean toilets (2.2).

It is encouraging to see that students reported that they felt happy and safe in their schools. On average, students rated the level of their happiness and safety in schools around 3 (many times) on a scale of 1 (never) to 4 (always). Likewise, students rated low on the statements that they felt lonely (1.8) and were bullied sometimes (1.8). Although student ratings are low on bullying, it is close to 'sometimes,' indicating that a few students experienced bullying. It is to be emphasised at the policy level that bullying is not acceptable behaviour and help for any student affected should be available in schools.

From the results of the Student Questionnaire, we find that students had healthy family interactions. Almost two out of three students (64%) said their parents or family members ate meals with them several times a week. A majority of students reported that at least few times a month, their parents or family members spent time talking to them (69%), one such topic being the importance of education (76%), and asked about problems they face at their schools (63%). Many students said that at least a few times a year, they participated in family activities including visiting temples (91%) and attending Tshechu (86%). Students received support from their families in various ways. Their families encouraged them to get good marks (94%), attended parent-teacher meetings (92%), helped them with homework (90%) and project work (82%), and asked what they do in schools (89%), among others.

The NEA 2021 results revealed that grade III students had positive attitudes towards learning. Nearly all students (99%) agreed that they felt learning is important. Almost all students wanted to get a job when they grow up (98%), to do well in their lives (98%), and to gain knowledge (97%).

It is inspiring to see that most of the students maintained good habits of self-study, reading, and playing after school. Many students (89%) did self-study at home, read (88%) at home, and played outdoor games (86%) at least half an hour every day. Watching TV and using a mobile phone were among popular activities students did outside their schools. On the contrary, using an iPad or tablet PC and playing computer games were not popular among students probably due to the unavailability of devices.

Based on the self-ratings of students on the nine student attributes, students nurtured the nine attributes well. The ratings done by their teachers on attributes also confirmed student views. Ratings from both teachers

and students ranged from 4.0 to 4.8 on a five-point scale (1-least important to 5-most important). Going to school (4.8), listening to teachers (4.7), staying clean (4.6), and taking care of school property (4.6) were among the highest rated items by students.

Most of the students experienced missing classes due to poor health during the last one year. Ninety seven percent of students reported that they were sick and 95 percent of students said that they missed school. These results may be consequences of the COVID-19 pandemic. On the positive side, a significant number of students reported that they received help from their schools when they were sick. More than 80 percent of students (85%) responded that their schools helped them when they were sick in the last one year. These results suggest that it is important to continue providing support for students who fall sick through schools and improving sanitation and personal hygiene programmes in schools for students.

Considering the ratings by students, there may be a need to further investigate corporal punishment cases in schools. Students were asked to rate on a scale of 1 (never) to 4 (always), on the questions asking about their principals, vice principals, and teachers. On average, they rated between 2 (sometimes) and 3 (many times) on most of the statements asked for rating. They responded that they were afraid of the principal (2.2), vice principal (2.7) or teachers (2.2). It is also reported that they experienced beating by the principal (1.8), vice principal (2.7) or teachers (2.0) in their schools.

The findings and aspects discussed in the chapter may be reviewed carefully before policy decisions to improve the school environment and student wellbeing. It is recommended to maintain the critical questions in the Student Questionnaire for the future cycles of NEA to trace a trend and changes in contextual factors of students.


DZONG
Addition
Using Capital Letters

Chapter 6. School and community environment

Box 1: Positive school environment

Teachers:
- rated highly on the availability of care for sick students, clean campus and clean drinking water in their school.
- evaluated that students in their school felt safe and happy.
  agreed that their school environments were friendly, cooperative, and orderly.

Principals:
- maintained good relationships with their school staff and students
- felt that their efforts contributed to improving student learning outcomes
- received adequate support from their school staff, vice principals, district education offices, and MoE
- considered their school environments friendly for teachers, support staff, students, and themselves
- evaluated that their students were safe and happy in the school
- reported that they hardly faced negative behaviour from students and teachers

Box 2: Professional development programmes for teachers in 2021

- Teachers received more PD in the areas directly related to teaching such as subject content and ICT.
- Teachers reported that PD opportunities were less frequent in the areas of SEN and action research.
- Teachers evaluated that PD programmes were more effective in the areas of assessment practices, teaching methods, ICT, and subject content.
- CDEOs and CTEOs were involved in various professional development activities at least once a year.
- Districts provided 40 hours of PD to all teachers.

Box 3: Teaching practices

Teachers:
- emphasised learning intentions
- promoted learner centred teaching strategies
- understood the importance of assessment
- promoted assessment for learning

Box 4: Motivation to teach

- Teachers reported that they were highly motivated to teach with high job satisfaction.

Box 5: Nine student attributes

- Principals strongly agreed that the nine student attributes were promoted in their schools

Box 6: Monitoring activities

CDEOs and CTEOs
- provided crucial feedback to schools on areas that need improvement
- focused on monitoring the learning outcomes of their schools
- visited schools more than twice for monitoring
- focused on the School Improvement Plan of the schools during their visits

This chapter discusses findings from the various questionnaires of NEA 2021, including the Teacher Questionnaire, the Principal Questionnaire, and the CDEO/CTEO Questionnaire. It focusses on analysing the environment for teachers and principals and the support received from CDEOs and CTEOs in their districts.

6.1. Enabling environment for teachers

This section analyses teacher responses to the Teacher Questionnaire on professional enhancement, teaching and assessment practices, and motivation to teach along with validating the school environment statements reported by students in the previous section.

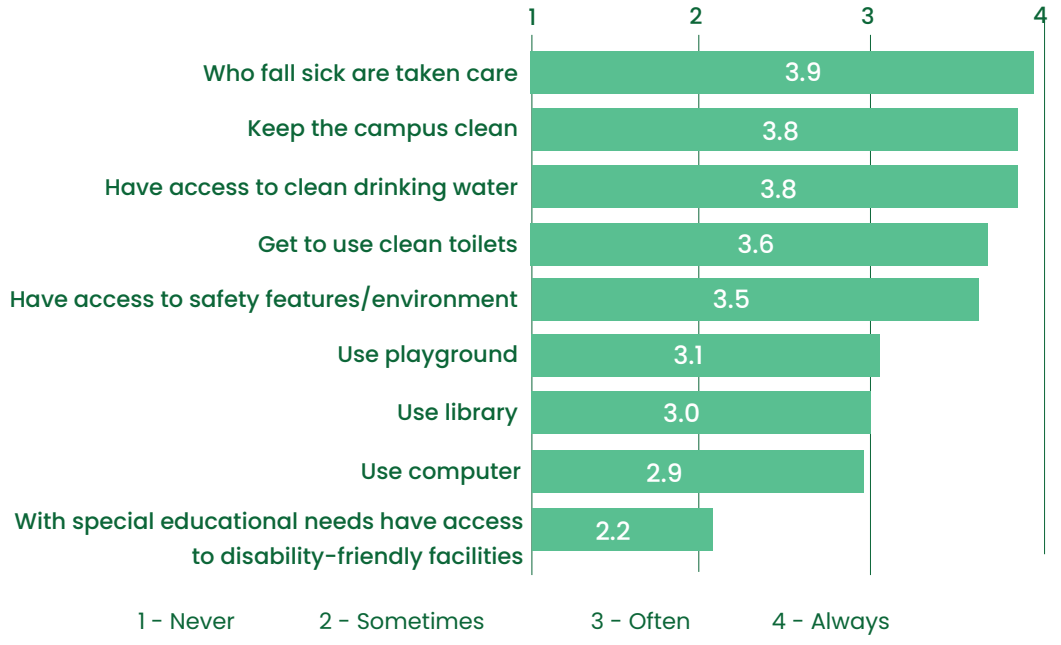
A total of 558 teachers participated in the NEA 2021 survey for collecting contextual questionnaire. In principle, three teachers from each sample school were asked to participate, preferably teaching grade III students in the three test domains. However, it is to be noted that sampling methods to guarantee representativeness of the sample were not applied to select teachers. Therefore, any analysis based on the data collected from teachers represents 'teachers who participated', not the entire teacher population and should be interpreted as sample specific.

6.1.1. School environment

Participant teachers were asked to evaluate a set of statements concerning students on a scale of 1 (never) to 4 (always). The average ratings of teachers are displayed in the figure below.

The teachers rated highly on the statements, 'In my school, generally students who fall sick are taken care' (3.9), 'In my school, generally students keep the campus clean' (3.8), and 'In my school, generally students have access to clean drinking water' (3.8), indicating that the activities described in the statements happened in their schools almost always. On the other hand, teachers reported that disability-friendly facilities were sometimes available for SEN students (2.2).

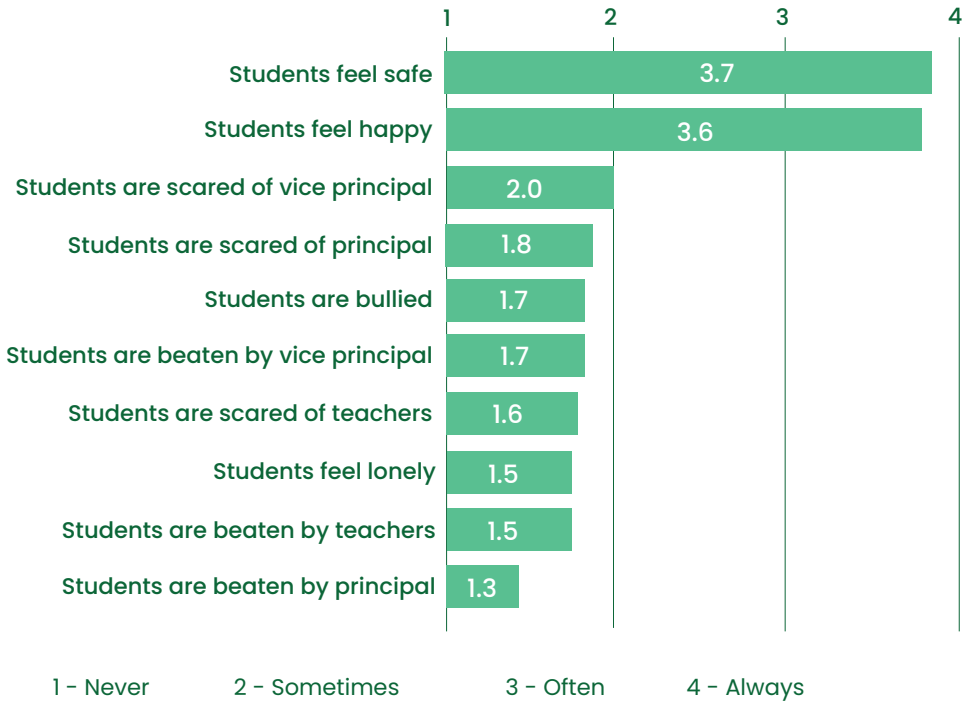
Figure 6.1: Physical environment of school for students



Another set of questions were about emotional aspects of their students. Teachers rated highly on student safety (3.7) and happiness (3.6) in school, but low on student loneliness (1.5) and student bullying (1.7).

This indicates that teachers thought their students usually felt safe and happy and only a few of them felt lonely or got bullied. Teachers evaluated that their students were 'sometimes' scared of the principal (1.8) and the vice principal (2.0).

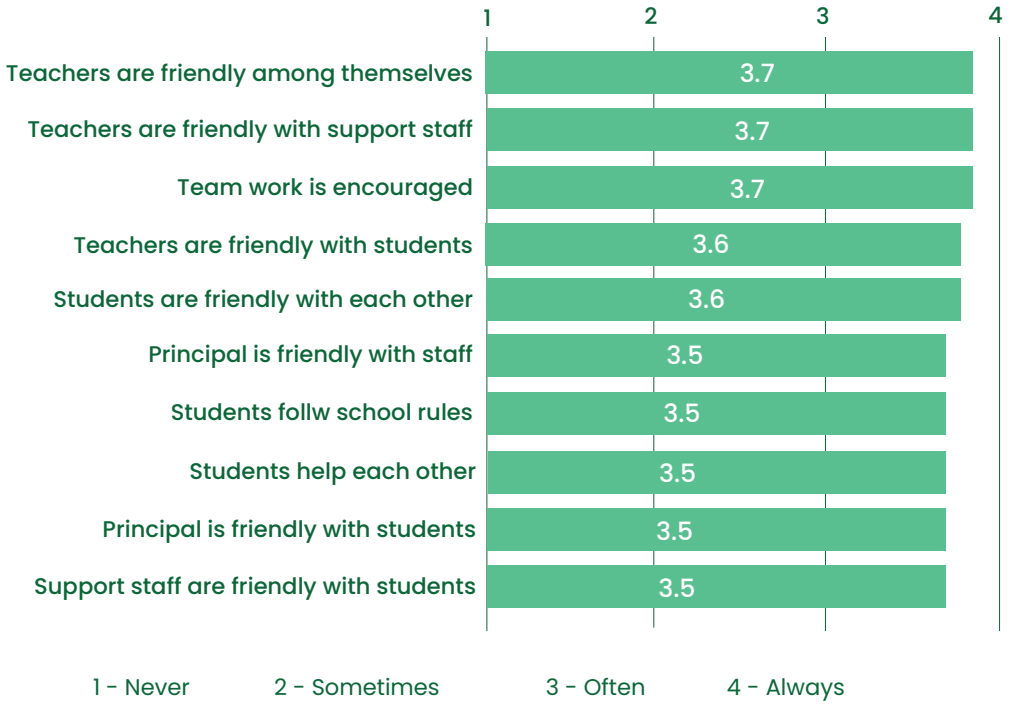
Figure 6.2: Social and emotional environment of school for students



Teachers highly rated the social environment of work. All the statements included on this topic in the questionnaire were rated between an average of 3.5 and 3.7, or close to 4 (always). There is a minor difference in the ratings of 3.5 and 3.7, meaning teachers observed the stated items almost always.

We can conclude that teachers worked in friendly, cooperative, and orderly school environments. The figure below summarises how teachers evaluated each of the statements.

Figure 6.3: Social environment of school

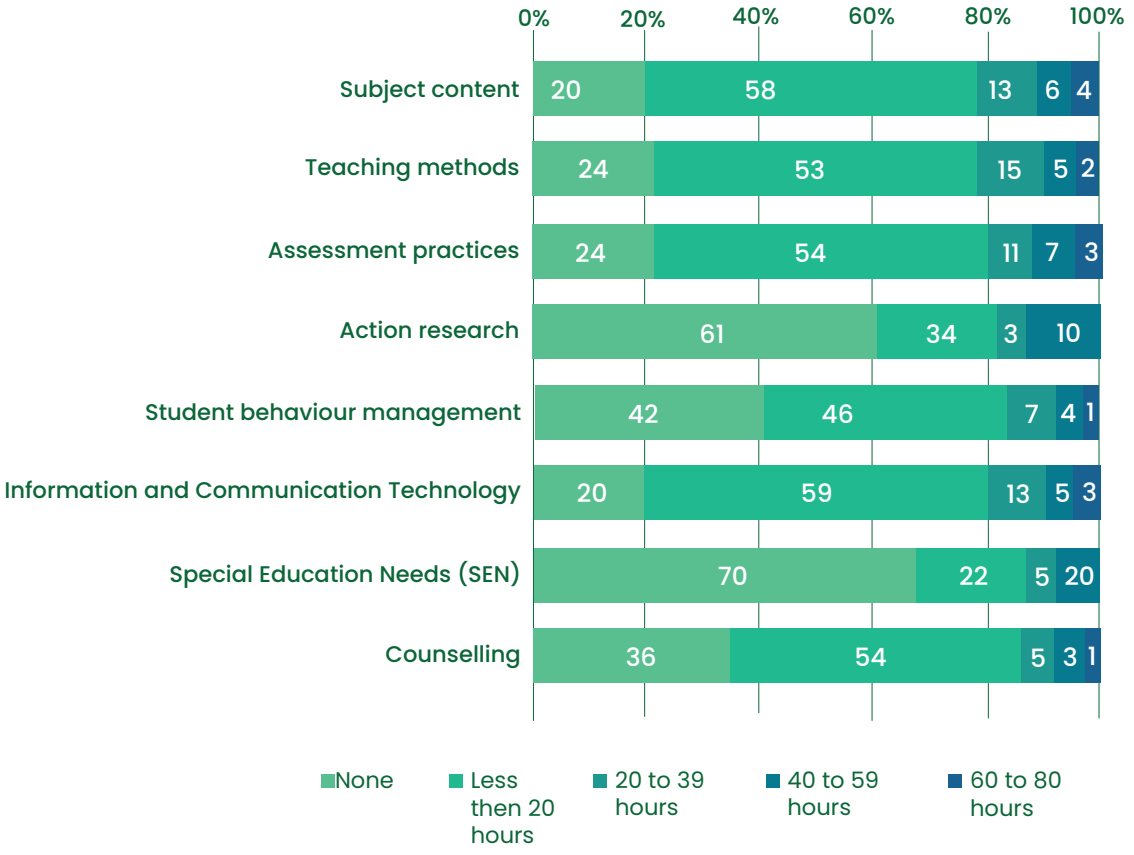


6.1.2. Professional enhancement

Teachers participated in various professional development (PD) programmes in 2021. The following figure displays the number of hours teachers participated in PD programmes on subject content, teaching methods, assessment practices, action research, student behaviour management, internet and communications technology (ICT), special education needs (SEN), and counselling.

The most frequent category of teachers' responses was 'less than 20 hours' of PD opportunities for most of the areas including ICT (59%), subject content (58%), assessment practices (54%), counselling (54%), teaching methods (53%), and student behaviour management (46%). However, many teachers reported that they never attended any PD programme on SEN (70%) and action research (61%). From the responses of teachers on PD participation, teachers spent more hours in PD programmes in areas related to teaching directly, such as subject content and ICT than others.

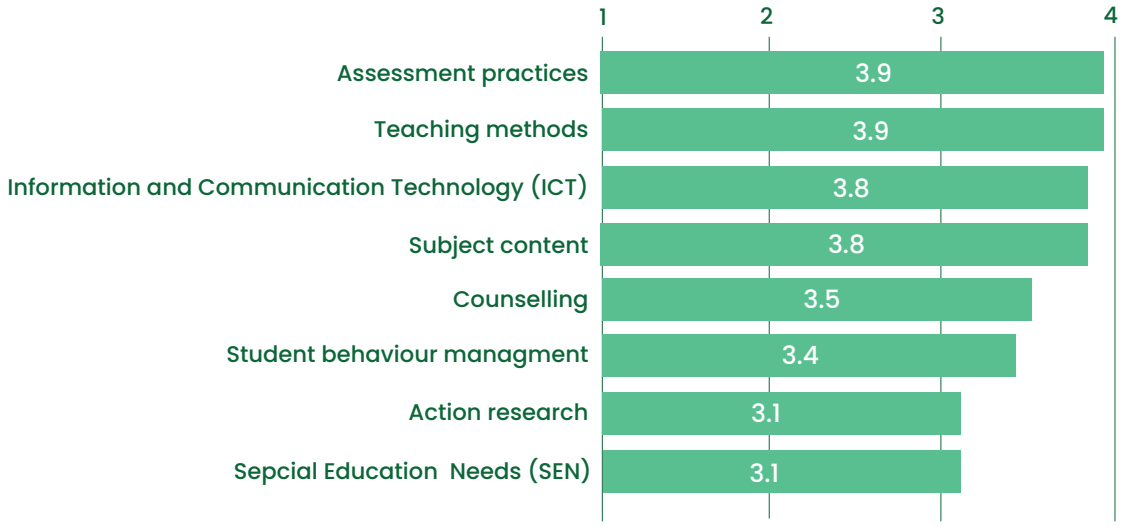
Figure 6.4: Hours of PD programmes received in 2021



Teachers were asked to evaluate the impact of PD programmes on a scale of 1 to 5, 1 being the lowest and 5 being the highest. On average, teachers rated the impact of PD between 3 and 4 on all the areas of PD.

Teachers felt that PD programmes had a higher impact on areas like assessment practices (3.9), teaching methods (3.9), ICT (3.8), and subject content (3.8). The following figure demonstrates the ratings of teachers on the impact of their PD experiences.

Figure 6.5: Impact of PD programmes

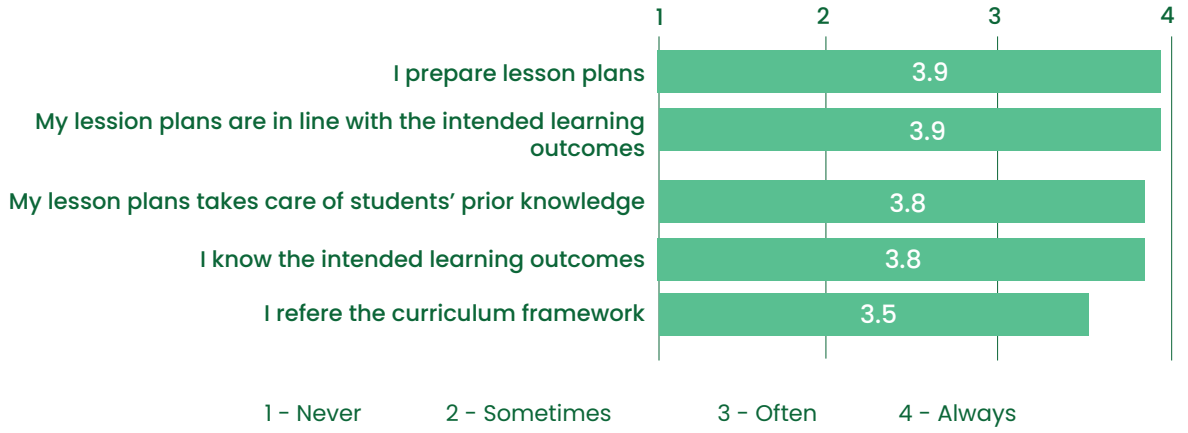


6.1.3. Teaching and assessment practices

The Teacher Questionnaire included questions regarding teachers' teaching practices on five key aspects - emphasising learning intentions, learner centred strategies, reflective practices, resources used, and continuous formative assessment.

Teachers evaluated themselves highly on emphasising learning intentions. All the statements used were rated close to 4 on a scale of 1 (never) to 4 (always), meaning that they prepare lesson plans aligned with intended learning outcomes in advance, take care of students' prior knowledge, and refer to the curriculum framework.

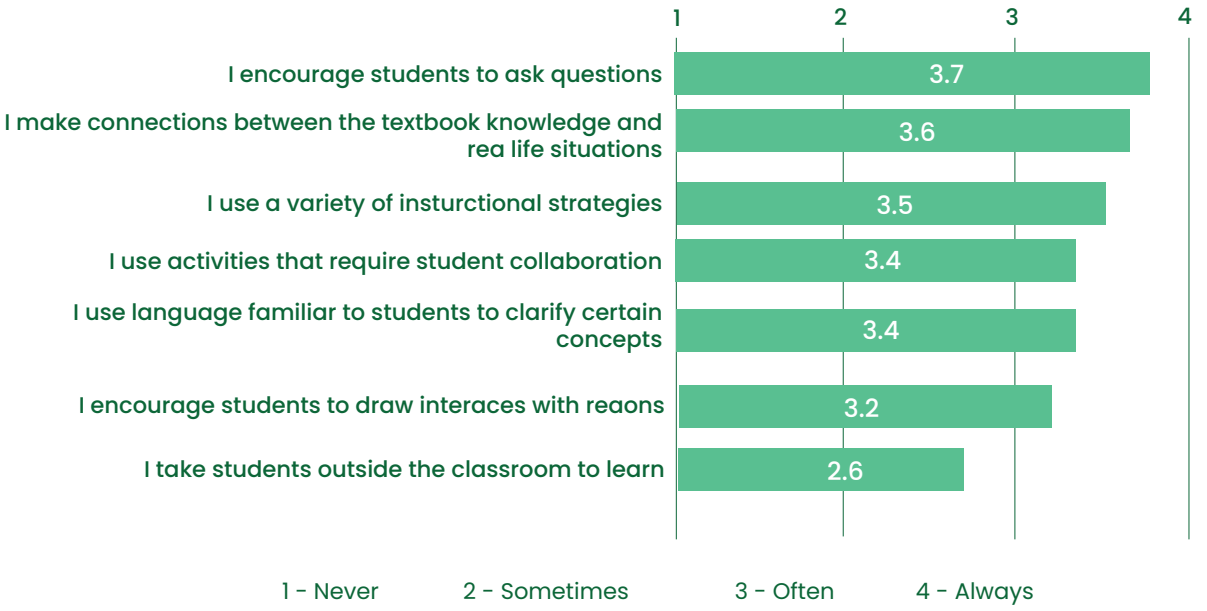
Figure 6.6: Teaching practices – Emphasising learning intentions



Teachers rated all the statements concerning learner centred strategies in teaching between 3 (often) and 4 (always), except the statement, 'I take students outside the classroom to learn' (2.6). It is understandable that teachers could take students outside only on limited occasions considering most of the teaching are supposed to happen within the school and in the classroom.

The most highly rated statements were 'I encourage students to ask questions' (3.7) and 'I make connections between the textbook knowledge and real-life situations' (3.6). This suggests teachers embrace learner centric approaches in their teaching practices.

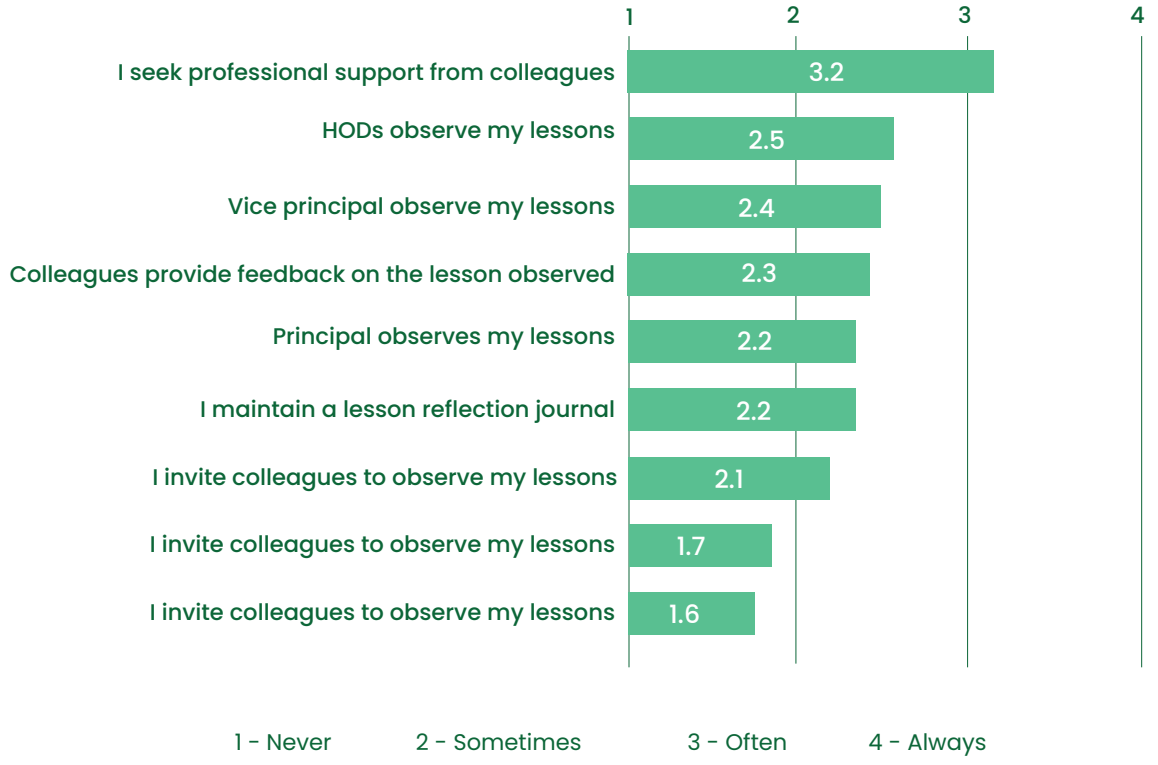
Figure 6.7: Teaching practices - Learner centred strategies



Teachers' ratings on reflective teaching practices were marginally lower than the earlier ones, ranging from 1.6 to 3.2. Among the statements asked, only one statement received a higher average rating than 3 (often), which is 'I seek professional support from colleagues' (3.2).

It seemed rare for teachers to review lessons through video recording (1.7) and conduct action research to improve their teaching (1.6).

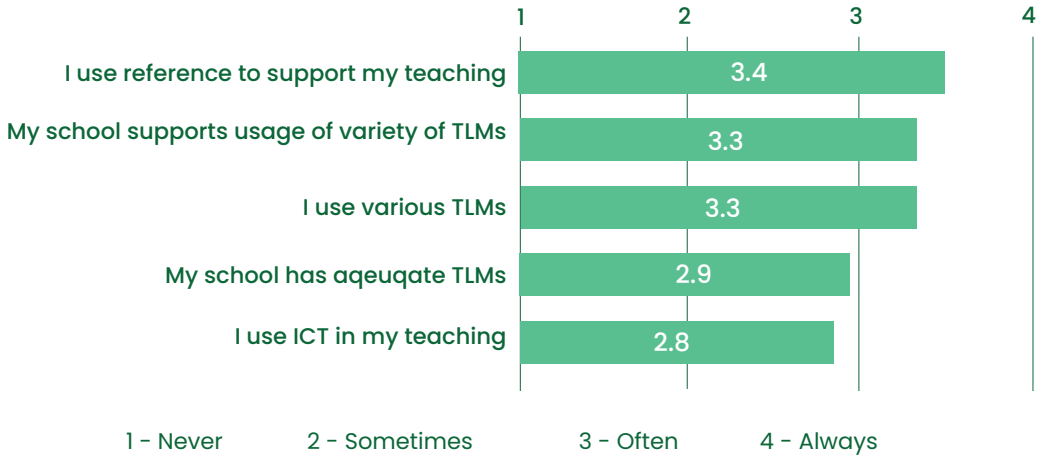
Figure 6.8: Teaching practices - Reflective practices



Teachers reported the use of resources including references and teaching learning materials (TLM) while teaching. The three statements were rated between 3 (often) and 4 (always): 'I use references to support my teaching' (3.4), 'My school supports usage of a variety of TLMs' (3.3), and 'I use various TLMs' (3.3). The rating was relatively lower for teachers' ICT use in teaching (2.8) and the availability of TLMs in schools (2.9).

Further research is recommended to understand the resource availability gaps and accordingly provide adequate resources for teaching including TLMs and ICT.

Figure 6.9: Teaching practices - Resources used

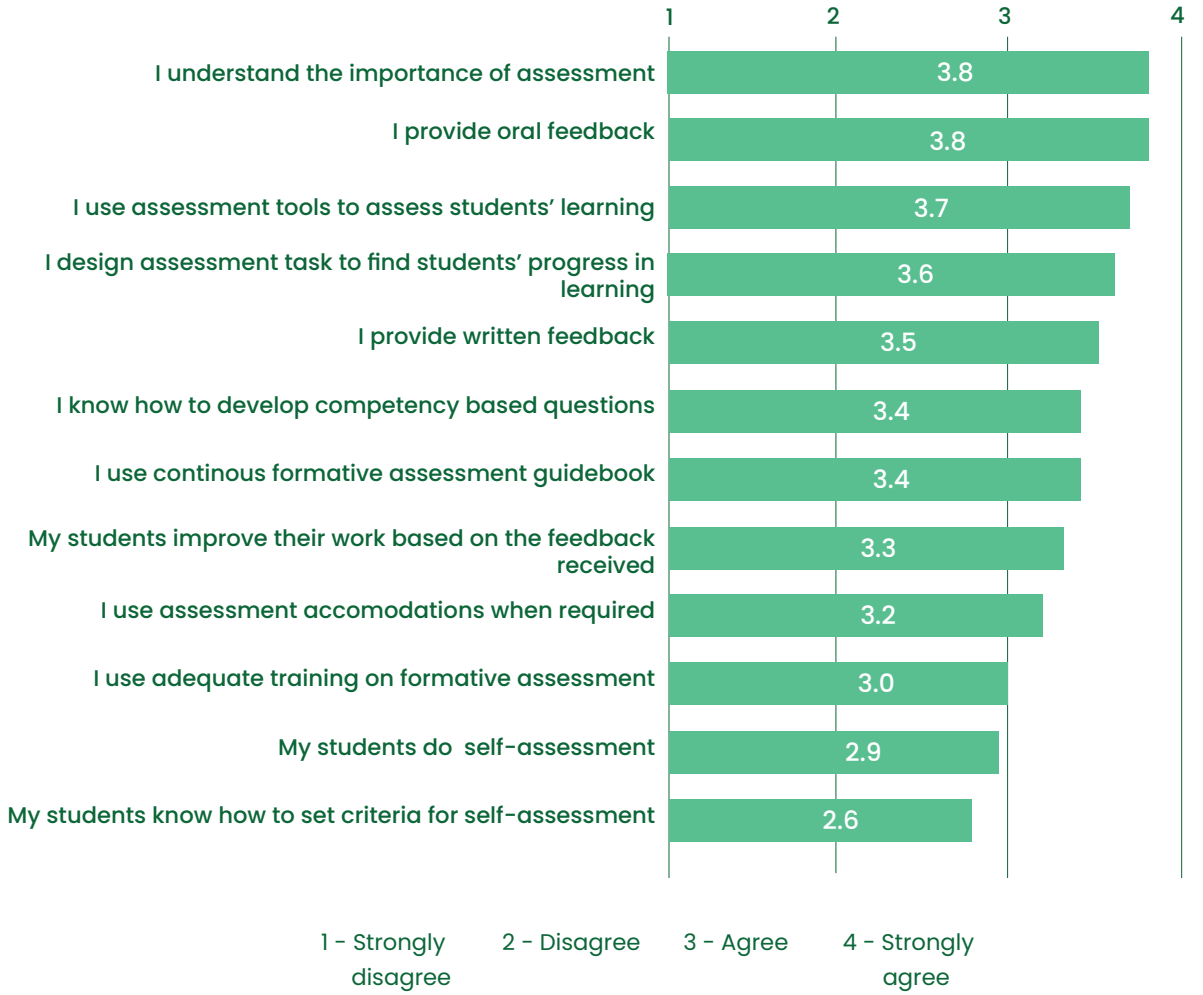


Teachers were asked to evaluate their assessment practices on a scale of 1 to 4, 1 being 'strongly disagree' and 4 being 'strongly agree'. The figure below summarises teachers' ratings on the various statements regarding their assessment practices. On average, teachers understood the importance of assessment (3.8) and they provided oral feedback to students (3.8). The rating was followed by 'I use assessment tools to assess students' learning' (3.7), 'I design assessment tasks to find students' progress in learning' (3.6), and 'I provide written feedback' (3.5), among others.

Considering teachers rated most of the assessment practice statements higher than 3 (agree), it can be derived that they were confident with the listed assessment practices and activities.

Teachers rated lower than 3 on two statements about students' self-assessment. The average rating was 2.9 on the statement, 'My students do self-assessment' and 2.6 on 'My students know how to set criteria for self-assessment'. This may indicate that student self-assessment is an area where teachers need training to guide and engage students.

Figure 6.10: Assessment practices - Continuous formative assessment

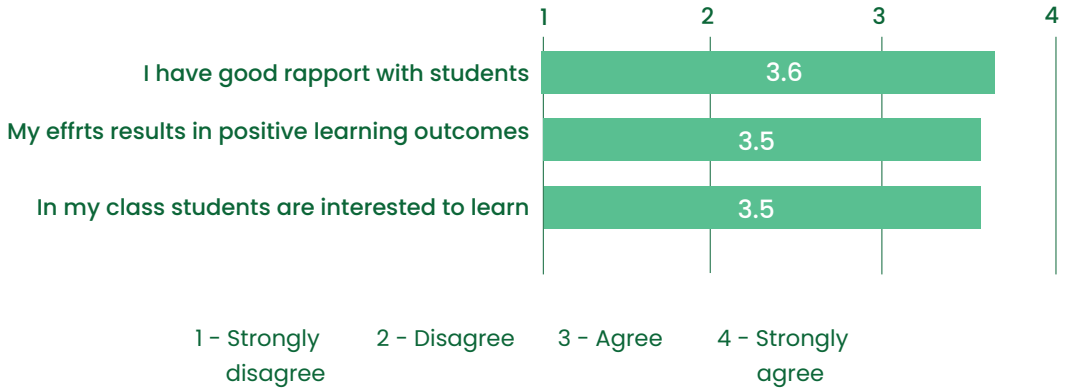


6.1.4. Motivation to teach

Teachers' motivation to teach students was investigated through the Teacher Questionnaire. The Questionnaire asked participants to rate several statements on a scale of 1 (strongly disagree) to 4 (strongly agree).

Teachers rated highly on the statement related to the interest of students. They agreed that they had good rapport with their students (3.6). They also said that their efforts in teaching resulted in positive learning outcomes of students (3.5). Teachers considered that their students were interested to learn in the class (3.5).

Figure 6.11: Motivation to teach – Student interest

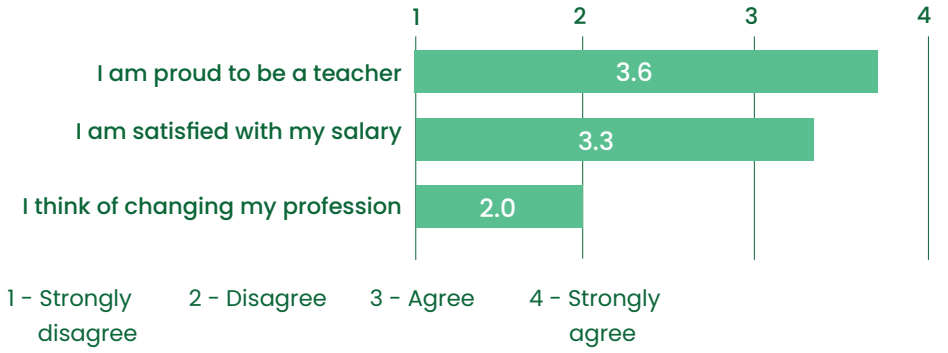


In general, teachers agreed that they had a good relationship with their principals (3.7) and received support from their school principals (3.6), vice principals (3.5), HODs (3.5) and the district education offices (3.1) for their work. Teachers rated higher than 3 (agree) on other statements on support. The statements include 'The management is flexible in addressing my professional needs' (3.3), 'I am recognised appropriately for my initiative' (3.2), and 'I depend on colleagues for professional support' (3.2). There was only one statement whose rating fell under 3, 'There is adequate support from parents' (2.9). This indicates that teachers felt support from parents was less than that from other stakeholders. The following figure summarises the responses from teachers on the support from different groups of stakeholders.

Figure 6.12: Motivation to teach – Support from management, peer and stakeholders

It seems that teachers were satisfied with their job. They agreed that they were proud to be a teacher (3.6) and satisfied with their salaries (3.3). In addition, they did not think of changing their profession (2.0).

Figure 6.13: Motivation to teach – Job satisfaction



When we considered the age of teachers and school location, findings showed slight differences in teachers' ratings of job satisfaction. Younger teachers and/or teachers teaching in rural areas seemed to be considering a change of profession. The tables below display the average ratings of the three job satisfaction statements by the age group of teachers and school location.

Figure 6.14: Job satisfaction by age group – I think of changing my profession

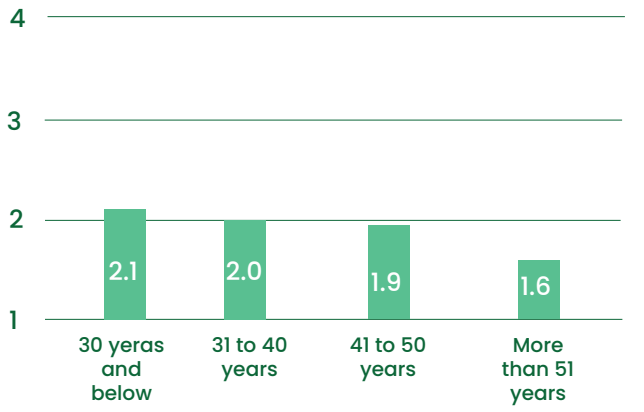
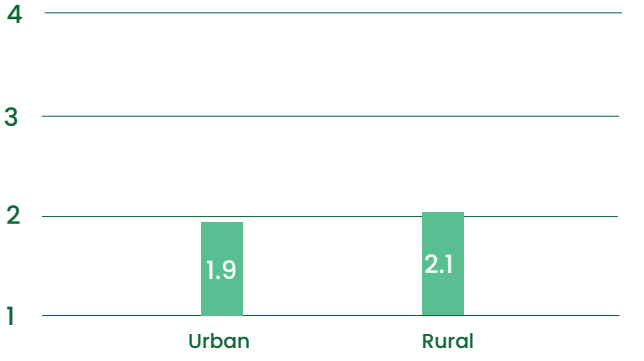
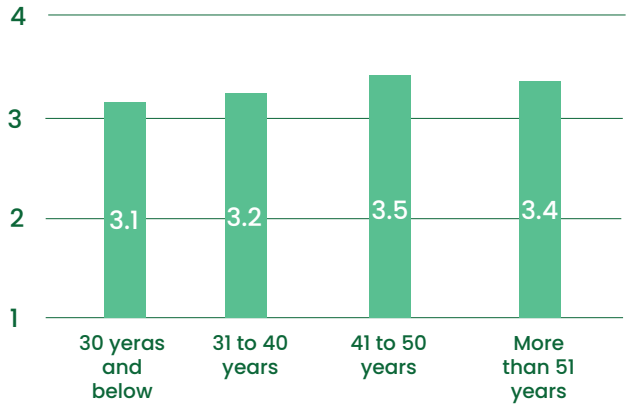


Figure 6.15: Job satisfaction by school location – I think of changing my profession



In addition, older teacher groups expressed satisfaction with their salaries more than younger groups. However, it is to be noticed that the gaps in the ratings were narrow as we can see in the figure below.

Figure 6.16: Job satisfaction by age group – I am satisfied with my salary



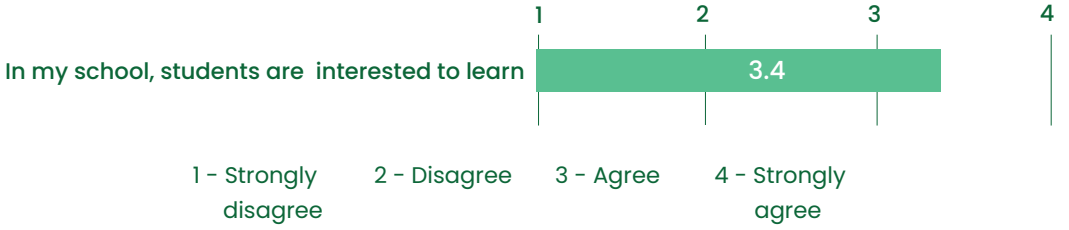
6.2. Enabling environment for principals

This section analyses responses from the Principal Questionnaire collected from 284 schools which participated in NEA 2021. The analysis focuses on investigating principals' attitudes towards the profession, efficacy of teachers, community engagement, social aspects of school environment, monitoring and support, and the nine student attributes.

6.2.1. Attitudes towards the profession

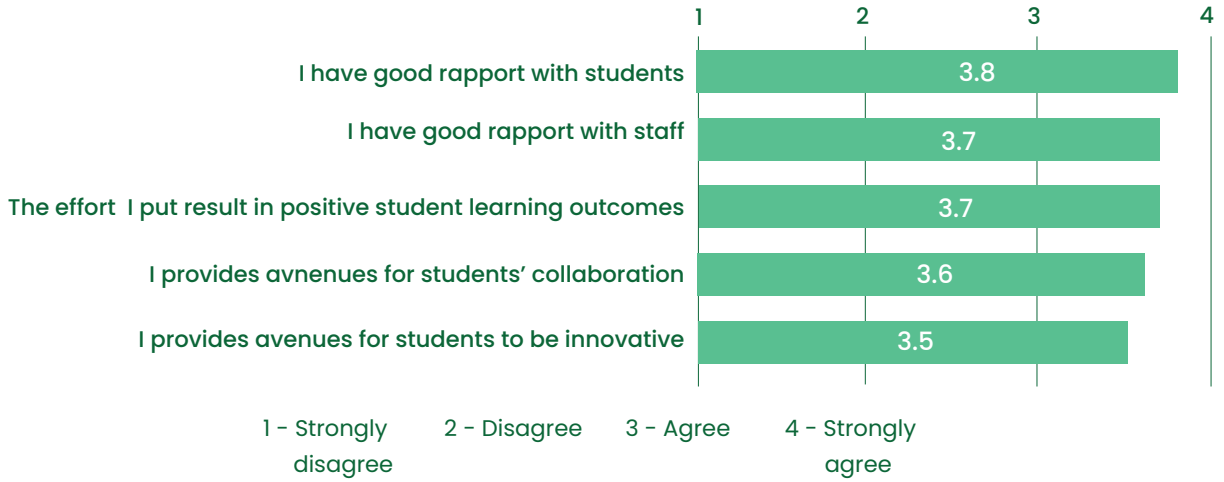
Principals agreed that their students were interested in learning, by giving an average rating of 3.4 on a scale of 1 (strongly disagree) to 4 (strongly agree). This result matches with the responses that came from teachers on students' interests (3.5), discussed in the previous section.

Figure 6.17: Attitudes towards profession – Students' interests



Principals reported they had a good rapport with students (3.8) and staff (3.7). They believed that their efforts resulted in positive student learning outcomes (3.7). Principals helped students to be collaborative (3.6) and innovative (3.5).

Figure 6.18: Attitudes towards profession – Management efficacy

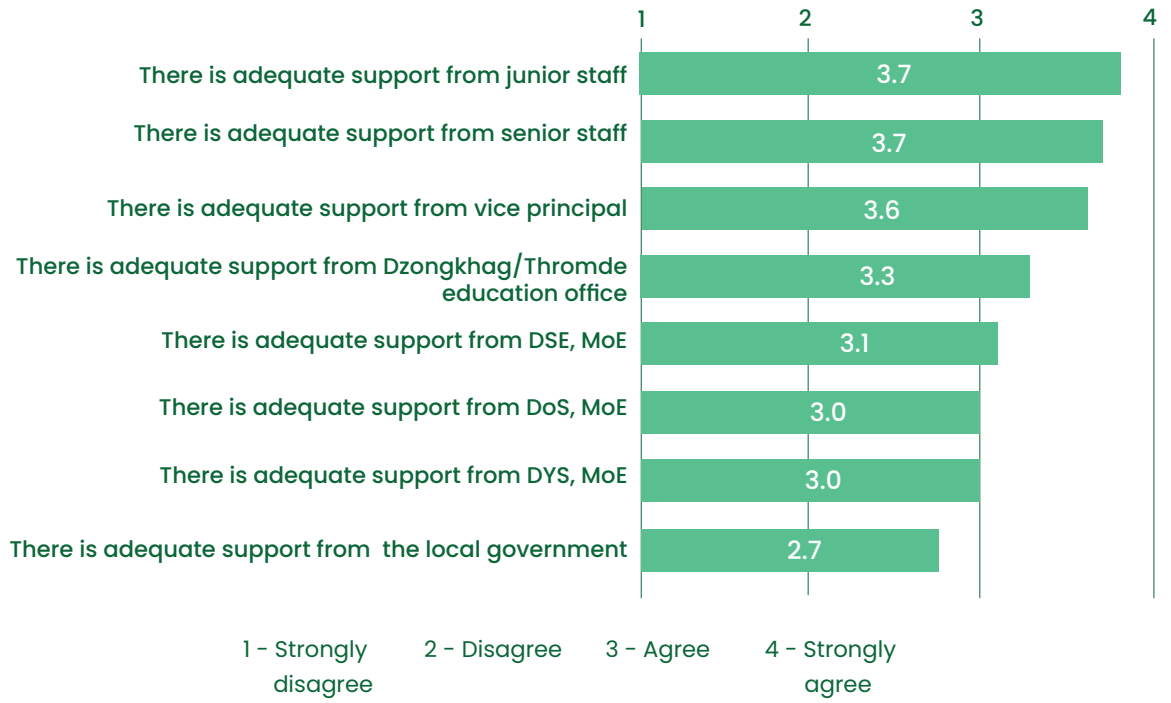


Principals evaluated that they received adequate support from both junior and senior staff in school (3.7), vice principals (3.6), and the district education offices (3.3).

They rated around 3 (agree) on the support from MoE (3.1 from the Department of School Education, 3.0 from the Department of Service, and 3.0 from the Department of Youth and Sports). The support from the local government was rated slightly lower as 2.7, oscillating between 'disagree' and 'agree'.

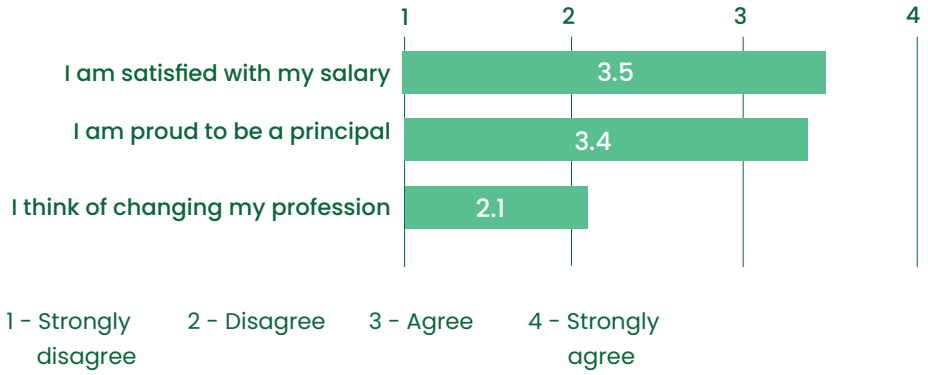
Principals evaluated that they received adequate support from both junior and senior staff in school (3.7), vice principals (3.6), and the district education offices (3.3). They rated around 3 (agree) on the support from MoE (3.1 from the Department of School Education, 3.0 from the Department of Service, and 3.0 from the Department of Youth and Sports). The support from the local government was rated slightly lower as 2.7, oscillating between 'disagree' and 'agree'.

Figure 6.19: Attitudes towards profession – Support from stakeholders



Similar to the results from the Teacher Questionnaire, the results from the Principal Questionnaire confirmed that principals were satisfied with their jobs. The average rating of 3.5 was given to the statement, 'I am satisfied with my salary' and 3.4 to the statement, 'I am proud to be a principal'. It is unlikely that they were thinking of changing their profession which can be understood from the low rating of the statement, 'I think of changing my profession' (2.1).

Figure 6.20: Attitudes towards profession – Job satisfaction

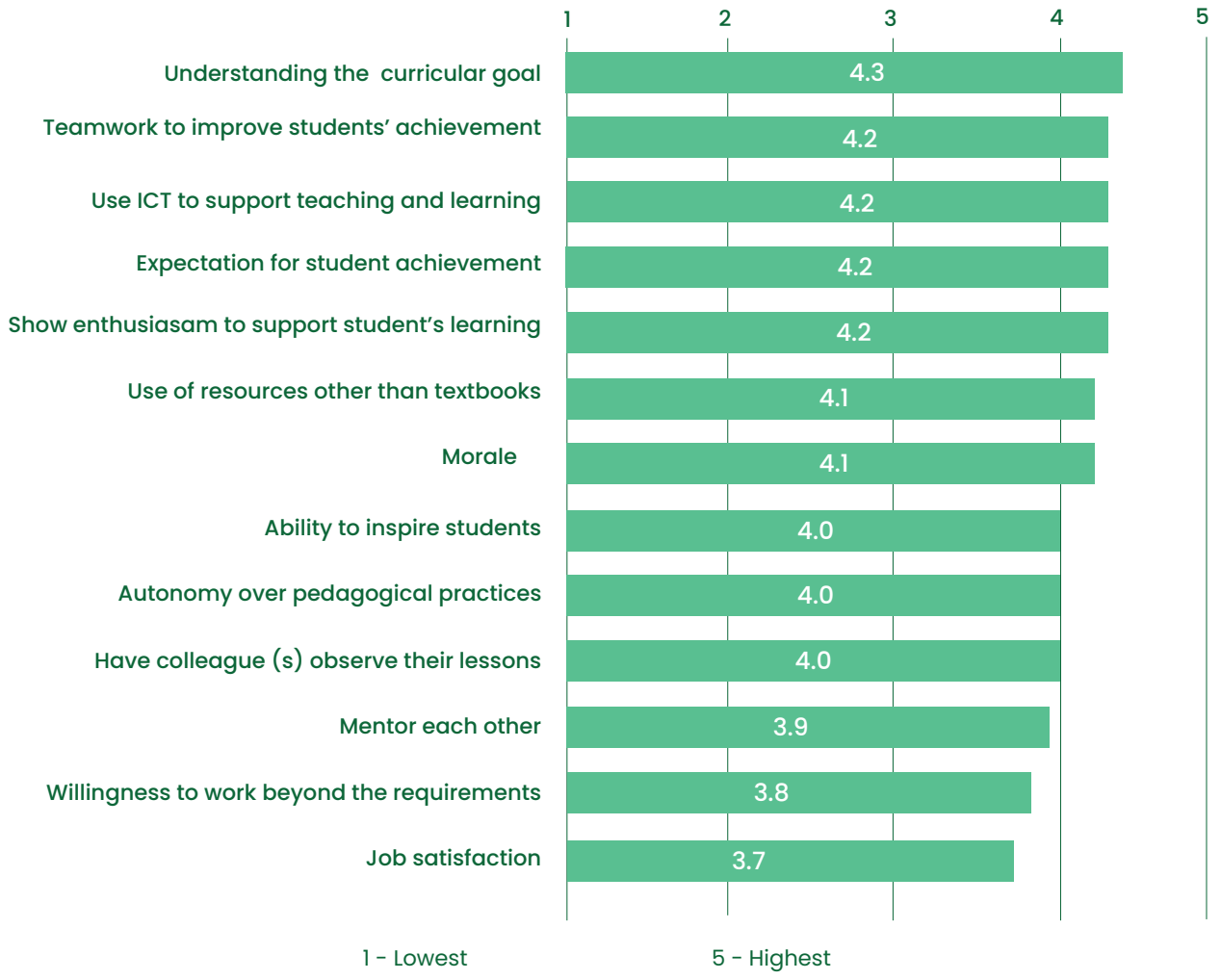


6.2.2. Teacher efficacy

Principals were asked to rate thirteen individual items on the efficacy of teachers on a scale of 1 to 5, 1 being the lowest and 5 being the highest. Among the given statements, principals gave highest rating to teachers on their understanding of curricular goals with the average rating of 4.3.

This was followed by teachers' teamwork to improve students' achievement (4.2), use of ICT (4.2), expectation for student achievement (4.2), and enthusiasm to support students' learning (4.2). The next group of statements were on the use of resources other than textbooks (4.1), morale (4.1), ability to inspire students (4.0), autonomy over pedagogical practices (4.0), and having colleagues to observe their lessons (4.0). On the relatively lower side of the ratings were mentoring (3.9), willingness to work beyond the requirements, and job satisfaction (3.7) of teachers.

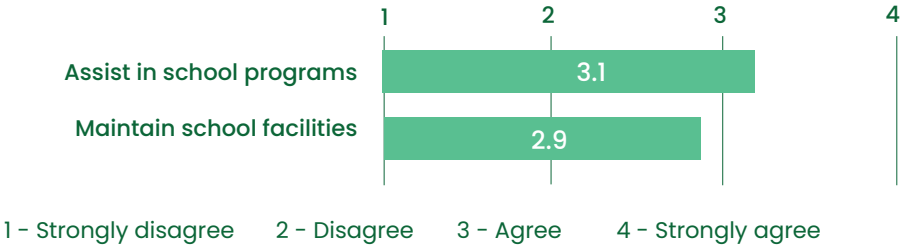
Figure 6.21: Teacher efficacy



6.2.3. Community engagement

Principals indicated the level of community engagement by rating two statements. They agreed that the community assisted in school programmes (3.1) and maintained school facilities (2.9).

Figure 6.22: Community engagement

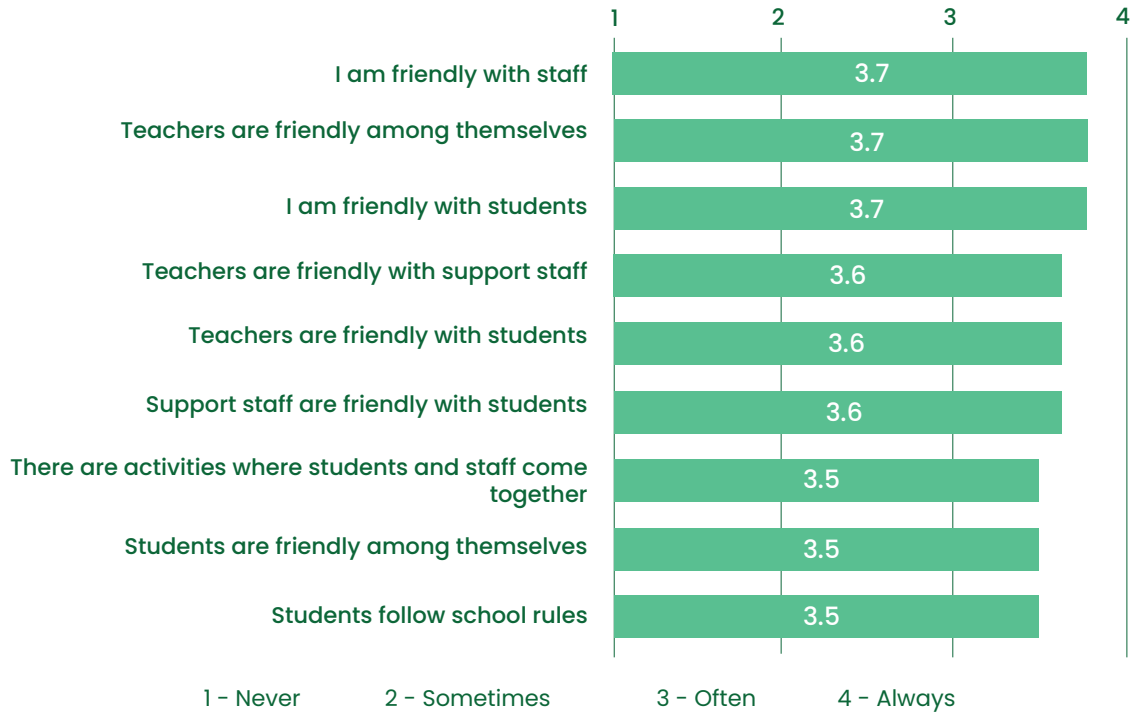


6.2.4. School social environment

Principals considered the social environment in their schools friendly. They evaluated that they were friendly with staff (3.7) and students (3.7) on a four-point scale (1-never, 2 sometimes, 3-often, 4-always).

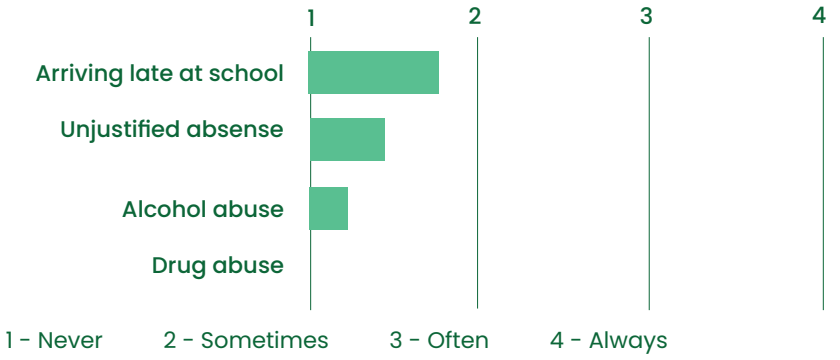
They agreed that their teachers were friendly among themselves (3.7), with support staff (3.6) and students (3.6). It is reported that students were friendly among themselves (3.5) and followed school rules (3.5) most of times. From the responses, it is concluded that principals worked in friendly and interactive school environments. The figure below summarises how teachers evaluated each of the statements.

Figure 6.23: Social environment of school



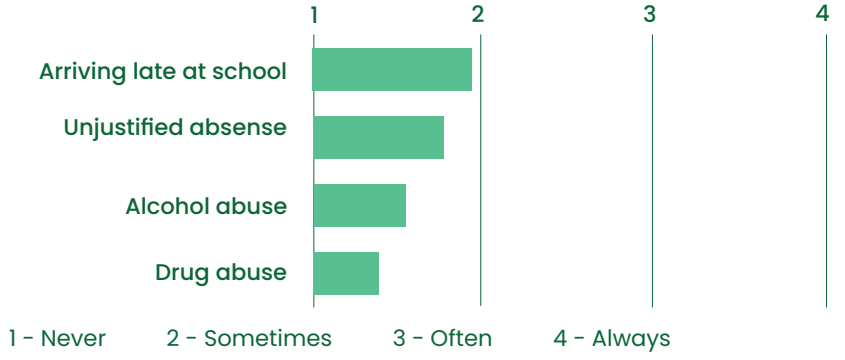
Principals evaluated the behaviour of their teachers positively, by disagreeing with the negative behavioural items listed in the questionnaire on a scale of 1 (strongly disagree) to 4 (strongly agree), including arriving late to school (1.8), unjustified absence (1.3), alcohol abuse (1.2), and drug abuse (1.0).

Figure 6.24: Teacher social behavior



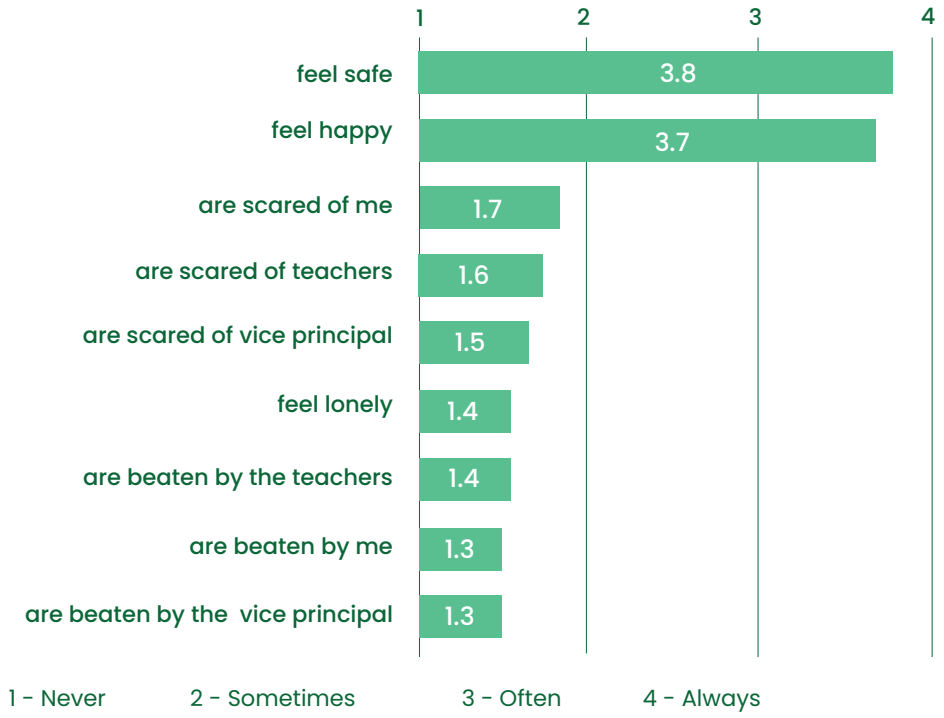
A similar pattern was visible from principals' responses on the behaviour of their students, but with slightly elevated ratings. On average, principals disagreed with facing behavioural problems of students such as arriving late at the school (2.0), unjustified absence (1.7), drug abuse (1.4), and alcohol abuse (1.3).

Figure 6.25: Student social behavior



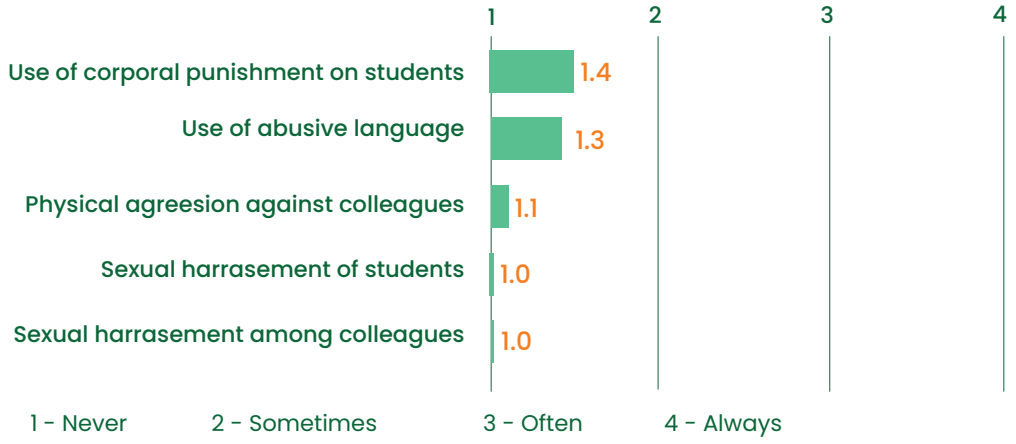
On a scale of 1 (strongly disagree) to 4 (strongly agree), principals were asked to rate how their students feel in the school. Principals evaluated positively on student safety (3.8) and happiness (3.7). They disagreed that students were scared of principals (1.7), vice principals (1.5), and teachers (1.6). They also objected to the statement related to beating by principals (1.3), vice principals (1.3), and teachers (1.4).

Figure 6.26: Social environment of school for students



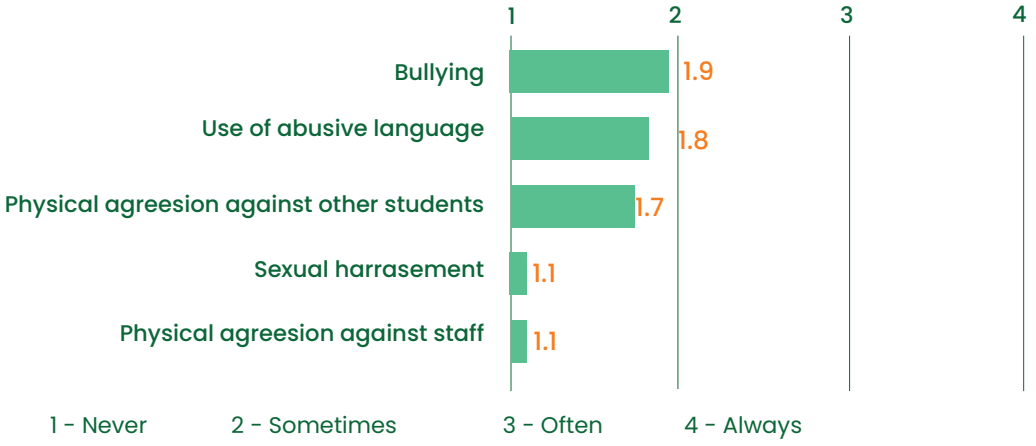
Principals strongly disagreed with the statements on teachers displaying negative behaviours in their schools. The ratings of the items were between 1 to 1.4, indicating they rarely observed any incident of the listed behaviours, including the use of corporal punishment on students (1.4), use of abusive language (1.3), physical aggression against colleagues (1.1), sexual harassment of students (1.0), and sexual harassment among colleagues (1.0).

Figure 6.27: Teacher emotional behavior



Principals disagreed with the negative emotional behaviour of their students on a scale of 1 (strongly disagree) to 4 (strongly agree). They rated bullying among students as 1.9, close to 2 (disagree), followed by the use of abusive language (1.8), physical aggression against other students (1.7), sexual harassment (1.1), and physical aggression against staff (1.1).

Figure 6.28: Student emotional behavior

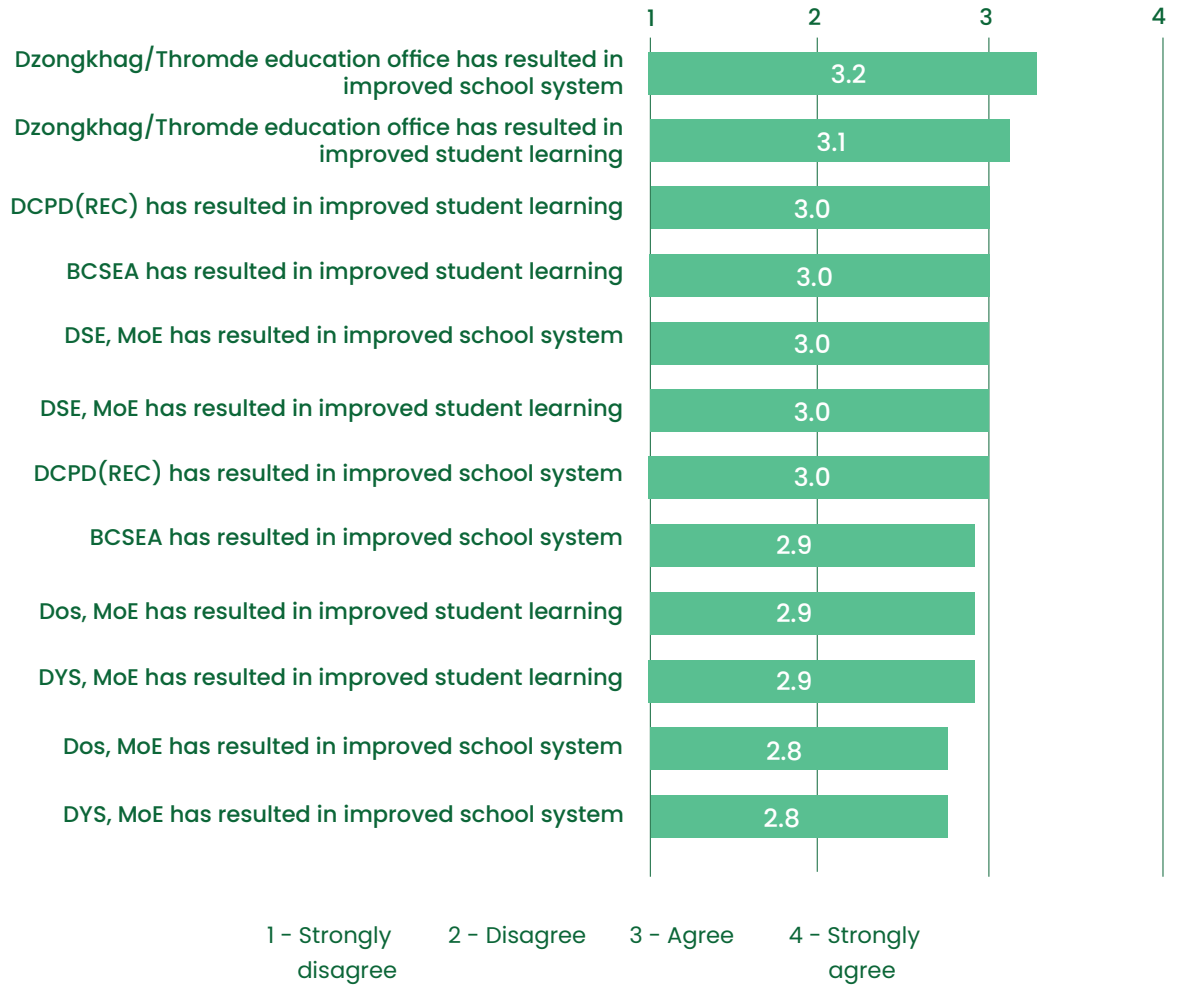


6.2.5. Monitoring and support

The questionnaire asked participants to indicate the level of agreement on the impact of monitoring and support received in 2021 from the listed stakeholders, including the district education office, REC, BCSEA and MoE. The average ratings of principals ranged from 2.8 to 3.2 around the rating of 3 (agree).

Among the highest rated statements were 'The Dzongkhag/Thromde education office has resulted in improved school system' (3.2) and 'The Dzongkhag/Thromde education office has resulted in an improved student learning' (3.1), whereas the statements, 'DYS, MoE has resulted in an improved school system' (2.8) and 'DoS, MoE has resulted in an improved school system' (2.8), were rated relatively lower. It might be possible that the support from district education offices was more visible to school principals. The graph that follows illustrates the average ratings from principals on each of the statements.

Figure 6.29: Monitoring and support



6.2.6. Nine student attributes

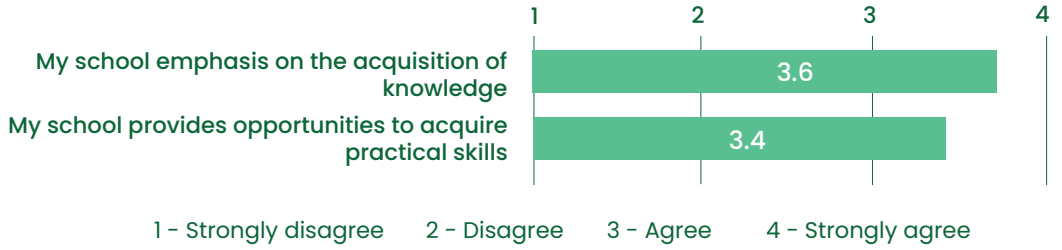
The Principal Questionnaire included questions regarding the nine student attributes in order to understand how the attributes were promoted and nurtured in schools. The nine attributes are:

- knowledge and understanding
- intellectual competence
- communicative competence
- enduring habits of lifelong learning
- family community and national values
- spirituality and character
- physical wellbeing
- leadership competence
- world readiness

Principals were asked to evaluate the nine attributes on a scale of 1 (strongly disagree) to 4 (strongly agree) on the given statements.

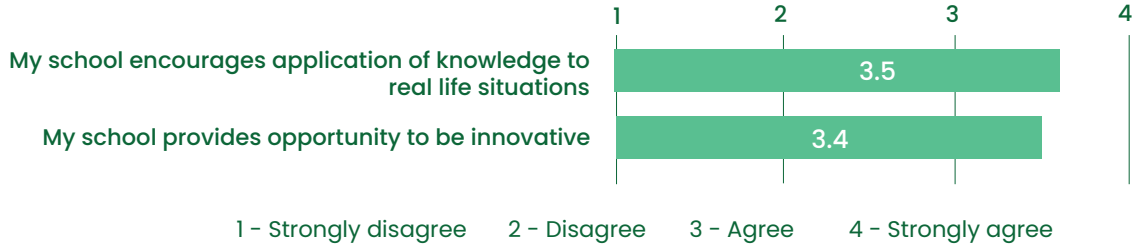
The ratings of principals on the statements regarding the first attribute, knowledge and understanding, were between 'agree' and 'strongly agree.' The average rating was 3.6 on the statement, 'My school emphasises on the acquisition of knowledge' and the rating on 'My school provides opportunities to acquire practical skills' was 3.4.

Figure 6.30: Knowledge and understanding



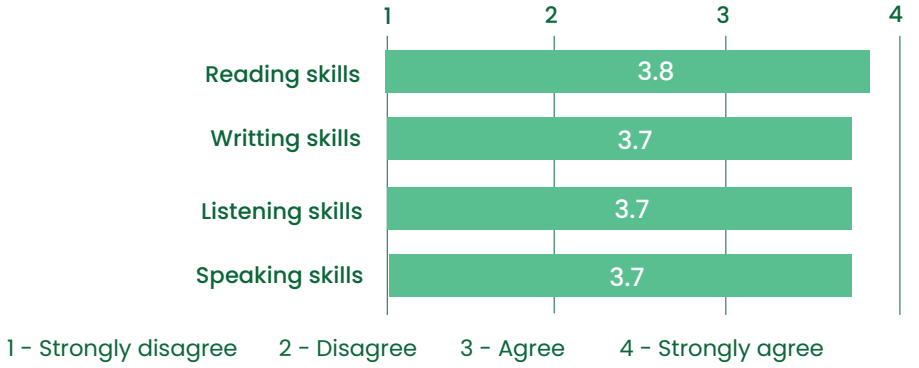
Principals rated the statements about intellectual competence of their students between 'agree' and 'strongly agree'. They agreed that their schools encouraged the application of knowledge to real life situations (3.5) and provided students the opportunities to be innovative (3.4).

Figure 6.31: Intellectual competence



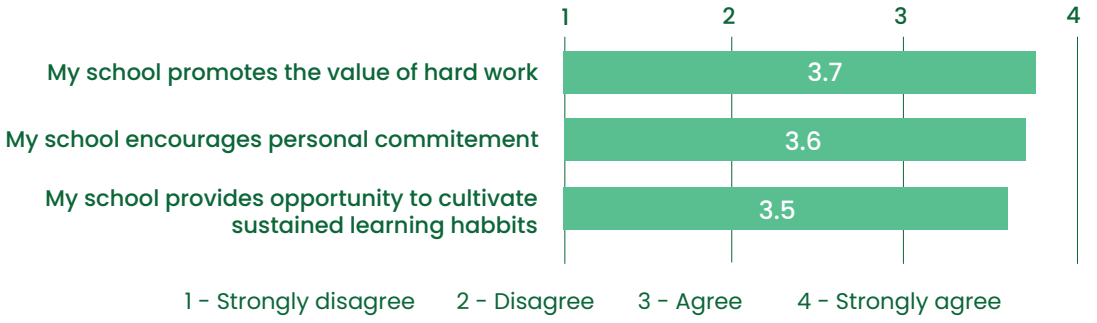
Principals evaluated that their schools focused on the development of communicative competence. Their answers to the rating on the communicative competence were close to 'strongly agree' with the average rating of 3.8 on reading skills and 3.7 on writing, listening, and speaking skills.

Figure 6.32: Communicative competence



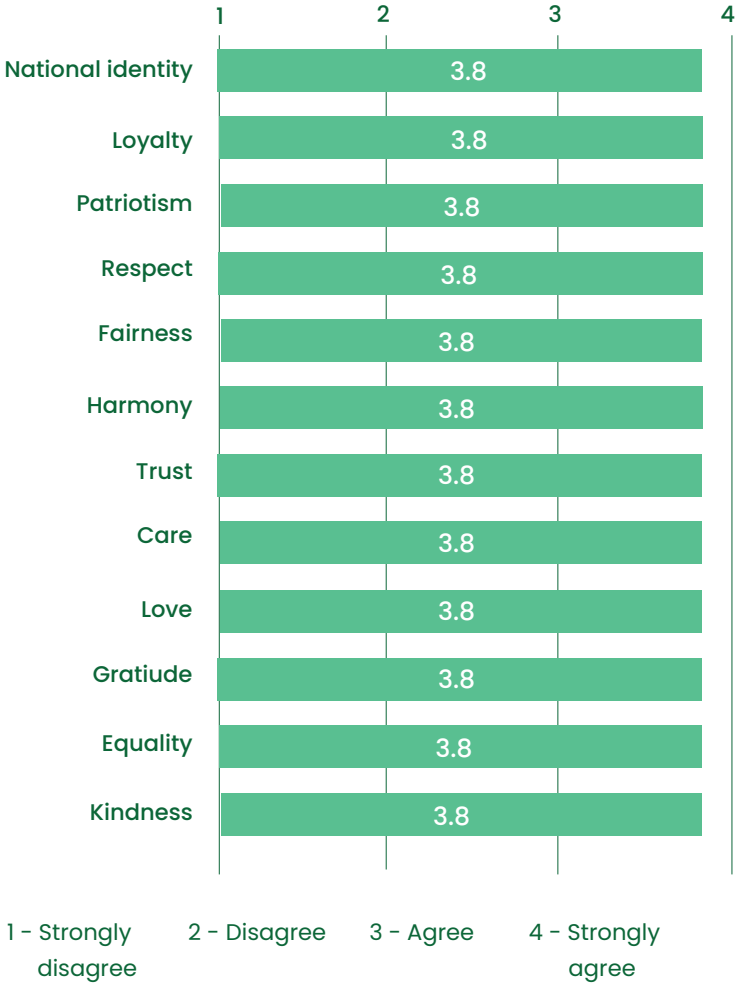
Principals rated the statements about habits of lifelong learning between 3.5 and 3.7, meaning they agreed their schools promoted the attribute. The statement, 'My school promotes the value of hard work' was rated the highest (3.7), followed by 'My school encourages personal commitment' (3.6), and 'My school provides opportunity to cultivate sustained learning habits' (3.5).

Figure 6.33: Enduring habits of lifelong learning



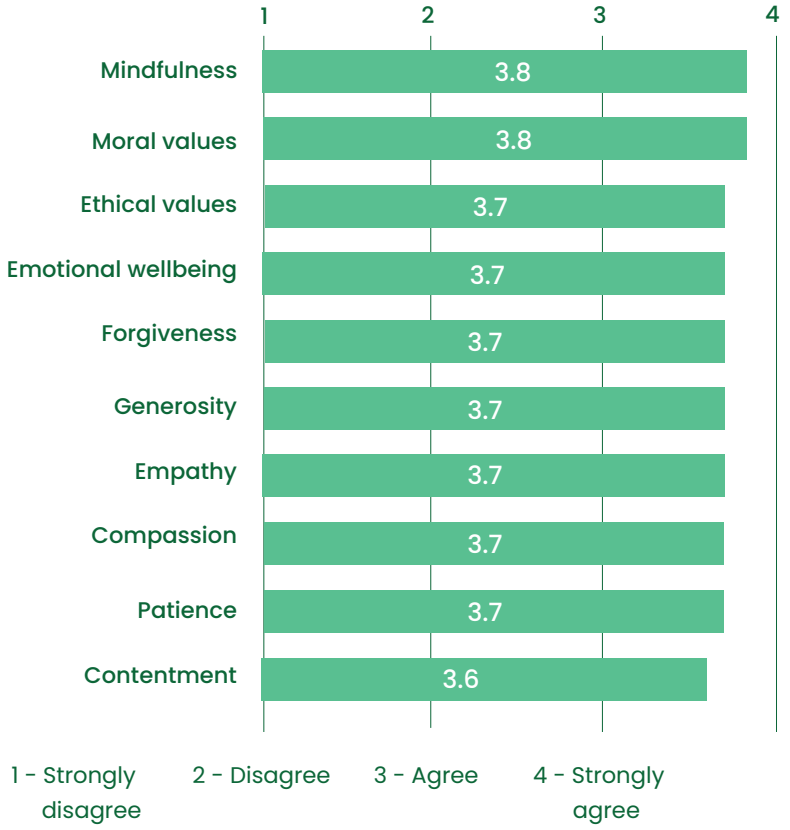
Principals strongly agreed that their schools promoted family, community, and national values. A total of twelve such values were asked to be rated and they received the average rating of 3.8, very close to 4 (strongly agree). The following figure shows the values and their ratings by principals.

Figure 6.29: Monitoring and support



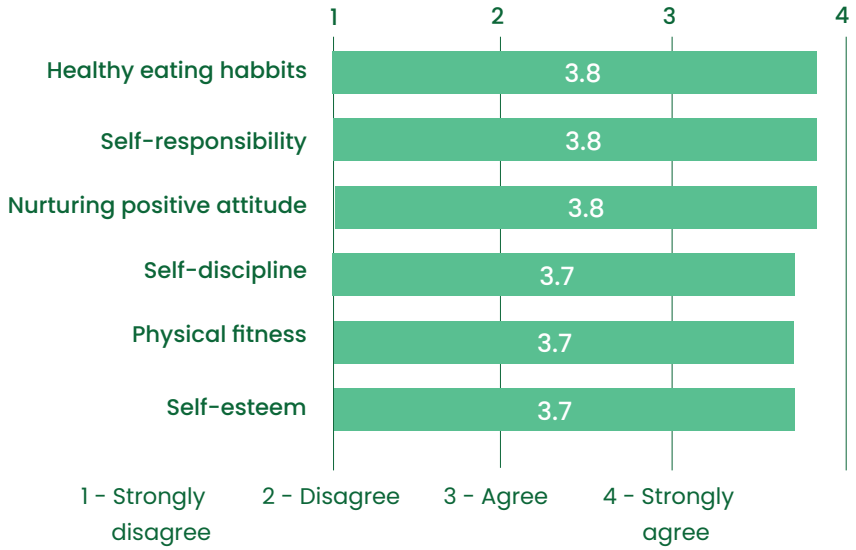
Principals rated the statements about spirituality and character between 3.6 and 3.8, meaning they believed that schools promoted the related attributes. They agreed that their schools promoted the ten listed values regarding sprituality and student character. The figure below demonstrates the values and their average ratings by principals.

Figure 6.35: Spirituality and character



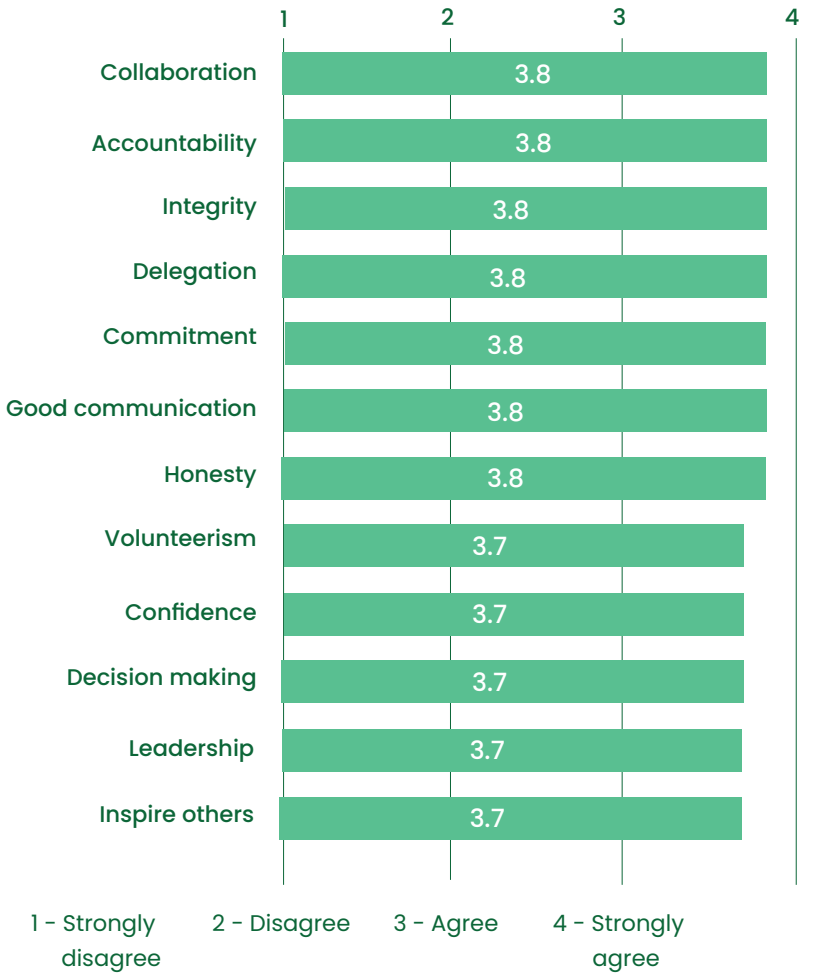
Principals strongly agreed that their schools promoted physical wellbeing. In their schools, healthy eating habits (3.8), self-reponsibility (3.8) and positive attitudes (3.8), self-discipline (3.7), fitness (3.7), and self-esteem (3.7) were promoted.

Figure 6.36: Physical wellbeing



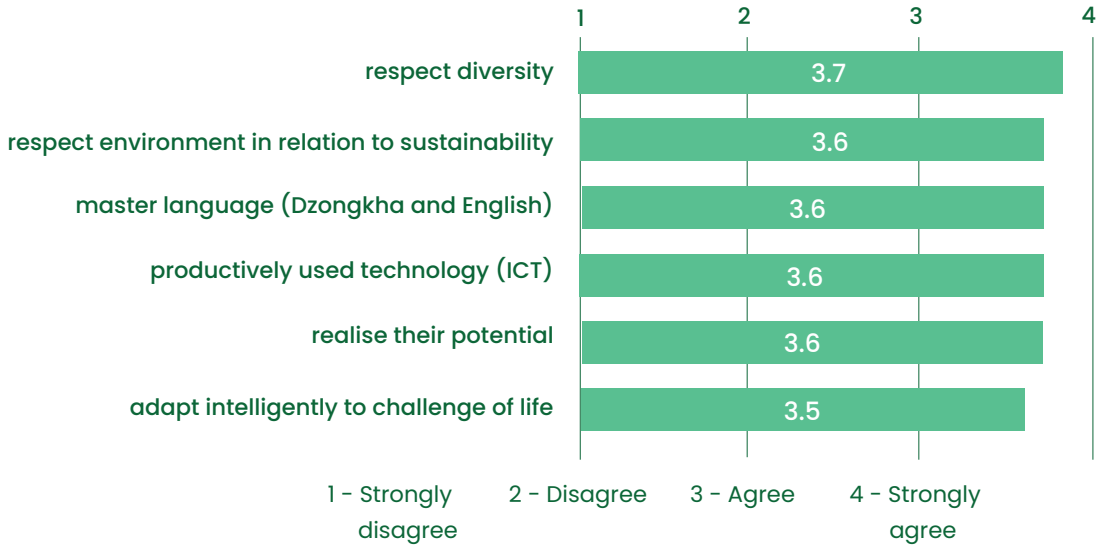
Principals strongly agreed that their schools promoted leadership competence. They rated all the twelve values related to leadership competence between 3.7 and 3.8, close to 4 (strongly agree). The following figure demonstrates the leadership values and their ratings by principals.

Figure 6.37: Leadership competence



Principals evaluated the statements on the promotion of world readiness in schools between 3.5 and 3.7. They agreed that their schools prepared students to respect diversity (3.7) and the environment (3.6), master Dzongkha and English (3.6), productively use ICT (3.6), realise their potential (3.6), and adapt to the challenges of life (3.5).

Figure 6.38: World readiness



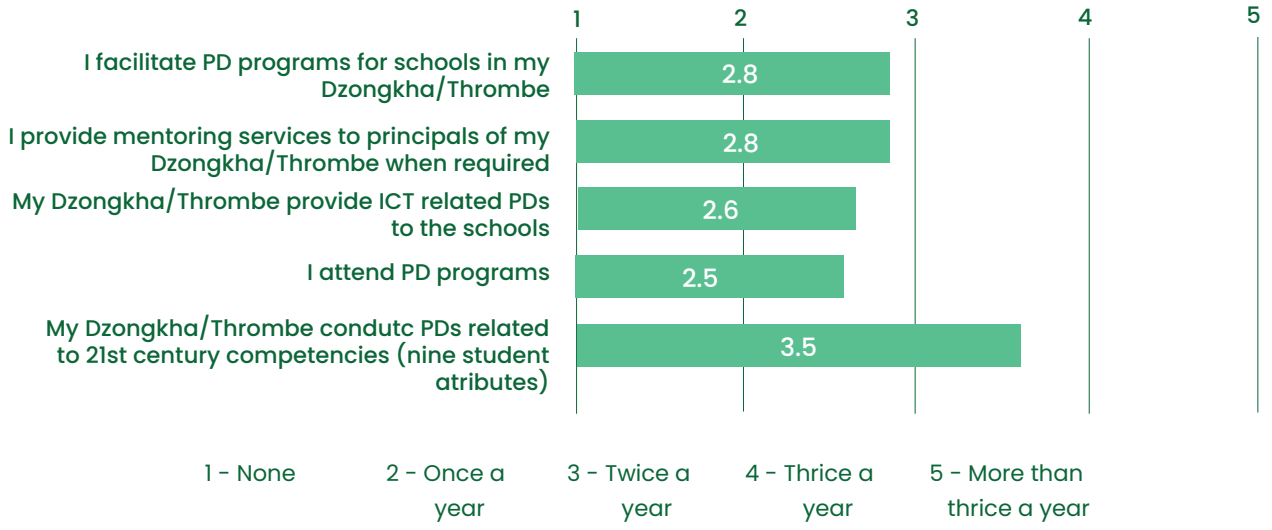
6.3. Support from districts

The questionnaire for Chief District Education Officers (CDEOs) and Chief Thromde Education Officers (CTEOs) helped to gain insights on factors affecting the educational outcomes of students participating in NEA 2021. CDEOs and CTEOs from all 24 districts responded to the questionnaire. This section reports the results from the analysis of the CDEO/CTEO Questionnaire.

6.3.1. Enabling professional development

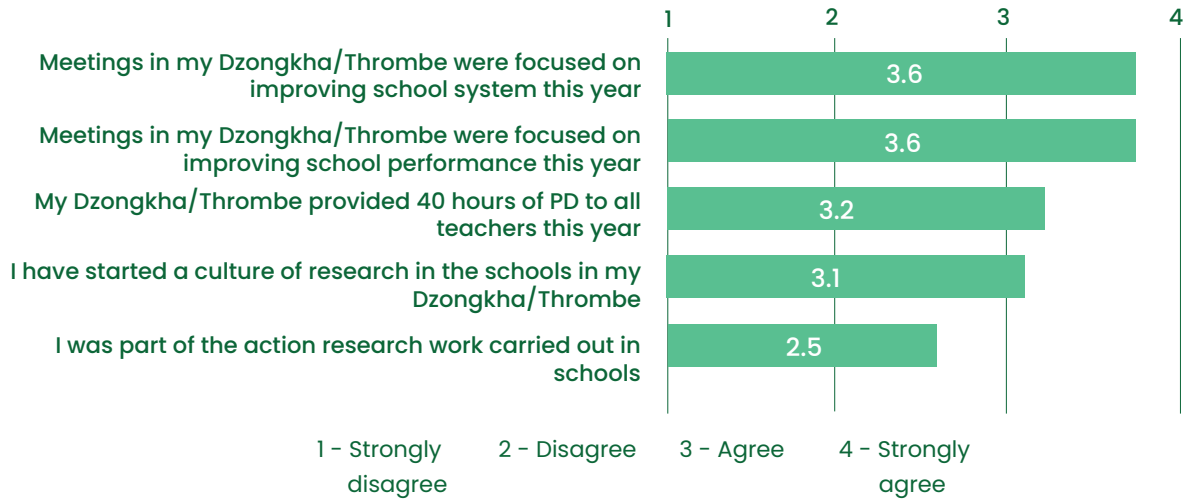
CDEOs and CTEOs were asked to indicate the frequency of given professional development activities on a scale of 1 to 5, 1 being 'none', 2 being 'once a year', 3 being 'twice a year', 4 being 'thrice a year', and 5 being 'more than thrice a year'. On average, participants rated 2.8 to the statements, 'I facilitate PD programmes for schools in my Dzongkhag/ Thromde' and 'I provide mentoring services to principals of my Dzongkhag/Thromde when required', close to the rating 3 which indicates 'twice a year'. The rating was followed by 'My Dzongkhag/Thromde provides ICT related PDs to the schools' (2.6), 'I attend PD programmes' (2.5), and 'My Dzongkhag/Thromde conducts PDs related to 21st century competencies' (2.4), indicating the activities happened once or twice a year on average.

Figure 6.39: Professional development activities



CDEOs and CTEOs were asked to indicate the level of agreement for the statements related to professional development on a scale of 1 (strongly disagree) to 4 (strongly agree). They agreed that the meetings in their districts were focused on improving school systems (3.6) and school performance (3.6) in 2021. On average, they agreed that their districts provided 40 hours of PD to all teachers in the assessment year (3.2) and started a culture of research in schools in their districts (3.1). However, in general, they took a neutral stance in rating the statement, 'I was part of the action research work carried out in schools' (2.5).

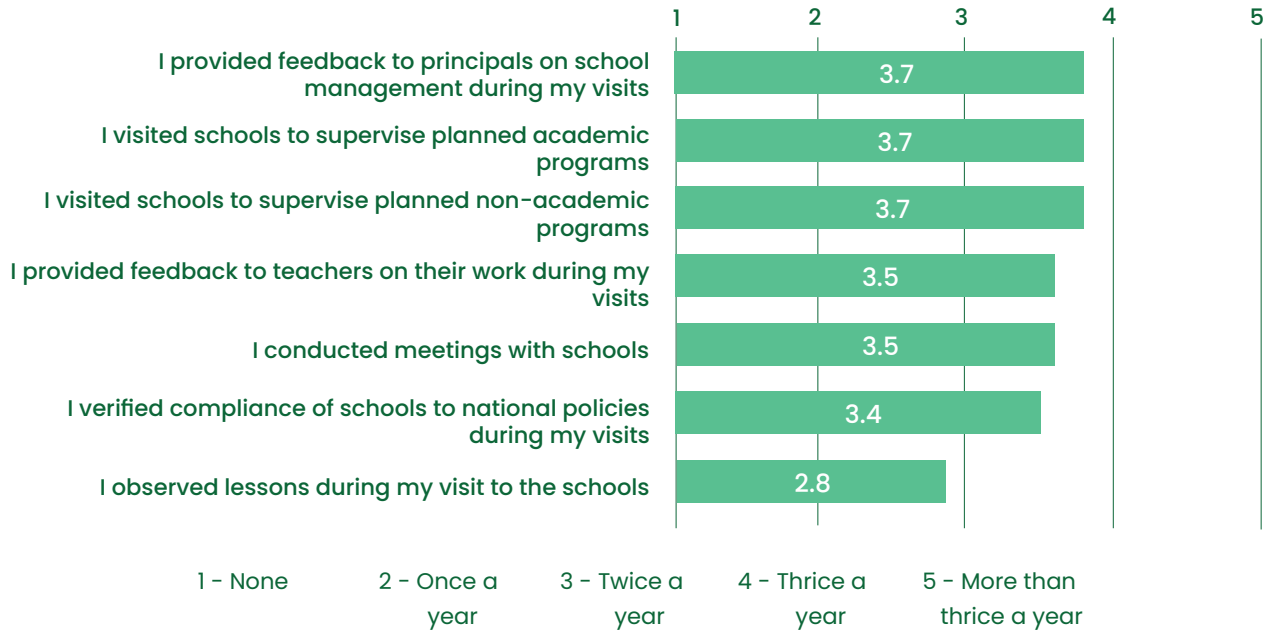
Figure 6.40: Enabling professional development



6.3.2. Professional supervision

CDEOs and CTEOs were asked to indicate the frequency of professional supervision activities in their districts in 2021 on a five-point scale, 1 being 'none', 2 being 'once a year', 3 being 'twice a year', 4 being 'thrice a year', and 5 being 'more than thrice a year'. They rated the statements, 'I provided feedback to principals on school management during my visits', 'I visited schools to supervise planned academic programmes', and 'I visited schools to supervise planned non-academic programmes', an average rating of 3.7, suggesting these activities were conducted almost thrice a year. On average, CDEOs and CTEOs provided feedback to teachers on their work (3.5), conducted meetings with schools (3.5), and verified compliance of schools with national policies (3.4) twice or thrice a year. They indicated that they observed classroom lessons during their school visits close to twice a year (2.8).

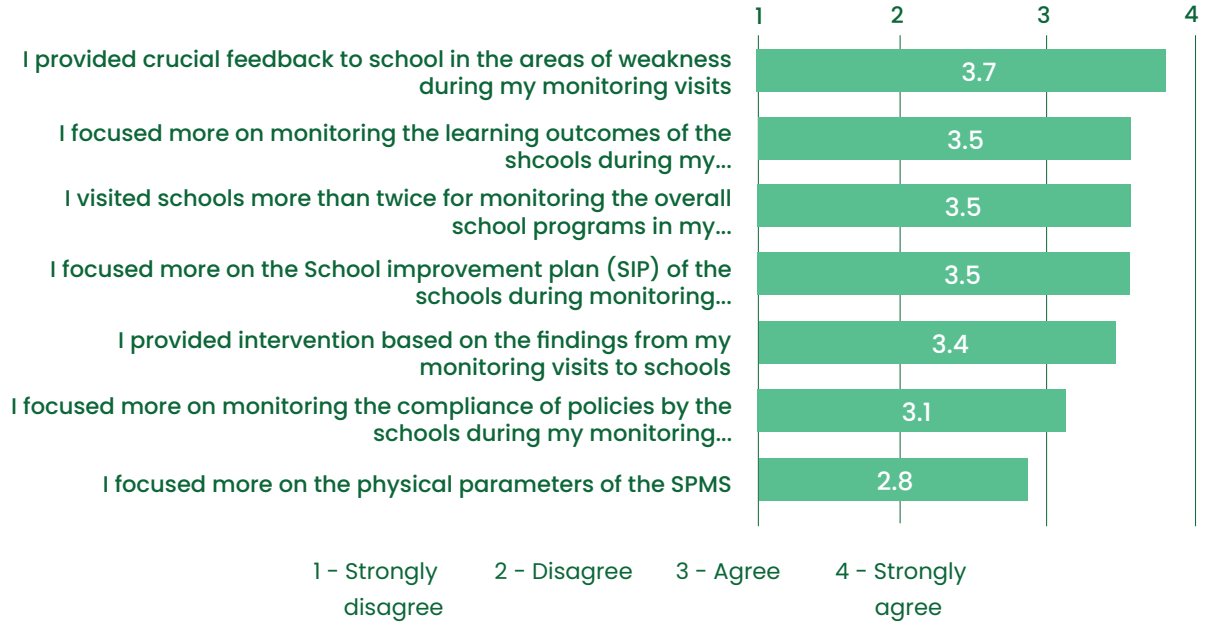
Figure 6.41: Professional supervision



6.3.3. Periodic monitoring

A total of seven statements were given to CDEOs and CTEOs to evaluate their monitoring activities on a scale of 1 (strongly disagree) to 4 (strongly agree). The highest rated statement was 'I provided crucial feedback to schools in the areas of weakness during my monitoring visits' with the average rating of 3.7, which means participants strongly agreed about this activity. On average, they rated between 3 agree) and 4 (strongly agree) on the statements, 'I focused more on monitoring the learning outcomes of the schools during my monitoring visits' (3.5), 'I visited schools more than twice for monitoring the overall school programmes in my Dzongkhag/Thromde' (3.5), 'I focused more on the School Improvement Plan (SIP) of schools during monitoring visits' (3.5), and 'I provided interventions based on the findings from my monitoring visits to schools' (3.4). The ratings were around 3 (agree) for the statements, 'I focused more on monitoring the compliance of policies by the schools during my monitoring visits' (3.1) and 'I focused more on the physical parameters of the SPMS' (2.8).

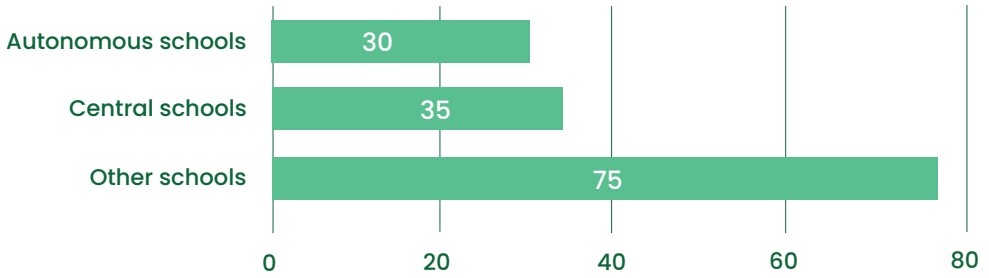
Figure 6.42: Periodic monitoring



6.3.4. Administration and management of resources

The questionnaire asked CDEOs and CTEOs for which types of schools could they control the budget. Less than 40 percent of the CDEOs and CTEOs answered they had control over the budget of central schools (35%) and autonomous schools (30%). Three fourth of them (75%) answered they had control over the budget of other schools.

Figure 6.43: Budget control



CDEOs and CTEOs were asked to indicate the level of agreement for the statements related to administration and resources on a scale of 1 to 4, 1 being 'strongly disagree' and 4 being 'strongly agree'. In general, they agreed that the administration and resource management activities were carried out following established plans, budgets, protocols, and in consultation with school principals.

The highest rated statement was 'The human resource deployment in the Dzongkhag/Thromde is carried out using the Teacher Requirement Exercise (TRE)' with the average rating of 3.9, meaning most of the participants strongly agreed. The CDEOs and CTEOs also rated very high on the statements, 'All the planned developmental activities are carried out as per the approved budget' (3.8), 'The planning for the education sector in my Dzongkhag/Thromde is carried out in consultation with all principals' (3.8) and 'I ensure student accessibility to safe school facilities in my Dzongkhag/Thromde' (3.8), which means they strongly agreed with these statements.

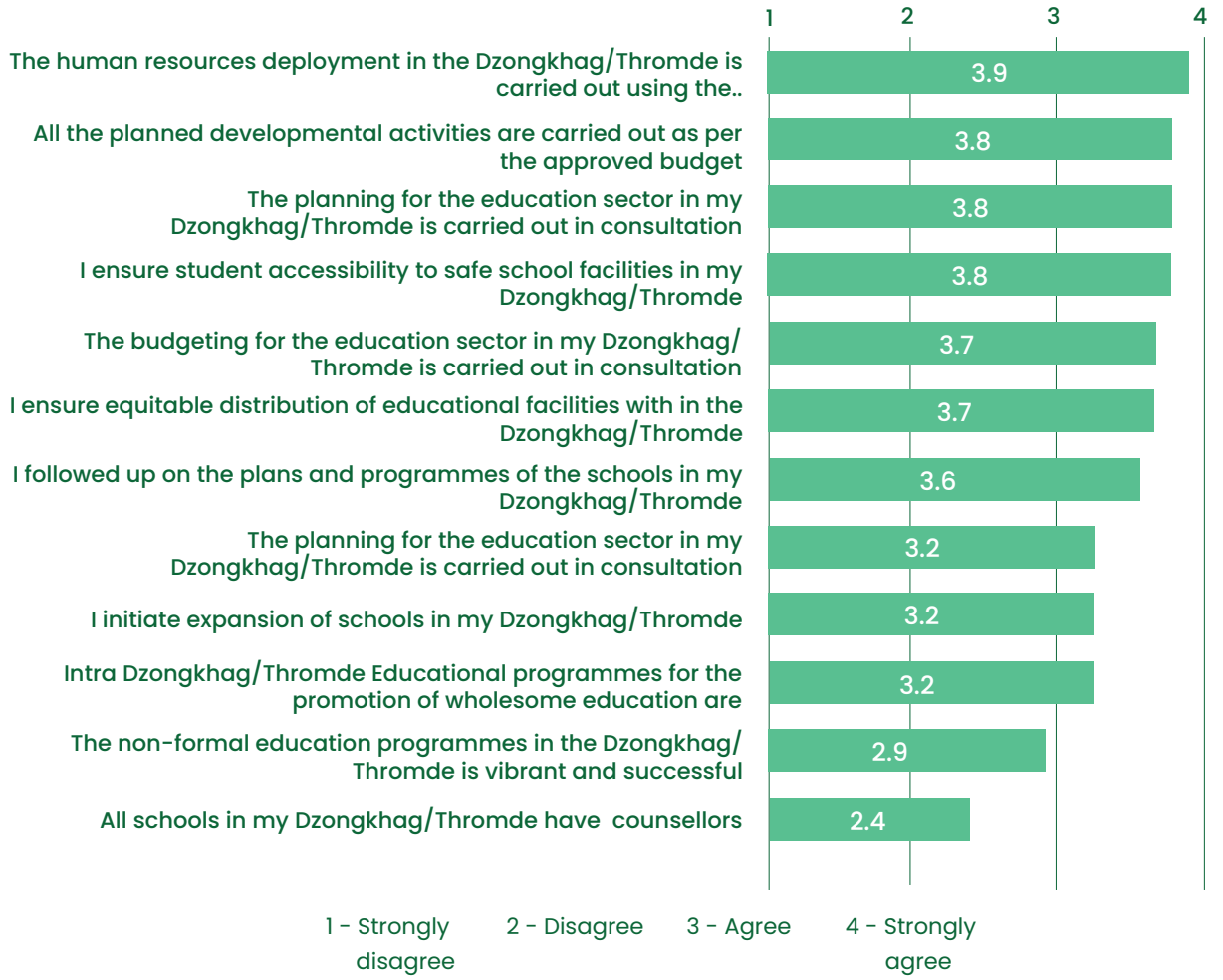
On average, participants rated the statements, 'The budgeting for the education sector in my Dzongkhag/Thromde is carried out in consultation with all principals' (3.7), 'I ensure equitable distribution of educational facilities within the Dzongkhag/Thromde' (3.7), and 'I followed up on the plans and programmes of the schools in my Dzongkhag/Thromde' (3.6).

The ratings to some degree plummeted for the statements, 'All principals in my Dzongkhag/Thromde are capable administrators' (3.2), 'I initiate expansion of

schools in my Dzongkhag/Thromde' (3.2), 'Intra-Dzongkhag/Thromde Educational programmes for the promotion of wholesome education are carried out' (3.2), and 'The non-formal education programmes in the Dzongkhag/Thromde is vibrant and successful' (2.9), pointing out that participants almost 'agree' to these statements.

There was a mixed rating between agreement and disagreement on the statement, 'All schools in my Dzongkhag/Thromde have counsellors' (2.4).

Figure 6.44: Administration and management of resources



6.4. Summary and conclusion

In this chapter, we have discussed the findings from three questionnaires, the Teacher Questionnaire, the Principal Questionnaire, and the CDEO/CTEO Questionnaire of NEA 2021.

Responses of teachers matched the student responses to the questions regarding school environment. Teachers rated highest on the statement, 'In my school, generally students who fall sick are taken care' (3.9), on a scale of 1 (never) to 4 (always). The rating was followed by the statements, 'In my school, generally students keep the campus clean' (3.8) and 'In my school, generally students have access to clean drinking water' (3.8), indicating that the facilities described were available to students. As discussed in the previous chapter, participating students highly rated these statements as well among the statements related to the school environment.

The responses from teachers and students differed in the ratings for the availability of clean toilets. Teachers rated the statement 'In my school, generally students get to use clean toilets' high with the average rating of 3.6, while students gave a low average rating of 2.2, closed to 2 (sometimes).

Teachers evaluated that students in their schools felt safe and happy similar to what students said in their responses to the Student Questionnaire. They agreed that they have a friendly, cooperative, and orderly school environment.

NEA 2021 showed that teachers participated in various professional development programmes in 2021. The major topics of the PD programmes covered subject content, teaching methods, assessment practices, action research, student behaviour management, ICT, SEN, and counselling. The analysis of the teacher questionnaire responses showed that teachers had greater opportunities to participate in PD in the areas directly related to teaching such as subject content and ICT. Four out of five teachers (80%) indicated that they participated in a PD programme on subject content and ICT. According to the teachers in the survey, PD opportunities were less frequent in the areas of SEN and action research. They found that PD programmes were more effective in the areas of assessment practices, teaching methods, ICT, and subject content.

Regarding their practices in teaching, teachers reported that they emphasised learning intentions by preparing lesson plans which are in line with the intended learning outcomes, took care of students' prior knowledge, and referred to the curriculum framework. They promoted learner centred teaching strategies including encouraging students to ask questions, making connections between textbook knowledge and real-life situations, using a variety of instructional strategies, etc.

Teachers understood the importance of assessment and promoted assessment for learning. They used assessment tools to measure student learning and provided oral and written feedback. They agreed that they used the continuous formative assessment guidebook and knew how to develop competency-based test items.

Teachers' motivation to teach students was reported high in NEA 2021. Teachers reported that they had good relationships with their

principals, vice principals, and students. They felt that their efforts resulted in improving learning outcomes of students who are interested in learning. They expressed that they were proud to be a teacher. However, teachers evaluated that support from parents was less than that from other stakeholders.

All principals from the 184 participating schools participated in the Principal Questionnaire, representing their schools. The principals agreed that they had good relationships with their school staff and students, similar to the responses from teachers. They said that the efforts they put in resulted in positive learning outcomes for their students who are interested in learning. They expressed that they received adequate support from their school staff, vice principals, district education offices and MoE, while they felt the support from their local governments was relatively less. The principals were satisfied with their salaries and took pride in being a principal.

Principals considered their school environments friendly for teachers, support staff, students, and themselves. They evaluated that their students were safe and happy in the school and that they hardly faced negative student behaviour including physical aggression against staff and sexual harassment.

They reported that in their schools, negative behaviour among teachers, including the use of corporal punishment, abusive language, physical aggression against colleagues and sexual harassment, was rarely observed.

Principals evaluated their teachers as highly effective with respect to their understanding of the curricular goals, teamwork to improve students' achievement, use of ICT, expectation for student achievement, and enthusiasm to support students' learning, among other questions related to the efficacy of teachers. They agreed that monitoring and support from district education offices had a bigger impact on the improvement of student learning and school systems.

Principals were asked to rate the promotion of the nine student attributes in their schools on a four-point scale (1 being 'strongly disagree' and 4 being 'strongly agree'). They evaluated a total of 57 items grouped under the nine attributes. The average rating of each item by principals ranged from 3.4 to 3.8, indicating their strong agreement with the promotion of the nine attributes in their schools.

NEA 2021 included the CDEO/CTEO Questionnaire to understand the support from districts for schools. CDEOs and CTEOs from all 24 districts responded to the questionnaire. On average, the CDEOs and CTEOs were involved in various professional development activities at least once a year. They agreed that their districts provided 40 hours of PD to all teachers this year. However, they took a neutral stance in rating their participation in action research work carried out in schools. CDEOs and CTEOs reported that they were engaged with each of the professional supervision activities at least twice a year, including visiting schools, conducting meetings, providing feedback, and verifying policy compliances. They indicated that they observed classroom lessons during their school visits close to twice a year.

Regarding their monitoring activities, CDEOs and CTEOs strongly agreed to the statements: they provided crucial feedback to schools in the areas of weakness; focused on monitoring the learning outcomes of their schools; visited schools more than twice for monitoring; and focused on the School Improvement Plan of the schools during their visits.

The questionnaire included various questions asking about resource management at the district level. CDEOs/CTEOs reported that the human resources deployment of their districts was carried out using TRE. They strongly agreed to several other statements regarding resource management: all the planned developmental activities were carried out as per the approved budget in their districts; planning for the education sector in their districts was carried out in consultation with all principals; and they ensured accessibility to safe school facilities in their districts.

Findings from the questionnaires of NEA 2021 confirmed in general positive aspects and enabling environment for students, teachers, principals, and CDEOs and CTEOs. The results also identified several areas where more attention is required from policy makers. It is expected that NEA 2021 will establish the baseline of national student assessment of Bhutan, while providing valuable information for evidence-based policy decisions.

Chapter 7. Teaching and learning during the COVID pandemic period

Box 1:
Online teaching and learning during the COVID pandemic period

- The availability of online classes was rated higher than the effectiveness of online classes by students and teachers.
- Around 90 percent of students received homework during the lockdown. More than 90 percent of teachers reported that they gave homework to students during the period.
- Thirty five percent of students reported taking online tests and sixty three percent of teachers conducting online tests the time.
- Although around 90 percent of teachers (88%) and CDEOs/CTEOs (92%) said they received the SIM, the proportions were lower in the responses from principals (80%) and students (52%).

Box 2:
Bridging courses

- Almost all principals (97%) and CDEOs and CTEOs (96%) reported that their schools offered bridging courses to grade III students in the beginning of the academic year 2021.

Box 3:
Teaching and learning after reopening

- Around one third of students reported that they found it difficult to learn at grade III in 2021.
- More than half of the teachers (53%) found teaching grade III students in 2021 difficult.
- More than half of the principals agreed that teachers found it difficult to teach grade III students after schools reopened.

RGoB has implemented various measures to support teaching and learning during the COVID-19 pandemic and post-pandemic periods (MoE, 2022). NEA 2021 included questions on teaching and learning during the COVID-19 pandemic period in the questionnaires for students, teachers, principals, and CDEOs/CTEOs. This chapter reports teaching and learning experiences during school closures and 2021 shared by participants of the study.

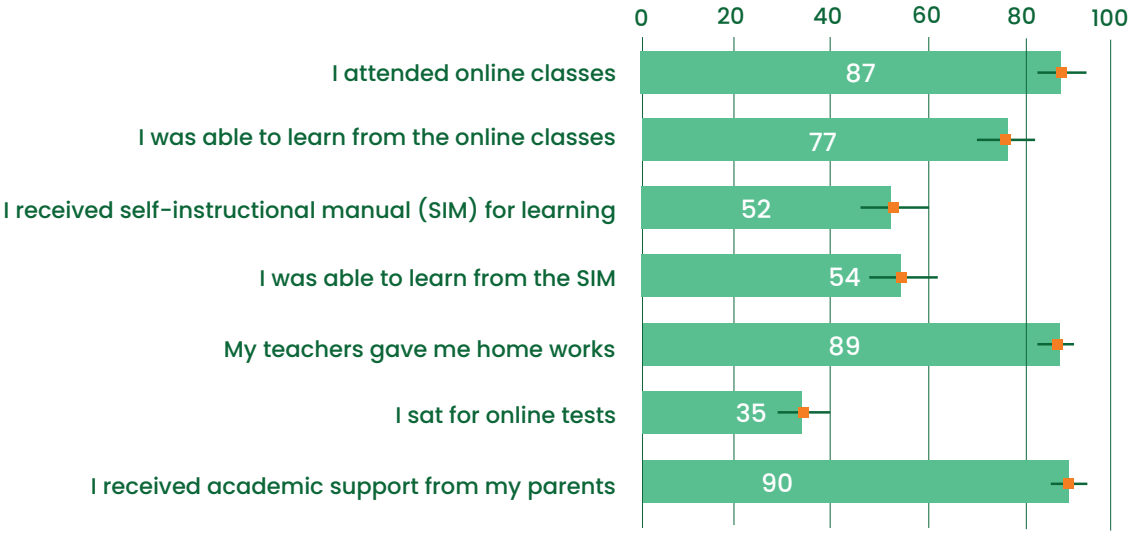
7.1. Teaching and learning during the COVID pandemic period at the student level

Close to 90 percent of students (87%) reported that they attended online classes during the lockdown and more than three quarter of students (77%) responded that they were able to learn from the online classes they had attended. Around 90 percent of students said that they were given homework (89%) and received academic support from parents (90%).

Around half of students (52%), however, received a Self-Instructional Manual (SIM) for learning during the period and were able to learn using the SIM (54%). This may indicate that about half of the students who did not receive the SIM found it difficult to keep up with learning during the lockdown. In addition, only 35 percent of students agreed that they sat for online tests during the time. There is a high possibility that all students were automatically promoted to the next grade with or without taking the online tests. This may have contributed to wider learning gaps among students as many moved to the next grade without having to demonstrate academic achievements of the previous grade.

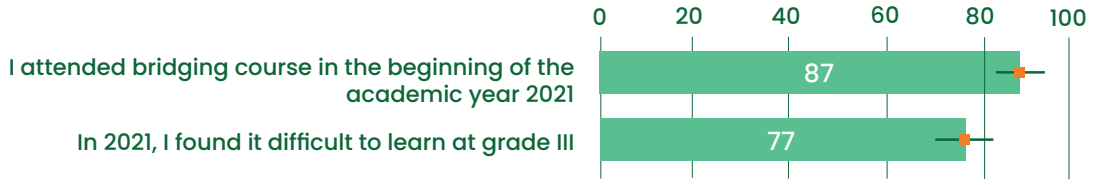
The figure below displays the responses from students.

Figure 7.1: During lockdown (students) (%)



A significant proportion of students (85%) reported that they attended a bridging course in 2021 after face-to-face classes were resumed. Around one third of students reported that they faced a learning difficulty in 2021.

Figure 7.2: After lockdown experiences (students) (%)



7.2. Teaching and learning during the COVID pandemic period at the teacher level

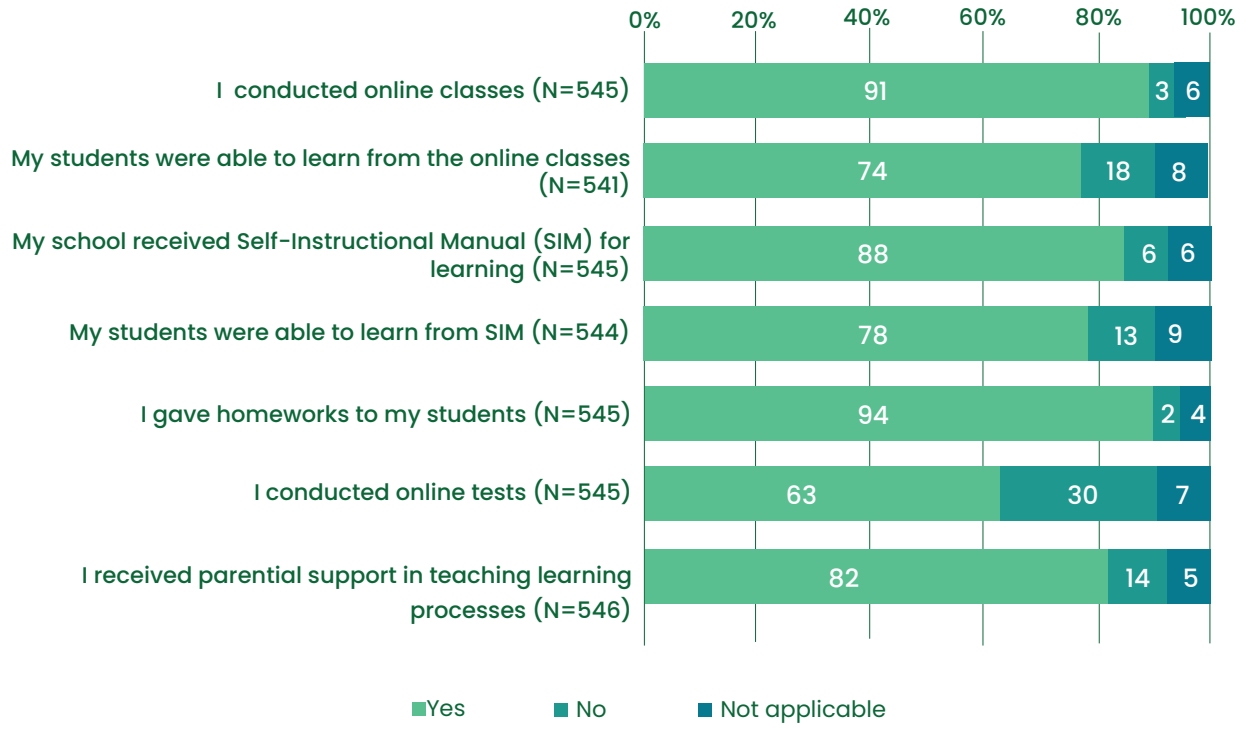
A group of questions regarding teaching during the COVID-19 pandemic period were asked through the Teacher Questionnaire. The questions were similar to the ones in the Student Questionnaire but addressed to teachers. This section analyses the responses from teachers to understand their teaching experiences during the period.

A total of 558 teachers participated in the Teacher Questionnaire of NEA 2021. In principle, three teachers from each sample school were asked to participate, preferably teaching grade III students in the three test domains. However, it is to be noted that sampling methods to guarantee representativeness of the sample were not applied to selected teachers. Therefore, any analysis based on the data collected from teachers represents 'teachers who participated', not the entire teacher population, and should be interpreted as sample specific.

More than 90 percent of teachers (91%) reported that they conducted online classes during the lockdown. A small number of teachers (3%) were unable to conduct online classes during the time for different reasons. Teachers' evaluation of the effectiveness of online classes was lower than the availability of online classes. Around three quarter of teachers (74%) considered that students were able to learn from the online classes they have conducted. Close to 90 percent of the teachers (88%) said that their schools received the SIM for learning during the lockdown, whereas nearly 80 percent of them (78%) agreed that their students were able to learn from the SIM.

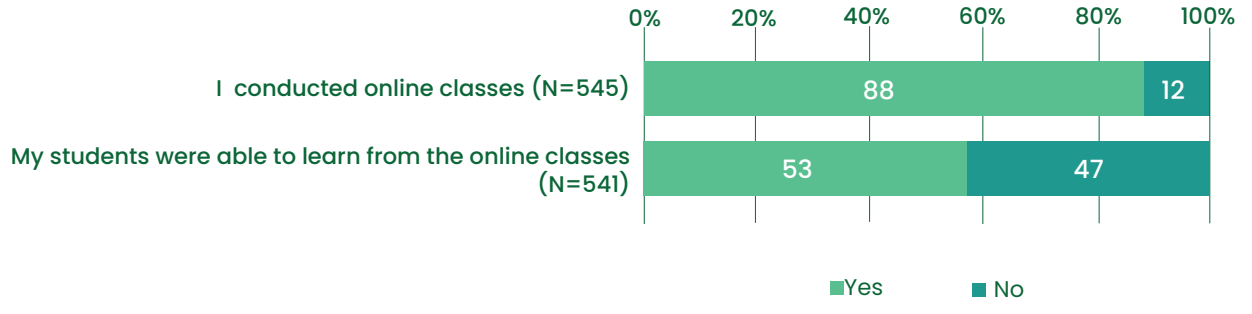
During the period, 94 percent of teachers stated they gave homework to students. Considering the proportion of teachers who gave homework (94%) was higher than those who conducted online classes (91%), it seems that some offline activities took place in rare cases. On contrary to giving homework, about two third of teachers (63%) reported conducting tests through an online mode. A little more than 80 percent of teachers agreed about receiving parental support in teaching and learning processes during the period.

Figure 7.3: During lockdown (teachers) (%)



Nearly 90 percent of teachers (88%) said they offered bridging courses to grade II students in the beginning of the academic year 2021. More than half of the teachers (53%) found teaching grade III students in 2021 difficult. However, we do not have detailed data to understand why teachers found it difficult to teach students during this period.

Figure 7.4: After lockdown experiences (teachers) (%)

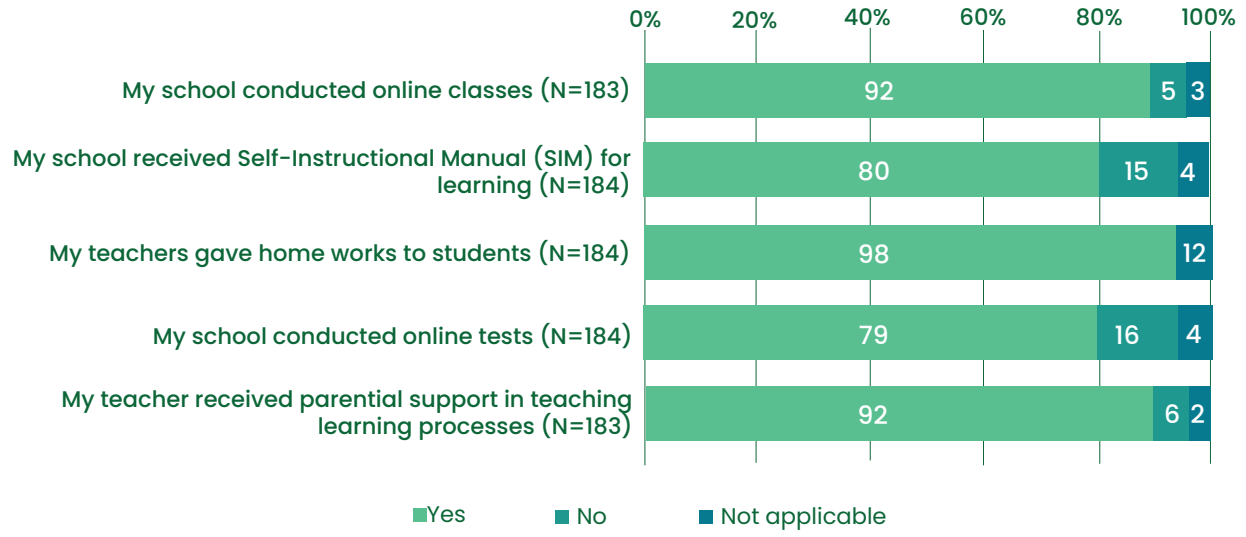


7.3. Teaching and learning during the COVID pandemic period at the school level

Out of the principals who responded to the survey, more than 90 percent of principals (92%) reported that their schools conducted online classes during the lockdown and five percent of them said their schools did not for some reasons. Almost all the school principals reported that teachers gave homework to students during the period. More than 90 percent of principals (92%) agreed that teachers received parental support in teaching-learning processes during the lockdown.

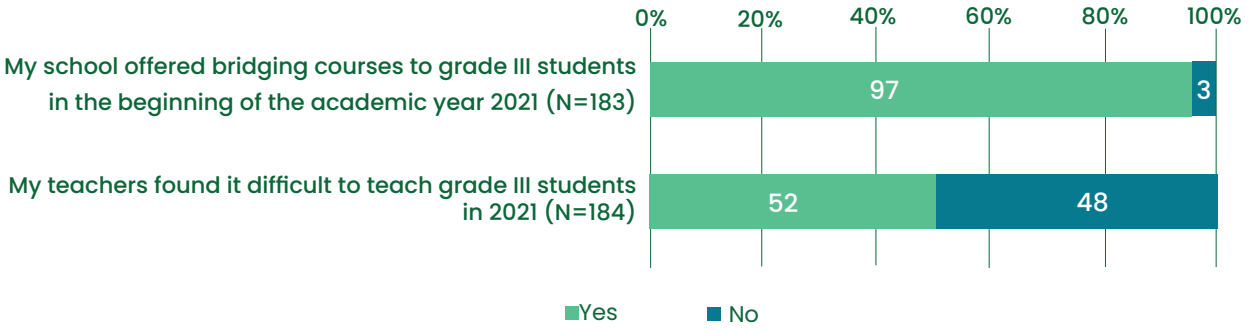
Responses from majority of principals on some questions of the survey contradict the findings from the responses of students. Eighty percent of them agreed that their schools received the SIM, while fifteen percent of them explicitly mentioned that they did not. On the other hand, only half of the students (52%) reported that they received the SIM. Moreover, almost 80 percent of principals (79%) said online tests were conducted. However, around a third of the students (35%) said they sat for online tests during the lockdown. Unfortunately, it is difficult to interpret why the gaps were identified unless we have further information available.

Figure 7.5: During lockdown (principals) (%)



Almost all principals (97%) reported that their schools offered bridging courses to grade III students in the beginning of the academic year 2021. More than half of the principals (52%) agreed that teachers found it difficult to teach grade III students in 2021. The proportion reflects the responses from teachers in the previous section (53%), which mentions, around half of the teachers faced difficulties teaching grade III students in 2021. These findings may be an indication that the difficulties in teaching during the lockdown brought negative impacts on students' learning. However, we do not have detailed data from NEA 2021 to investigate the reasons for the difficulties teachers faced.

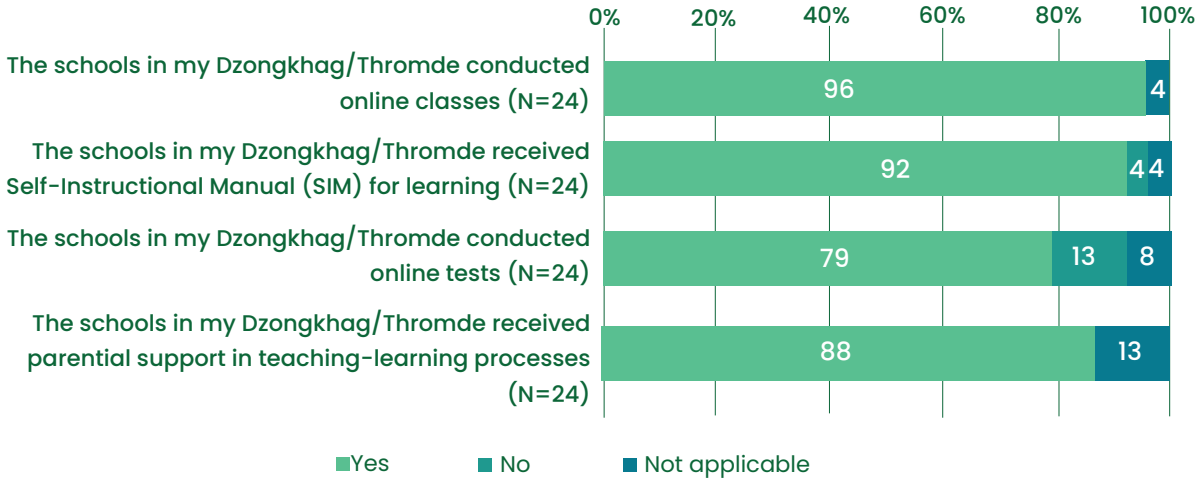
Figure 7.6: After lockdown experiences (principals) (%)



7.4. Teaching and learning during the COVID pandemic period at district level

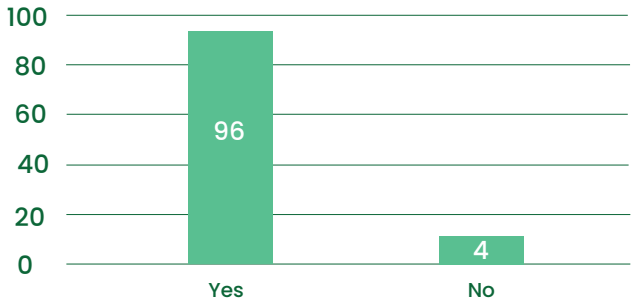
Almost all CDEOs and CTEOs (96%) reported that schools in the districts conducted online classes, which means that schools in only one district failed to deliver online classes during the lockdown. More than 90 percent of the districts (92%, 22 districts) received the SIM, according to CDEOs and CTEOs who participated in the study. Nearly 80 percent of CDEOs and CTEOs reported that schools in their districts conducted online tests. Close to 90 percent of participants agreed that schools in their districts received parental support in teaching-learning processes during the assessment period.

Figure 7.7: During lockdown (CDEOs/CTEOs) (%)



Almost all the districts (96%), except one, reported that their schools offered bridging courses to grade III students in the beginning of the academic year 2021.

Figure 7.8: Bridging courses to grade III students in 2021 (%)



7.5. Summary and conclusion

In order to cope with the COVID-19 pandemic in 2020, an unprecedented pandemic, RGoB closed schools in mid-February 2020 and shifted teaching and learning from the face-to-face mode to the digital learning mode using social media apps, television, Google classroom, radio lessons, etc. MoE shortly introduced the Adapted Curriculum for grade III, focusing on core competencies in literacy and numeracy (MoE, 2022).

After re-opening schools, there were a series of measures implemented to accelerate learning recovery. A progressive bridging strategy was adopted as a measure to help students catch up with their learning in the academic year 2021. Based on student performances in competency-based tests in English, Dzongkha, mathematics, and science (grades PP to VIII), students with low competencies and areas with learning gaps were identified. Weak students were provided with remedial classes along with additional exercises and peer teaching (MoE, 2022).

In this chapter, findings from the various questionnaires of NEA 2021 on teaching and learning during the COVID-19 pandemic period have been described. The similar sets of questions were included in the student, teacher, principal, and CDEO/CTEO questionnaires to investigate how students, teachers, schools, and districts responded to the COVID19 pandemic situation.

Results show that the availability of online classes was rated higher than the effectiveness of online classes by students and teachers. Around 90 percent of students (87%) expressed that they attended online classes, 91 percent of teachers reported that they conducted classes online during the lockdown, and 92 percent of principals mentioned that online classes were provided in their schools. On the other hand, 77 percent of students stated that they were able to learn from the online classes they had attended and 74 percent of teachers thought their students learned from the online classes they conducted.

Around 90 percent of students received homework during the lockdown. More than 90 percent of teachers reported that they gave homework to students during the period. However, the proportion is significantly lower when it comes to students taking online tests (35%) and teachers conducting online tests (63%) during the time. This shows that teachers faced difficulties in assessing students through the online mode due to some reason. It is recommended to look into the difficulties as a further study and prepare for online testing in emergency situations.

Although around 90 percent of teachers (88%) and CDEOs/CTEOs (92%) said they received the SIM, the proportions were lower in the responses from principals and students. Around half of the students (52%) received the SIM while 80 percent of principals agreed that their schools did. In terms of the effectiveness of the SIM, 54 percent of students evaluated that they could learn using the manual whereas 78 percent of teachers agreed that their students did so.

The level of parental support during the lock down was evaluated differently by different groups. Ninety percent of students reported that they received academic support from their parents. A little more than 80 percent of teachers and 92 percent of principals agreed

about receiving parental support in teaching and learning processes during the period. Twenty one out of the 24 CDEOs and CTEOs agreed that schools in their districts received parental support in teaching-learning processes during the period. It seems that teachers who carry out educational transactions everyday with students felt that more academic support was required from parents during the lock down.

Although almost all principals (97%) and CDEOs and CTEOs (96%) reported that their schools offered bridging courses to grade III students in the beginning of the academic year 2021, the proportions were lower than the same question was asked to students and teachers. Eighty five percent of students reported that they attended a bridging course in 2021, after coming back to the school. Close to 90 percent of teachers (88%) said they offered bridging courses to grade II students in the beginning of the academic year 2021.

It is concerning that teachers and students struggled with catching up on their teaching and learning after school reopening. Around one third of students reported that they found it difficult to learn at grade III in 2021. Similarly, more than half of the teachers (53%) found teaching grade III students in 2021 difficult. More than half of the principals agreed that teachers found it difficult to teach grade III students after schools reopened. However, there is no in-depth data to identify the reasons for the difficulties teachers faced from NEA 2021. Grade III is a critical time for students to build their foundation in learning. It is strongly recommended that RGoB continues to support schools and teachers in identifying students who fall behind and providing them with remedial learning opportunities.

Chapter 8. Recommendations

Based on the findings from the NEA 2021, it has identified the following areas of attention. The recommendations and interventions have been proposed upon series of consultations with the stakeholders.

Area of attention	Recommendations
Performance gap by gender	• Supporting boys to improve their Reading Literacy abilities • Strengthening differentiated teaching and assessment strategies.
Performance gap by school management type	• Improving the standard of education in public schools • Buy-in the best practices from the performing schools
Performance gap by district	• Identifying students falling behind and providing remedial courses to them. • Carrying out study to investigate any difficulties students, teachers, and schools face in the underperforming Dzongkhags/Thromdes
Performance gap by Socio-Economic Status	• Supporting children from disadvantaged background
Performance gap by location	• Strengthening the resources in the rural schools to bridge education disparity • Carrying out the school consolidation for cost savings and enhancing the fairness and quality education. • Providing rural schools access to high-quality teachers through remote learning and relevant online resources.
Performance gap in three Domains	• Reviewing and revising Dzongkha reading and learning materials at lower grades. • Teaching should be targeted beyond students' current minimum level of proficiency, as this is where the most effective instruction and learning are likely to take place. • Strengthening reading culture in the schools. • Strengthening school-parent partnership though strong communication and interactions. • Enhancing diverse PD programmes in the schools.
Students' well-being and values	• Instituting Scout as a whole school programme to enhance students values and basic life skills
ECCD	• Carrying out further analysis to understand performance of students who attended EECD. • Reviewing and strengthening ECCD programmes.
Health of students	• Continuing supporting students who fall sick • Improving sanitation and personal hygiene programmes

Area of attention	Recommendations
Bullying	• Establishing a clear anti-bullying policy • Reviewing School Discipline Policy Guidelines
Corporal punishment	• Strengthening school counselling programme • Sending out constant reminders to teachers of Code of Conduct
Effectiveness of online learning	• Conducting an evaluation study on the effectiveness of the online classes • Facilitating schools to continue hybrid mode of learning.
Continuous post-COVID support	• Identifying students falling behind • Providing bridging /accelerated programs to address learning loss due to COVID-19 pandemic

8.1. Summary of findings from NEA 2021

8.1.1. Student achievements

NEA 2021 shall serve as the foundation of future cycles of NEA. As the foundation cycle, a proficiency scale for each test domain was developed based on the results of NEA 2021. Each scale has a set national mean score of 300 with a standard deviation of 50. The establishment of the scale was essential to ensure the comparison of NEA scores across years. Beginning with the 2021 cycle, NEA has been transformed into a competency-based assessment that will help to understand the skills of students in different learning domains.

Overall student performance

Student performances in each test domain were distributed around the set mean of 300 in most of the districts. There was only one district which performed better than the national mean in English Reading Literacy and Mathematical Literacy. In Dzongkha Reading Literacy, students from two districts outperformed their peers from other districts. Students from three districts achieved lower than the national mean in Dzongkha Reading, whereas students from only one district did so in English Reading and Mathematical Literacy.

Detailed insights into student performance

When we compared the performances of students from different subgroups, marginal differences were found in students' Dzongkha Reading abilities. There was an insignificant difference in the mean achievement levels of boys and girls at the national level.

Performances of students from rural schools and urban schools were statistically indifferent. The same results emerged when the mean scores of private school students and public school students were compared. Thus, we could not conclude that the performances of public school students and private school students were different in Dzongkha Reading.

On the contrary, there were clear performance gaps detected in English Reading and Mathematical Literacy between the students from rural areas versus urban areas and students from private versus public schools. Urban students outperformed their peers from rural schools and private school students performed better than students studying in public schools.

Negligible performance gap between boys and girls was detected in most of the districts from the analysis of the mean comparisons. Gaps were found in only one district in Dzongkha Reading and English Reading, but not in Mathematical Literacy. Whenever a gender gap was identified, girls had a clear lead in the mean score in both Dzongkha Reading and English Reading.

The results from NEA 2021 showed that socio-economic status affects student learning. Students from a higher-income household had better English Reading and Mathematical Literacy abilities than students coming from the lowest-income group. The group of students coming from households where fathers have a college degree outperformed students in the other categories, including households where fathers have achieved school education or received no education in English Reading and Mathematical Literacy. However, these gaps were not detected in the results of Dzongkha Reading Literacy.

Proficiency levels of students

One of the objectives of NEA 2021 was to set a minimum performance level of grade III students in Bhutan. Four different proficiency levels in Dzongkha Reading and English Reading and five levels in Mathematical Literacy were established from the set proficiency scales based on the results of NEA 2021. At the national level, 84 percent of students in Dzongkha Reading (from Level 2 to Level 4), 90 percent in English Reading (from Level 2 to Level 4) and 93 percent in Mathematical Literacy (from Level 2 to Level 5) were able to meet the minimum proficiencies for grade III.

The results of NEA 2021 should be interpreted bearing in mind the hindrances in learning caused due to COVID-19 school closures. Teachers had to avoid face-to-face interactions with students and adjust to non-traditional modes of teaching and learning without much preparation. Such changes may have impacted teaching and learning in Dzongkha which has possibly led to a significant proportion of students failing to meet the minimum level of Dzongkha Reading proficiency. It is commendable for the country to record a high proportion of students meeting the minimum level of English Reading and Mathematical Literacy proficiency, even after experiencing obstructions in learning.

Factors affecting student performance

Regression analysis captures factors affecting student performances and their impact on the performances. A regression model was applied to student scores in each domain to investigate what contextual factors are affecting student performances of grade III students in Bhutan.

The regression analysis showed that there were significant gender differences in Reading Literacy, both Dzongkha and English. Girls outperformed boys in the two Literacy tests, controlling for all other variables in the model constant. However, the difference was not statistically significant in Mathematical Literacy.

After controlling all other variables in the regression model, several factors were identified which affect student performances in Dzongkha Reading. Those factors explain that girls, non-grade repeaters, students with college-educated father, students with good health, non-tuition takers, and students who practice the nine attributes would perform well in their Dzongkha Reading.

In English Reading, female students, non-grade repeaters, private school students, students studying in urban areas, students from higher family income groups, students with college-educated father, students with good health, and students who practice the nine attributes were more likely to achieve higher scores.

The regression analysis of Mathematical Literacy confirmed most of the results found in other test domains. After controlling for all other variables in the regression model constant, several factors were identified that affect student performance in Mathematical Literacy. Students who speak English at home, non-grade repeaters, private school students, students studying in urban areas, students from higher family income groups, students with college-educated father, students with good health, and students who practice the nine attributes would perform well in their Mathematical Literacy assessments.

The regression analysis results showed that the socio-economic status, such as family income level and parental education level, was an important predictor of student performance in all three domains. Students who were in good health, practice the nine attributes, and did not repeat any grade are more likely to achieve better in all three test domains. Urban students and private school students have a better chance to perform higher in English Reading and Mathematical Literacy.

8.1.2. Environment for students

From the results of NEA 2021, students evaluated the environment of their schools positively. Students agreed that their teachers took care of sick students and reported that most of the essential facilities were available in their schools. It is encouraging to see that students reported that they felt happy and safe in their schools. Although student ratings were low on bullying, it is close to 'sometimes,' indicating that some students have experienced bullying.

Healthy family interactions were reported by most of the students. In general, students had meals with their parents or family members several times a week and had conversations about their education and schools with their family members. They participated in family activities including visiting temples and attending Tshechus together and received support from their families in various ways, such as help for homework and project work.

The NEA 2021 results showed that students have positive attitudes towards learning, agreeing with the importance of learning and aspiring to get a job and do well in their lives and gain knowledge. It is inspiring to see that most of the students maintained good habits of self-study, reading, and playing after school. Watching TV and using a mobile phone were among most the popular activities students did outside their schools. On the contrary, using an iPad or tablet PC and playing computer games were not popular among students probably due to the unavailability of devices.

Based on the self-ratings of students on the nine student attributes, students nurtured the nine attributes well. It was confirmed by the ratings done by their teachers on the same attributes. Average ratings from both teachers and students were between 4.0 and 4.8 on a five-point scale (1 - least important to 5 - most important). Going to the school (4.8), listening to teachers (4.7), staying clean (4.6), and taking care of the school property (4.6) were among the highest rated items by students.

Most of the students experienced missing classes due to poor health during the last one year. Ninety seven percent of students reported that they were sick and 95 percent of students said that they missed school. These results may be consequences of the COVID-19 pandemic. On the positive side, a significant number of students reported that they received help from their schools when they were sick. These results suggest that it is important to continue providing support for students who fall sick through schools and improving sanitation and personal hygiene programmes in schools.

Considering the negative ratings by students, there may be a need to further investigate corporal punishment cases in schools. Although the practice of corporal

punishment in schools is not common, students reported that they experienced beating by vice principals, teachers, and principals sometimes. They responded that they were afraid of the principal (2.2), vice principal (2.7) or teachers (2.2) on a four-point scale (1-never, 2-sometimes, 3-many times, 4-always). It is also reported that they experienced beating by the principal (1.8), vice principal (2.7) or teachers (2.0) in their schools on the same four-point scale.

8.1.3. Environment for teachers

Teacher responses matched student responses to the questions asking about the school environment. The three most highly rated statements by the teachers were 'In my school, generally students who fall sick are taken care', 'In my school, generally students keep the campus clean', and 'In my school, generally students have access to clean drinking water', complementing the ratings of students. These ratings indicated that the activities described in the statements occurred in their schools almost always. However, teachers and students rated differently on the availability of clean toilets in their schools. Teachers thought that their students could use clean toilets many times or all the time while students said that clean toilets were sometimes available.

Teachers evaluated that students in their schools felt safe and happy similar to what students said in their responses to the Student Questionnaire. They agreed that their school environments are friendly, cooperative, and orderly.

Teachers had the opportunity to participate in various professional development programmes in 2021.

The number of PD activities activities were higher in the areas directly related to teaching such as subject content and ICT. According to teachers in the survey, PD opportunities were less frequent in the areas of SEN and action research. They found that PD programmes were more effective in the areas of assessment practices, teaching methods, ICT, and subject content.

Teachers reported that they emphasised learning intentions and promoted learner centred teaching strategies in their practices. Teachers understood the importance of assessment and promoted assessment for learning. Teachers expressed high levels of motivation to teach and job satisfaction. Teachers evaluated that support from parents was less than that from other stakeholders.

8.1.4. Environment for schools

Principals from all the sample schools participated in the Principal Questionnaire. The principals who participated in the Principal Questionnaire evaluated their school environments as positive. They maintained good relationships with their school staff and students. They felt that their efforts contributed to improving student learning outcomes and they received adequate support from the school staff, vice principals, district education offices, and MoESD. They also reported their teachers had a high level of job satisfaction.

Principals considered their school environments friendly for teachers, support staff, students, and themselves. They evaluated that their students were safe and happy in the school, which also found in the responses from students and teachers. They reported that they rarely faced negative behaviour from students and teachers.

Principals evaluated their teachers as highly effective in many aspects including their understanding of the curricular goals, teamwork to improve student achievement, use of ICT, setting expectations for student achievement, and enthusiasm to support student learning, etc. They agreed that monitoring and support from their district education offices had an impact on the improvement of student learning and school systems. Principals strongly agreed that the nine student attributes were promoted in their schools.

8.1.5. Support from dzongkhag/thromde

CDEOs and CTEOs from all 24 districts responded to the CDEO/CTEO Questionnaire. On average, the CDEOs and CTEOs were involved in various professional development activities at least once a year. They agreed that their districts provided 40 hours of PD to all teachers this year. CDEOs and CTEOs reported that they were engaged with each of the professional supervision activities at least twice a year.

Regarding their monitoring activities, CDEOs and CTEOs said they provided crucial feedback to schools on areas that need improvement and focused on monitoring learning outcomes of their schools. They visited schools more than twice for monitoring and focused on the School Improvement Plan of the schools during their visits. They indicated that they observed classroom lessons during their school visits close to twice a year.

CDEOs and CTEOs reported that resource management was carried out in their districts following the regulations including the Teacher Requirement Exercise, the approved budget, and consultation with all principals in their districts. They have neutral agreement on the non-formal education programmes in the Dzongkhag/Thromde was vibrant and successful.

8.2. Recommendations

Based on the findings from NEA 2021, it is identified that several subgroups of students require attention and support to improve their learning in the three test domains.

Performance gap by gender

The results of NEA 2021 show girls and boys have performed equally well. However, this is in contrast to the global trend of boys outperforming girls in Mathematics. More than 90 percent of students (93%) were able to meet the minimum performance level and the performance gap between two gender groups was negligible.

When only the average scores were compared, boys and girls had almost same scores in all the test domains, showing an insignificant performance gap between the two gender groups. However, performance gaps between boys and girls became significant in Dzongkha Reading Literacy and English Reading Literacy (but not in Mathematical Literacy), from the regression analysis. This means that girls outperformed boys when other conditions were the same – such as location, school management type, socio-economic status, and so on. Based on these results, it is recommended that RGoB makes an effort to support boys in their Reading Literacy in their early grades.

Performance gap by location

There were noticeable learning gaps between students from urban areas and those from rural areas. Students from urban areas outperformed students from rural areas in two test domains, English Reading Literacy and Mathematical Literacy.

It has been detected that students who had limited access to online learning during the COVID-19 pandemic, particularly those in rural areas and highlands, were less likely to spend time learning. Such students were found to be engaged in household chores and other labour (MoE, 2022). Therefore, it is recommended that RGoB prioritises its resource allocation in the favour of rural and/or remote areas.

For example, distant or online learning can be effective for students in rural areas if they have access to remote learning facilities and devices. In general, rural schools tend to utilise fewer resources and facilities than urban schools. It often happens that rural and/or remote schools are smaller than urban schools and as a consequence, a limited number of teachers are available for teaching. Therefore, teachers in rural schools teach multiple grade levels or multiple subjects which can sometimes become a challenge to the provision of quality education to students. With access to ICT, it is possible for students to learn quality online content overcoming the disadvantage of being remote. However, a teacher who understand the effectiveness of remote learning needs to facilitate online learning for maximum benefits.

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Thus, it is important for MoESD to ensure that students and schools in rural and/or remote areas have access to remote or online learning facilities with access to high quality content. It is strongly recommended that MoESD continues to improve infrastructure, facilities, and content of online teaching, including ICT for rural schools and provide professional development activities for teachers to better guide students in remote or online learning.

Performance gap by school management

It is evident from the results of NEA 2021 that private school students performed better than public school students, even though there were only 19 private schools out of 184 participating schools. The difference in mean scores between students studying in private schools and those studying in public schools was statistically significant by more than a standard deviation, which is considered as a grade level difference, in both English Reading and Mathematical Literacy. In general, private schools tend to invest more in their teaching and learning practices and facilities that may result in better student learning outcomes.

It is critical for MoESD to improve the quality of education in public schools and close the achievement gaps at the earliest. Policy measures such as providing rigorous teacher professional development programmes with refresher courses, strengthening one-teacher-one-subject policy, and minimising teacher workload related to administrative tasks are recommended.

Performance gap by district

It is encouraging to see that student performances were more or less equally distributed around the set national mean of 300 in most of the districts. There were a few districts whose mean scores in the test domains were significantly higher or lower

than the national mean. Further research to investigate difficulties students, teachers, and schools face in the underperforming districts is recommended so that the challenges to learning can be addressed.

The analysis of NEA 2021 also showed that there were a few districts which had a wider distribution of student scores than other districts, when the percentile scores were checked. This means that the ability gap between high performers and low performers is large in those districts. For the districts with a wider range of score distribution, it is recommended that efforts should be made to improve performances of low ability students by supporting them with personal attention and remedial courses.

Many grade III students were able to achieve the minimum proficiency level set in each of the test domains. Ninety three percent students passed the minimum proficiency benchmark in Mathematical Literacy, 90 percent in English Reading Literacy, and 86 percent in Dzongkha Reading Literacy. This means that seven percent of students in Mathematical Literacy, ten percent in English Reading, and fourteen percent in Dzongkha Reading failed to attain the minimum level. Thus, it is recommended that remedial measures should be taken to improve the learning of students performing below the minimum proficiency levels. In order to do so, individual students should be evaluated with the same criteria as NEA 2021 while testing the competencies included in the cognitive tests of NEA 2021.

Performance gap by socio-economic status

The analysis of NEA 2021 results points out that the socio-economic status of students' families has an impact on student learning. Students with college educated father and belonging to families with higher income are more likely to achieve better scores in the test domains. Students from affluent and educated families are more likely to receive support for their education from their families. Therefore, it is important for MoESD to support students from low socio-economic status and focus its resources on them, which will ultimately help the students to achieve better learning outcomes and have opportunities to succeed in their lives. It is important for the government to support disadvantaged children to start their education at the same level as children who receive better family support. It may give priority to the economically disadvantaged children for admission in boarding schools and exempt fees if required.

Health of students

Most of the students reported that they were sick and missed classes due to poor health during the last one year. These results may be consequences of the COVID-19 pandemic, even though the government recommended students with flu like symptoms visiting flu centres or hospitals and staying at home. Therefore, it is important to continue providing support for students who fall sick through schools and improving sanitation and personal hygiene programmes in schools to help students maintain their health. Some of the policy options may include conducting annual health screening to identify students in poor health and report their health status to their school and parents, providing clean water in schools with regular quality checks, promoting physical activities, and advocating the importance of good nutrition and diet.

Attention to bullying

Many students reported that they felt happy and safe in their schools. However, students' average rating on bullying was close to 'sometimes,' indicating that some students experienced bullying. It is recommended that MoESD establishes a clear anti-bullying policy so that all students and teachers understand that bullying is not acceptable behaviour and there is help available for affected students in schools. The government needs to make sure that all schools review their School Discipline Policy Guidelines and enforce them in their schools.

Attention to corporal punishment

The findings from NEA 2021 indicated that there may be a need to further investigate corporal punishment cases in schools. Students responded that they were afraid of the principal (2.2), vice principal (2.7), or teachers (2.2) on a scale of 1 to 4 (1-never, 2-sometimes, 3-many times, 4-always). The survey also reported that they experienced beating by the principal (1.8), vice principal (2.7), or teachers (2.0) in their schools on the same scale. Although student ratings on beating were low and close to 'sometimes', the ratings indicated that there is evidence of corporal punishment in schools. Thus, it is recommended to investigate the situation with a future study and make policy decisions based on what the study reveals. Some of the policy measures may include strengthening counselling programme in schools and sending out constant reminders to teachers of code of conduct.

Effectiveness of online classes

RGoB made prompt responses during the COVID-19 pandemic by shifting face-to-face teaching and learning to contactless learning through various remote-learning modes. Students, teachers, principals, CDEOs, and CTEOs reported that online classes were available during the school closures. However, teaching and learning through online modes may not have been as effective as teaching and learning delivered in the face-to-face mode. It is recommended to conduct an evaluation study on the effectiveness of online learning.

It is also suggested that the study includes online assessment strategies. As discussed in the section on teaching and learning during the COVID-19 pandemic period, online testing was conducted in a limited manner. Teaching and learning should be integrated with assessments to understand what students know, understand, and can do so that the data can guide teachers and students to achieve the teaching and learning outcomes. It is essential for this purpose to establish effective online assessment strategies, since online teaching and learning will be a significant part of education in the future, especially in any emergency situation. It is critical for RGoB to provide schools with proper infrastructure for conducting online classes and continuous professional development opportunities for teachers to acquire the knowledge and skills in recent online teaching pedagogies.

Continuous post-COVID support

It is reported that both teachers and students struggled to keep pace with teaching and learning after the school reopening. Grade III is a critical time for students to build their foundation in learning. It is strongly recommended that MoESD continues to

provide post-COVID support for schools and teachers. The support includes identifying students who fall behind and providing them with remedial learning opportunities. MoESD is working to build the national capacity for diagnostic and formative assessments of student learning which will become markers of learning recovery. Continuing this effort will help identify the learning needs of students and mitigate the learning losses experienced during emergency situations, including the COVID-19 pandemic.

8.3. Conclusion

Even before the COVID-19 pandemic period, countries in South Asia were facing a learning crisis, a situation where students are unable to achieve their grade appropriate learning levels (World Bank 2018). The disruptions in teaching and learning during the pandemic worsened the status of student learning across the globe (World Bank, UNESCO and UNICEF 2021). It is anticipated that such learning loss would have also occurred in Bhutan. Nevertheless, the magnitude of the learning loss caused is hard to be quantified in the country, since there was little information on the levels of student performance before the pandemic at the system level. NEA is an effort to measure student learning in a scientific manner, so that policy makers and other stakeholders are able to monitor changes in student learning and support where and when needed.

NEA 2021 assessed students through competency-based assessments in core subjects. The cognitive tests of NEA 2021 were developed following rigorous quality standards to inform about the competencies of students rather than assessing rote memorisation of textbook content. The assessment results informed us that a major proportion of students achieved the minimum proficiency levels in all three test domains. The results also identified several subgroups of students who require more attention and support to improve their learning.

The findings from the questionnaires of NEA 2021 confirmed, in general, positive aspects of teaching and learning and enabling environments for students, teachers, principals, and CDEOs and CTEOs. The results also identified several areas where more attention is required from policy makers. The analysis of teaching and learning during the COVID pandemic period helped to understand how students, teachers, principals, and CDEOs and CTEOs responded to the challenging situation.

Improving student learning has always been the top priority of RGoB. The government has implemented various post COVID-19 learning recovery plans to boost teaching and learning in the country. It is expected that NEA 2021 establishes the baseline of the national student assessment of Bhutan, while providing valuable information for evidence-based policy decisions. The findings and aspects discussed in this report should be considered during policy decisions in order to improve teaching and learning, school environments, and wellbeing of students and teachers. The government should continue its efforts toward making NEA robust and use the evidence from the assessment for improving the learning outcomes of school going children in Bhutan.

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Annexure 1.
Sample Items of Cognitive Tests Dzongkha Reading Literacy

དཔྱོད་ཐག་ བཞི་པ།

དཔྱོད་ཐག་འདི་ནང་གི་ སློབ་ཕྲུག་ཚུ་གིས་ ཡིག་བྱིས་མ་རྣམ་པ་མ་འདྲཔ་ རིངམོ་ཚུ་ལྷག་སྟེ་ འདི་ནང་ལས་ སྐྱོན་ཡོན་གྱི་བསམ་འཆར་བཀོད་ ཚུགསཔ་མ་ཚད་ རང་སྟོབས་ཀྱིས་གནས་རིམ་དང་བསྟུན་པའི་ དོན་ཚན་དེའི་ཐོག་ལུ་ ཁྱད་པར་དོན་བཀོད་དེ་ རང་སོའི་རིག་སྟོབས་དང་བསྟུན་པའི་ བསམ་ཞིབ་དང་དཔྱོད་ཚུ་འབད་ཚུགས། དེ་ལས་ དོན་ཚན་འདི་དང་ རིགས་བསྡེས་ཏེ་ རྒྱས་བཤད་ཀྱི་དང་ བཅུད་བསྡུ་ནི་ གཞན་ཡང་ དོན་ཚན་འདིའི་ཐོག་ལུ་ འཕྲི་སྟོན་ཚུ་འབད་ཚུགས་པའི་ཁར་ ཁྱད་པར་ཡང་ཕྱེ་ཚུགས།

དྲི་བའི་དཔེ།

ཤིང་འབྲས།

ཨ དཔའཆས་ གཱ་ར་འབད་རུང་ གཟུགས་སྒྲིང་སྒྲིང་ བཞག་ནིའི་དོན་ལུ་ ཤིང་འབྲས་ཚུ་ གཡུས་སྟོ་ སོ་སོ་ལས་བཏོན་ཏེ་ ཁོམ་ཁ་ལུ་བཙོ་ནི་ཡོད། ཨིན་རུང་ མི་རྒྱལ་ནི་དང་ འབྲུ་གིས་མི་བཟའ་ནིའི་དོན་ལུ་ ཤིང་འབྲས་ལ་ལུ་ཅིག་ནང་ལུ་ སྐན་ཡང་བྱུགས་ཏེ་འོང་།

འདི་བཟུམ་མའི་ཤིང་འབྲས་ཚུ་ མིག་ཁར་ལེགས་རུང་ གཟུགས་ལུ་ གཞོད་པ་ཡོད། དེ་འབདཔ་ལས་ སྐན་བྱུགས་ཡོད་པའི་ཤིང་འབྲས་ཚུ་ མ་བཟའ་བར་ སྐན་ཨེད་པའི་ཤིང་འབྲས་ཚུ་ བཟའ་དགོ་པ་ཁག་ཅི།




༢༨ སྐན་ མ་བྱུགས་པའི་ཤིང་འབྲས་ བཟའ་དགོ་མི་འདི་

ཀ བོམ་ཡོད་ནི་དེ་གིས་ཨིན།

ཁ འཕོབ་འཛམ་ནི་དེ་གིས་ཨིན།

ག གཟུགས་ལུ་ཕན་ནི་དེ་གིས་ཨིན།

ང ལྷུམ་ར་ནང་ལས་འཕོབ་ནི་དེ་གིས་ཨིན།

དྲི་བ་གི་འགྲེལ་བཤད།

དྲི་བ་འདི་གིས་ སློབ་ཕྲུག་ཚུ་རང་སོའི་གཟུགས་ཁམས་ལུ་ སྐན་མ་བྱུགས་པའི་ཕིང་འབྲས་བཟའ་བ་ཅིན་ ཕན་གནོད་གཏེ་སྦྱི་ ཡོད་གཏེ་ བརྡ་དོན་ཤེས་མི་ཤེས་བལྟ་ནིའི་དོན་ལུ་ཨིན། མ་གཞི་ཡིག་བྱིསམ་འདི་ མི་སྡེ་ནང་ལུ་ གཅིགས་བཟའ་སྡོལ་ཡོད་པའི་ ཕིང་འབྲས་ཀྱི་སྐོར་ལས་འབད་ནི་འདི་ གིས་ སློབ་ཕྲུག་ བརྒྱ་ཆ་ ༤༠ དེམ་ཅིག་གིས་ ཡེངས་སྤྱད་ གཏེ། པ་དེ་གདམ་ཁ་རྒྱབ་སྟེ་ ལན་ངོམ་འདི་ཐོག་ཡོད་པ་ཨིན། དེ་འབདཝ་ད་ སློབ་ཕྲུག་ བརྒྱ་ཆ་ ༩༠ དེམ་ཅིག་གིས་ ལན་ངོམ་འདི་ གདམ་ཁ་རྒྱབ་མ་ཚུགས་པར་ ལུས་སོངཔ་ཨིན།

སློབ་སྟོན་གྲོས་འཆར།

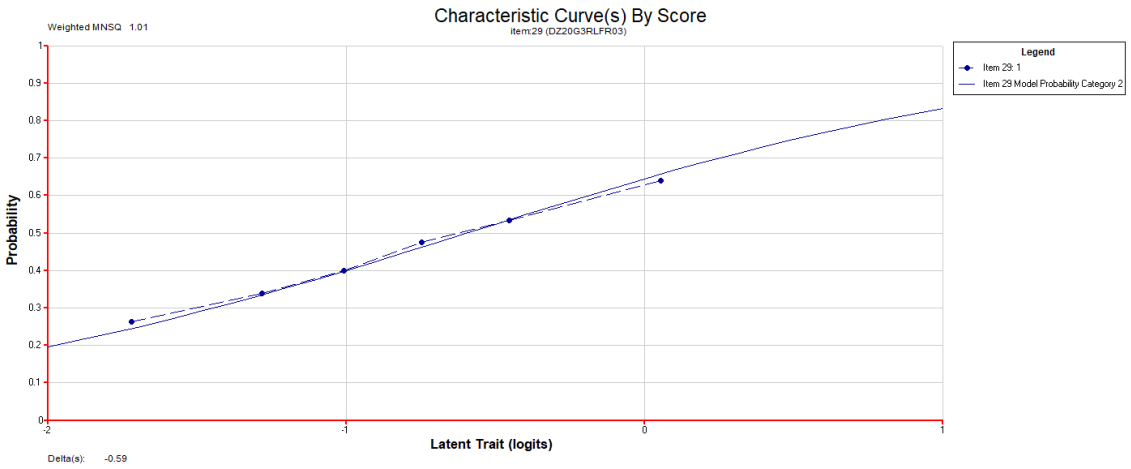
སློབ་དཔོན་གྱིས་ སློབ་ཕྲུག་ཚུ་ལུ་ རྒྱབ་སྐྱོར་དང་ལམ་སྟོན་གྱི་ཐོག་ལས་ ཡིག་བྱིསམ་འདི་གི་ནང་དོན་ཚུ་ གྲོས་བསྡུར་འབད་དགོ་པའི་ཁར་ ཡིག་བྱིསམ་འདི་གི་ཅ་འབད་ གདམ་ཁ་རྒྱབ་ཡོདཔ་ཨིན། ཡིག་བྱིསམ་གི་ནང་དོན་ལུ་ ཁག་ཆེ་ཏིང་ཏེའམ་ཅིག་ཡོདཔ་ཨིན་ཚུ་གཅིག་ཁར་སྦྱི་ གྲོས་བསྡུར་འབད་དགོ་པ་ཨིན། དེ་མ་ཚད་ སློབ་སྟོན་འབད་བའི་སྐབས་ལུ་ དོན་ཚན་གྱི་ཕན་པ་རྒྱབ་གཅིག་ཨེན་པར་ འདིའི་གནད་པ་ཚུ་ཡང་ བཤད་དེ་ཕྱིན་དགོ་ཁ་ཁག་ཆེ་བས།

- ཡིག་བྱིསམ་འདི་གི་ནང་དོན་ གལ་ཆེཤ་སྦྱི་ཡོད་ནི་འདི་གིས་ བརྡ་དོན་ཚུ་ཕྱིན་ཚུགསཔ་ཨིན། དེ་འབདཤ་ལས་ སྤྱིར་བཏང་ བརྡ་དོན་ཤེས་དགོ་པ་གལ་ཆེཤ་སྦྱི་ སློབ་སྟོན་འབད་དགོ་པ།
- ཡིག་བྱིསམ་གི་དོན་ཚན་འདི་ མི་ཚེའི་གནས་སྟངས་ནང་ལུ་ ཁག་ཆེ་བས་གཅི? སློབ་ཕྲུག་ཚུ་ལུ་ ཡིག་བྱིསམ་གི་ཁྱངས་དང་དགོས་པ་ཚུ་ ལེགས་ཤོམ་སྦྱི་ བཤད་པ་རྒྱབ་སྟེ་ ཤེས་ཚུགསཔ་བཟོ་དགོ་པ་ཨིན།
- གཟུགས་ཁམས་འཛོད་བསྟེན་གྱི་དོན་ལུ་ ཕིང་འབྲས་ཚུ་བཟའ་བ་ཅིན་ ཕན་ཐོགས་ཡོད་པ་ལས་ ཕིང་འབྲས་བཟའ་ནི་ལུ་ སེམས་ཤུགས་བསྐྱེད་ཚུགསཔ་བཟོ་དགོ་པ་ཨིན།

གནས་སྡུད་ཆེ་བ།

༡	ཡིག་བྱིསམ་གི་མིང་།	ཕིང་འབྲས།
༢	ཡིག་བྱིསམ་གྱི་ཚད།	༥༢ །
༣	དྲི་བ་ལྟ་ཁག་ཉིད།	ལྟ་ཁག།
༤	ཡིག་འབྲི་མའི་དབྱེ་བ།	རྒྱུད་སྐུལ་ཡིག་འབྲིམ།
༥	གནས་སྡུད།	རང་རྒྱུད།
༦	དྲི་བ་གི་རིག་རྩལ།	བསམ་ཞིབ་དང་དབྱེ་ཞིབ།
༧	སློབ་སྦྱོང་གྲུབ་འབྲས།	སྡེ་རིམ་༤ པ། ལྷག་ནི་ ༡༠ པ། གནས་རིམ་དང་བསྟུན་པའི་ སྡུད་ལྷག་སྡེ་ གོ་དོན་ ལེན་ཚུགས་དགོ།
༨	ཚ་རྒྱེན།	43.7
༩	དྲི་བའི་འབྲེལ་མཐུད།	0.23

༡༠	དྲི་བ་དང་དྲི་བའི་འབྲེལ་མཐུད་ཀྱི་བསྟོམས།	0.29
༡༡	ཞེ་གྲངས་ཚེམ་ཚེས་ཀིལ་ (Weighted MNSQ)	1.01
༡༢	དེལ་ཊ། (Delta)	-0.59

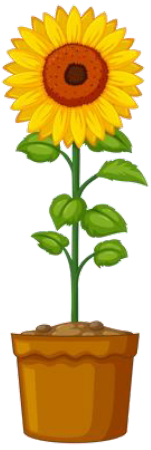


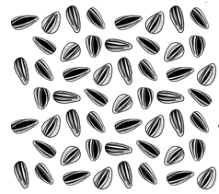
དབྱེ་ཞག་གསུམ་པ།

དབྱེ་ཞག་འདི་ནང་གི་སློབ་ཕྲུག་ཚུ་གིས་ ཡིག་བྱིསམ་ཚུ་ལྷག་སྟེ་ འདི་ནང་ལས་ བརྟ་དོན་འཚོལ་ཚུགས་པའི་ཁར་ རིགས་སྒྲེ་གི་བཞད་པ་རྒྱབ་ཚུགས། དེ་བཟུམ་སྟེ་ ཡིག་བྱིསམ་མ་འདྲཔ་ཚུ་ ལྷག་ཁེནམ་ལས་དོན་ཚན་ཚུ་ལུ་ ཁྱབ་ཅིས་ཡོད་ཚུགས་པ་ཚོད། གོ་དོན་ཚུ་ཡང་བརྟ་སྐྱུར་འབད་ཚུགས་པ་ཨིན། གཞན་ཡང་ ཡིག་བྱིསམ་གྱི་བཅུད་དོན་ བཏོན་ཚུགས་ནི་དང་ བརྟ་དོན་དབྱེ་དཔྱད་འབད་དེ་ གདམ་འཐུ་འབད་ཚུགས་ཨིན། དེ་མ་ཚད་ གནས་རིམ་དང་བསྟུན་པའི་རྒྱུ་མཚན་བཅོད་ཐོག་ལས་ རང་སོའི་བསམ་འཆར་ཚུ་ བཀོད་ཚུགས།

དྲི་བའི་དཔེ།

ཉིམ་གང་ཤར་མེ་ཏོག་བཙུགས་ཐངས།





༡) དངཔ་ར་ མེ་ཏོག་གི་ཕྲམ་ནང་ ས་བླུགས།

༢) འདི་ནང་ཚུ་ ཞ་ཙི་ཅིག་བླུགས་ཞིནམ་ལས་ ས་འདི་བྲེནམ་བཟོ།

༣) དེ་ལས་ ཉིམ་གང་ཤར་མེ་ཏོག་གི་ སོན་འདི་ ས་ནང་བཙུགས།

༤) དེའི་ཤུལ་ལས་ སོན་འདི་ས་གིས་བཀབ།

༥) མཇུག་ར་ ས་འདི་གུར་ ཆུ་མང་སུ་ཅིག་བླུགས་སྟེ་ བཞགས་ཚིན།

༦) མེ་ཏོག་འདི་ ལེགས་ཤོམ་སྟེ་ སྐྱེ་ཞིའི་དོན་ལུ་ ཉིམ་ཞ་རྟག་ར་ཆུ་ བླུགས་ནི་འདི་ སེམས་ཁར་བཞག།

༧) བདུན་ཕྲག་གཉིས་ ཡང་ཅིན་ གསུམ་གྱི་ནང་ལུ་ ཉིམ་གང་ཤར་མེ་ཏོག་འདི་ སྐྱེ་སར་མཐོང་ཚུགས།

๗๙ མེ་ཏོག་ བཙུགས་ཚར་ཞིན་ལས་ ཆུ་བླུག་དགོ་མི་འདི་"

ཀ ས་རྩོན་བཟོ་ནིའི་དོན་ལུ་ཨིན།

ཁ ས་ནང་སོན་བཙུགས་ནིའི་དོན་ལུ་ཨིན།

ག ས་འཛམ་ཏོང་ཏོ་བཟོ་ནིའི་དོན་ལུ་ཨིན།

ང མེ་ཏོག་ལེགས་ཤོམ་སྦྲེ་སྐྱེ་ནིའི་དོན་ལུ་ཨིན།

དེ་བ་ཀི་འགྲེལ་བཤད།

དེ་བ་འདི་གི་དམིགས་དོན་ངོམ་ར་ སློབ་ཕྲུག་གིས་ རང་སྟོད་སའི་ཁྱིམ་གྱི་མཐའ་འཁོར་དང་ ནང་ན་ལུ་ མེ་ཏོག་ཚུ་བཙུགས་ཚར་ཞིན་ལས་ འདི་ ནང་ལུ་ཆུ་བླུགས་དགོ་ཁག་ཆེའབི་ བཙུ་མཐོང་ཚུ་གི་སྐོར་ལས་ ཤེས་དགོ་ཁི། དེ་མ་ཚད་ ཡིག་བྱེམ་འདི་ མེ་ཏོག་གི་སྐོར་ལས་ཨིན་ལས་ མེ་ཏོག་བཙུགས་ནི་ལུ་ སེམས་ཤུགས་དང་སྤྲོ་བ་བསྐྱེད་ཚུགས་པའི་ ཕན་ཐོགས་ཡོད་ཅེར་ཞུ་ནི་ཨིན། སློབ་ཕྲུག་ བཙུ་ཚ ༣༠ དེམ་ཅིག་གིས་ ལན་ངོམ་འདི་ཐོག་ཡོདཔ་ཨིན། དེ་འབདཝ་ད་ སློབ་ཕྲུག་ བཙུ་ཚ ༡༠ དེམ་ཅིག་གིས་ ལན་ངོམ་འདི་ གདམ་ཁ་ཤུབ་མ་ཚུགས་པར་ ལུས་སོང་ནུག།

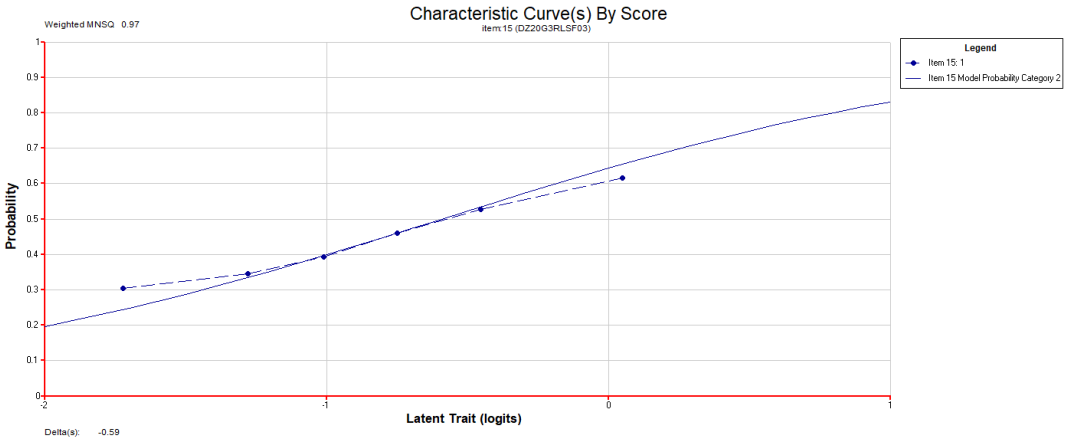
སློབ་སྟོན་གྲོས་འཆར།

སློབ་ཕྲུག་ཚུ་ལུ་ ཡིག་བྱེམ་འདི་ནང་ལུ་ མེ་ཏོག་བཙུགས་ཐངས་ཀྱི་རིམ་པ་ཚུ་ གཏེ་སྦེ་ར་ཡོད་གཱ་ བཤད་པ་ཤུབ་བྱིན་ཐོག་ལས་ མེ་ཏོག་ལུ་ ཉེན་གང་ཤར་ཟེར་སླབ་དགོ་པའི་ དོན་དགུ་ཚུ་ཡང་ལེགས་ཤོམ་སྦྲེ་ བཤད་པ་ཤུབ་སྟེ་སློབ་སྟོན་འབད་དགོ་པ་ཞིན། དེ་ཚར་ལུ་ སློབ་ཕྲུག་ཚུ་ལུ་ ཤུབ་སྐྱོར་དང་ལམ་སྟོན་གྱི་ཐོག་ལས་ ཡིག་བྱེམ་འདི་གི་ནང་དོན་ཚུ་ གྲོས་བསྡུར་འབད་དགོ་པའི་ཚར་ ཡིག་བྱེམ་འདི་གི་ཅ་འབད་ གདམ་ཁ་ཤུབ་ཡོདཔ་ཨིན་ན། ཡིག་བྱེམ་གི་ནང་དོན་ལུ་ ཁག་ཆ་ཉིད་གཅིག་ལུ་ཨིན་ན་ཚུ་གཅིག་ཁར་སྦྲེ་ གྲོས་བསྡུར་འབད་དགོ་ཨིན།

- ཡིག་བྱེམ་འདི་གི་ནང་དོན་ བཏ་དོན་ཚུ་ཕྱིན་ཚུགསཔ་སྦྲེ་ཡོད། དེ་འབདཔ་ལས་ སྤྱིར་བཏང་ བཏ་དོན་ཤེས་དགོ་པ་གལ་ཆེཔ་སྦྲེ་ སློབ་སྟོན་འབད་དགོ།
- ཡིག་བྱེམ་གི་དོན་ཚན་འདི་ མི་ཚེའི་གནས་སྟངས་ནང་ལུ་ ཁག་ཆེའམ་གཱ? སློབ་ཕྲུག་ཚུ་ལུ་ ཡིག་བྱེམ་གི་ཁྲངས་དང་དགོས་པ་ཚུ་ ལེགས་ཤོམ་སྦྲེ་ བཤད་པ་ཤུབ་སྟེ་ ཤེས་ཚུགས་བཟོ་དགོ་ཨིན།
- བང་གིས་ ལྷ་འབབ་ཚར་ཞིན་ལས་ འདི་ནང་ལུ་ ལོག་སྟེ་ག་ཅི་འབད་དགོ་པ་ཡོད་ག? ཤེས་ཚུགསཔ་བཟོ་ནི་དང་ལྷག་པར་དུ་ཡང་ མེ་ཏོག་དང་ཚོད་སྦེ་གི་རིགས་ཚུ་ བཙུགས་ཚར་ཞིན་ལས་ ཆུ་བླུགས་དགོ་པ་འདི་ཁག་ཆེཔ་ཨིན་ན་ཤེས་ཚུགསཔ་བཟོ་དགོ།

གནས་སྟངས་ཚེག

༡	ཡིག་བྱིས་མ་གི་མིང།	ཉིམ་གང་ཤར་མེ་ཏོག་བཙུགས་ཐངས།
༢	ཡིག་བྱིས་མ་གྱི་ཚད།	༡༠༣
༣	དྲི་བ་ལུ་ཁག་ཉིད།	ལུ་ཁག
༤	ཡིག་བྱིས་མའི་དབྱེ་བ།	སྒོབ་སྟོན།
༥	གནས་སྟངས།	མཐའ་འཁོར།
༦	དྲི་བ་གི་རིགས་རྩལ།	གོ་དོན་ཚུ་ལེན་ཏེ་ བརྡ་དོན་ཚུ་བཤད་པ་རྐྱབ་ནི།
༧	སྒོབ་སྦྱོང་གྲྭ་འབྲས།	སྤེ་རིམ་༣ པ། ལྷག་ནི་ ༦ པ། དོན་ཚན་ འཛམ་ཏོང་ཡོད་པའི་ རྩོམ་རིག་ སྤྱང་ཀུ་ཚུ་ལྷག་སྟེ་ གོ་དོན་ ལེན་ཚུགས་དགོ།
༨	ཚ་རྒྱན།	43.7
༩	དྲི་བའི་འཛེལ་མཐུད།	0.23
༡༠	དྲི་བ་དང་དྲི་བའི་འཛེལ་མཐུད་ཀྱི་བསྟོམས།	0.29
༡༡	ཁེ་ཀེད་ཨེམ་ཨེན་ཨེས་ཀིཁ་ (Weighted MNSQ)	1.01
༡༢	དེལ་ཊ། (Delta)	-0.59



དབྱེ་ཞིབ་གཞིས་པ།

དབྱེ་ཞིབ་འདི་ནང་གི་ སྒོབ་ཁྲག་ཚུ་གིས་ རྩོད་ཚོག་དང་ བཤད་པ་ བནཀ་ཏོག་ཏོ་ཡོད་པའི་ ཡིག་བྱིས་མ་ཚུ་ལྷག་སྟེ་ འདི་ནང་ལས་ བརྡ་དོན་འཚོལ་ཏེ་ བཤད་པ་རྐྱབ་ཚུགས་པའི་ཁང་ དོས་འཛིན་འབད་དེ་ གདམ་ཁ་རྐྱབ་ཚུགས། དེ་ལས་ མིང་ཚིག་བརྗོད་ཟླུང་འབད་དེ་ བཙུད་དོན་ལེན་ཚུགས་པ་ མ་ཚད་ མིང་ཚིག་ཚུ་ལྷག་སྟེ་ གོ་དོན་ལེན་ཚུགས་པ་ཨིན། དེ་མ་ཚད་ ཡིག་བྱིས་མ་ཚུ་ལྷག་སྟེ་ ཁེ་ཡན་དབྱེ་དཔྱད་འབད་ཞིན་ལས་ རྒྱ་མཚན་ཚུ་ཡང་ བཀོད་ཚུགས།

དྲི་བའི་དམེ།

འཁན་པ་མེ་ཏོག།

ཟླ་ ངམེ་ཏོག་ལྷུ་དགའ། དེའི་ཁྱིམ་ཐྱི་མཐའ་འཁོར་ལྷུ་ མེ་ཏོག་མ་འདྲཔ་ཚུ་ བཙུགས་ཏེ་ཡོད། མེ་ཏོག་ཚུ་གི་གྲས་ལས་ འཁན་པ་མེ་ཏོག་འདི་ བདག་འཛིན་འབད་ནི་འཛམ། གཅེ་སྦེ་ཟེར་བ་ཅིན་ ས་གནས་ ཐུང་ས་དང་ དོ་ས་ ཆུམེད་ས་ཚུ་ལུ་ཡང་ སྐྱེ་བཏུབ་ཨིན།

འཁན་པ་མེ་ཏོག་ལུ་ དཀར་པོ་དང་ སེར་པོ། དམར་པོ། ཤ་ཁ་འབད་ཡོད། དེ་ལས་ འདུབ་མ་གི་ཚོས་གཞི་འདི་ ལྷང་ཁ་དང་ བོཔ་ཁག་བྱགས་སྦེ་ ཡོད་པ་ཨིན།

མེ་ཏོག་འདི་ མངའ་སོས་ར་ ཁྲུས་འབབ་རན་མ་དུ་ ཤར་པ་ཨིན། མེ་ཏོག་འདི་ ལྷ་ལུ་ མཆོད་པ་སྦེ་ཡང་ ཕུལ་བཏུབ་ཨིན།

༢ མེ་ཏོག་འདི་ཚུ་ གཅེ་ལུ་ བཙུགས་ཏེ་ ཡོད་པ་ཨིན་མས་གོ?

ཀ ཁྱིམ་ཐྱི་མཐའ་འཁོར་ལུ་བཙུགས་ཏེ་ཡོད།

ཁ སྒོབ་གྲྭའི་མཐའ་འཁོར་ལུ་བཙུགས་ཏེ་ཡོད།

ག ལྷ་ཁང་གི་མཐའ་འཁོར་ལུ་བཙུགས་ཏེ་ཡོད།

ང ཡིག་ཚང་གི་མཐའ་འཁོར་ལུ་བཙུགས་ཏེ་ཡོད།

དྲི་བ་གི་འགྲེལ་བཤད།

སྒོབ་ཕྲུག་གིས་ རང་སྟོད་སའི་ཁྱིམ་ཐྱི་མཐའ་འཁོར་ལུ་ མེ་ཏོག་ཚུ་བཙུགས་དགོཔ་གལ་ཆེ་བའི་སྐོར་ལས་ ཤེས་ཚུགསཔ་བཟོ་ནི་དང་ གཞན་ཡང་ བརྡ་དོན་ཚུ་ འཆོལ་ཏེ་ བཤད་པ་རྒྱབ་ཚུགས་པའི་ཁར་ ས་གོ་ངོས་འཛིན་འབད་ཚུགས་དགོཔ་ཨིན། དེ་མ་ཚད་ ཡིག་བྱིས་མ་འདི་ མེ་ཏོག་གི་སྐོར་ལས་ཨིན་ལས་ མེ་ཏོག་བཙུགས་ནི་ལུ་ སེམས་ཤུགས་དང་སྒོ་བ་བསྐྱེད་ཚུགས་པའི་ ཕན་ཐོགས་ཡོད་ཟེར་ཞུ་ནི་ཨིན། སྒོབ་ཕྲུག་ བརྒྱ་ཆ ༤༠ དེམ་ཅིག་གིས་ ཡན་ངོ་མ་འདི་ཙོག་ཡོད་ཨིན། དེ་འབདཝ་དུ་ སྒོབ་ཕྲུག་ བརྒྱ་ཆ ༤༠ དེམ་ཅིག་གིས་ ཡན་ངོ་མ་འདི་ གདམ་ཁ་ཤུབ་མ་ཚུགས་པར་ ལུས་སོང་ནུག།

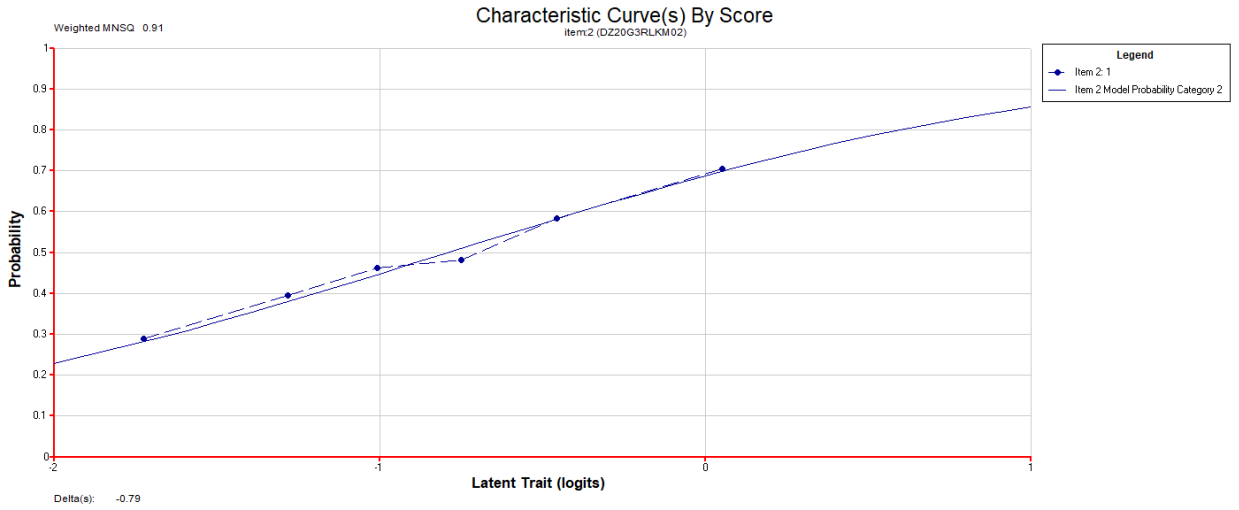
སྒོམ་སྟོན་གྱོས་འཛར།

ཡིག་ཟིས་མ་འདི་ནང་ལུ་ འཁན་པ་མེ་ཏོག་གི་སྐོར་ལས་ བཤད་པ་རྐྱབ་སྟེ་ཡོད་པ་ལས་ སྒོབ་དཔོན་གྱིས་ མེ་ཏོག་བཙུགས་དགོ་པའི་ཁུངས་དང་ དགོས་པ་ཚུ་ ལེགས་ཤོམ་སྦེ་ བཤད་པ་རྐྱབ་སྟེ་སྒོབ་སྟོན་འབད་དགོ་པ་ཨིན། དེ་མ་ཚད་སྒོབ་ཐུག་ཚུ་ལུ་ ལམ་སྟོན་གྱི་ཐོག་ལས་ ཡིག་ཟིས་མ་འདི་ གི་ནང་དོན་ཚུ་ གོས་བསྡུར་འབད་དགོ་པའི་ཁར་ ཡིག་ཟིས་མ་འདི་ག་ཅི་འབད་ གནམ་ཁ་རྐྱབ་ཡོད་ཨིན་ན། ཡིག་ཟིས་མ་གི་ནང་དོན་ལུ་ ཁག་ཆ་ཅིང་ག་དེམ་ཅིག་ཡོད་ཨིན་ན་ཚུ་ ལེགས་ཤོམ་སྦེ་ཤེས་ཚུགས་པ་བཟོ་དགོ་པ་ཨིན།

- ཡིག་ཟིས་མ་འདི་གི་ནང་དོན་ གལ་ཆེཤ་སྦེ་ཡོད་ནི་འདི་གིས་ བརྡ་དོན་ཚུ་ཅིན་ཚུགས་པ་ཨིན། དེ་འབདཤ་ལས་ སྤྱིར་བཏང་ བརྡ་དོན་ ཤེས་དགོ་པ་གལ་ཆེཤ་སྦེ་ སྒོབ་སྟོན་འབད་དགོ།
- ཡིག་ཟིས་མ་གི་དོན་ཚན་འདི་ མི་ཚེའི་གནས་སྐྱངས་ནང་ལུ་ ཁག་ཆེབས་གཅ? སྒོབ་ཐུག་ཚུ་ལུ་ ཡིག་ཟིས་མ་གི་ཁུངས་དང་དགོས་པ་ཚུ་ ལེགས་ཤོམ་སྦེ་ བཤད་པ་རྐྱབ་སྟེ་ ཤེས་ཚུགས་བཟོ་དགོ་པ་ཨིན།
- མེ་ཏོག་གི་རིགས་མ་འདྲཤ་ལེ་ཤ་ཡོད་པ་ལས་ འདི་ཚུ་རང་སོའི་ བཙུགས་སའི་ས་གོ་མ་འདྲ་ཡོད་པའི་ སྐོར་ལས་ཤེས་ཚུགས་དགོ་པ་ དང་ དེ་བ་འདི་ནང་ལུ་ མེ་ཏོག་བཙུགས་སའི་ ས་གོ་མ་འདྲ་ཚུ་ ཡེངས་ཁྱེད་ དོ་མཉམ་སྦེ་ཡོད་པ་ལས་ དཔེ་བ་དཔྱད་ཚུགས་པ་བཟོ་ དགོ་པ་ཨིན།

གནས་སྡུད་ཚེག

༡	ཡིག་ཟིས་མ་གི་མིང།	འཁན་པ་མེ་ཏོག།
༢	ཡིག་ཟིས་མ་གྱི་ཚད།	༡༡༢ །
༣	དྲི་བ་ལྟ་ཁག་ཏིང།	འཛམ་ཏོང་ཏོ།
༤	ཡིག་ཟིས་མ་གི་དཔེ་བ།	འགྲེལ་བཤད།
༥	གནས་སྡུད།	མཐའ་འཁོར།
༦	དྲི་བ་གི་རིགས་རྣལ།	བརྡ་དོན་འཆོལ་ནི།
༧	སྒོབ་སྦྱོང་གྲུབ་འབྲས།	སྟེ་རིམ་༣ པ། ལྷག་ནི་ ༦ པ། དོན་ཚན་ འཛམ་ཏོང་ཏོ་ཡོད་པའི་ རྩོམ་རིགས་ཐུང་ངུ་ ཚུ་ལྷག་སྟེ་ གོ་དོན་ ལེན་ཚུགས་དགོ།
༨	ཚ་ཆུན།	48.6
༩	དྲི་བའི་འབྲེལ་མཐུད།	0.24
༡༠	དྲི་བ་དང་དྲི་བའི་འབྲེལ་མཐུད་ཀྱི་བསྟོམས།	0.30
༡༡	ཁེ་ཀྲེད་ཨེམ་ཨེན་ཨེས་ཀཱིཁ་ (Weighted MNSQ)	0.91
༡༢	དེལ་ཊཱ། (Delta)	-0.79

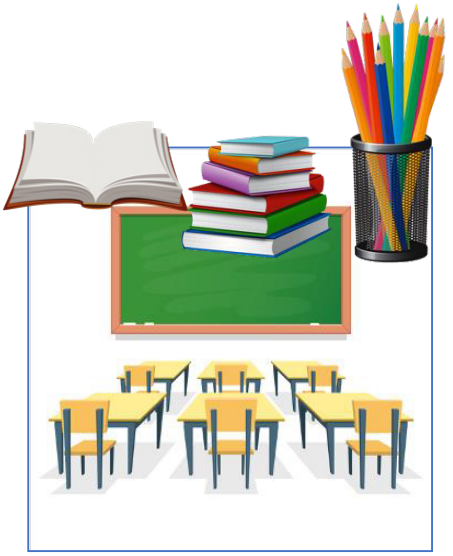


དབྱེ་ཞག་དང་པ།

དབྱེ་ཞག་འདི་ནང་གི་སློབ་ཕྲུག་ཚུ་གིས་ བཤད་པ་ཐུང་སུ་ཡོད་པའི་ ཡིག་ཆེས་མ་ཚུ་ལྷག་སྟེ་ འདི་ནང་ལས་ གོ་དོན་ལེན་ཏེ་ བརྡ་དོན་འཆོལ་ཚུགས་པའི་ཁར་ ཅཚས་ཚུ་ ངོས་འཛིན་འབདཝ་དེ་ མིང་སྨན་ཚུགས། དེ་མ་ཚད་ གནས་ཚད་དང་མཐུན་པའི་ དོན་ཚན་གྱི་ཐོག་ལུ་ བཤད་པ་ཐུང་ཀུ་ནི་ རྒྱབ་ཚུགས་ནི་དང་ ཐུངས་ཁ་ཡང་བཀྱེ་ཚུགས་ནི་ཨིན། དེ་ལས་ སློབ་ཕྲུག་ཚུ་གིས་ བརྡ་རྟགས་ཚུ་ བརྡ་སྐྱུར་འབདཝ་ནི་དང་ པར་ལུ་བལྟ་སྟེ་ མཐུན་སྒྲིག་འབདཝ་ཚུགསཔ་མ་ཚད་ དོན་དག་ཚུ་ཡང་ཀ་གོ་ཚུགསཔ་ཨིན།

དྲི་བའི་དཔེ།

སློབ་ཁང་གི་ཅཚས།
ཟ་ བཅཅས་ ཚངོགས་ཚུ་ གཅ་འབདཝ་རྒྱང་ གཞུང་གིས་ གནང་མི་ སློབ་གྲྭ་ནང་གི་ཅ་ལ་ཚུ་ མེདཔ་མ་གཏང་པར་ རང་གི་ཁྱིམ་ནང་གི་ ཅ་ལ་བཟུམ་ བདག་འཛིན་འབདཝ་དགོ།
སློབ་ཁང་ནང་གི་ ཅ་ལ་ཚུ་གིས་ དཔེ་ཚན་སྟོན་ནི་དང་ དཔེ་ཚ་ལྷབ་ནི་ལུ་ སྤྱབས་བདེ་ཏོག་ཏོ་བཟོཔ་ཨིན།
ཅ་ལ་དེ་ཚུ་ གཞུང་གིས་ ཏེ་རུ་ལེ་ཤ་སྟོང་དེ་ ཉོཉོཔ་ཨིན་མ་ལས་ བདག་འཛིན་ལེགས་ཤོམ་སྟེ་ འཐབ་དགོཔ་འདི་ ཁག་ཆེ།



༢༢ དཔེ་ཚଌད་དང་ སྐབས་བདེ་ཀྱག་ཀྱ་ བཟོ་མི་འདི་

ཀ སློབ་ཁང་གི་ཅ་ལ་ཚུ་ཨིན།

ཁ སློབ་གྲྭའི་སློབ་དཔོན་ཚུ་ཨིན།

ག སློབ་གྲྭའི་མཐའ་འཁོར་ཚུ་ཨིན།

ང སློབ་གྲྭ་ནང་གི་ཚརྩོགས་ཚུ་ཨིན།

དྲི་བ་གི་འགྲེལ་བཤདཔ།

དྲི་བ་འདི་གི་དམིགས་དོན་ངོམ་ར་ སློབ་ཕྲུག་གིས་ སློབ་ཁང་ནང་ལུ་ དཔེ་ཚଌད་པའི་སྐབས་ལུ་ སྐབས་བདེ་ཀྱག་ཀྱ་ འོང་དགོ་པ་ཅིན་ མཐུན་རྐྱེན་ གཅིར་ཚང་དགོ་པ་འདུག་གཱ་ ཤེས་ཚུགས་པ་བཟོ་ནི་དང་ ཡིག་ཐྲིས་མ་འདི་ སློབ་ཁང་ཅ་ཚས་ཀྱི་སྐོར་ལས་ ཚེནམ་ལས་ སློབ་སྐྱེན་མཐུན་རྐྱེན་ཚུ་ གལ་ཆེ་བའི་སྐོར་ལས་ ཤེས་དགོ་པ་ཚེན། དེ་ལས་ གཞན་ཡང་ ཡིག་ཐྲིས་མ་འདི་གོ་དོན་ལེན་ཏེ་ བརྡ་དོན་འཆོལ་ཚུགས་པའི་ཁར་ ཅ་ཚས་ཚུ་ ངོས་འཛིན་འབད་དེ་ མིང་སྐྱབ་ཚུགས་དགོ། སློབ་ཕྲུག་ བརྒྱ་ཆ ༧༠ དེམ་ཅིག་གིས་ ལན་ངོམ་འདི་ཡོག་ཡོད་པ་ཚེན། དེ་འབདཝ་ད་ སློབ་ཕྲུག་ བརྒྱ་ཆ ༣༠ དེམ་ཅིག་གིས་ ལན་ངོམ་འདི་ གདམ་ཁ་རྒྱབ་མ་ཚུགས་པར་ ལུས་སོང་ནུག།

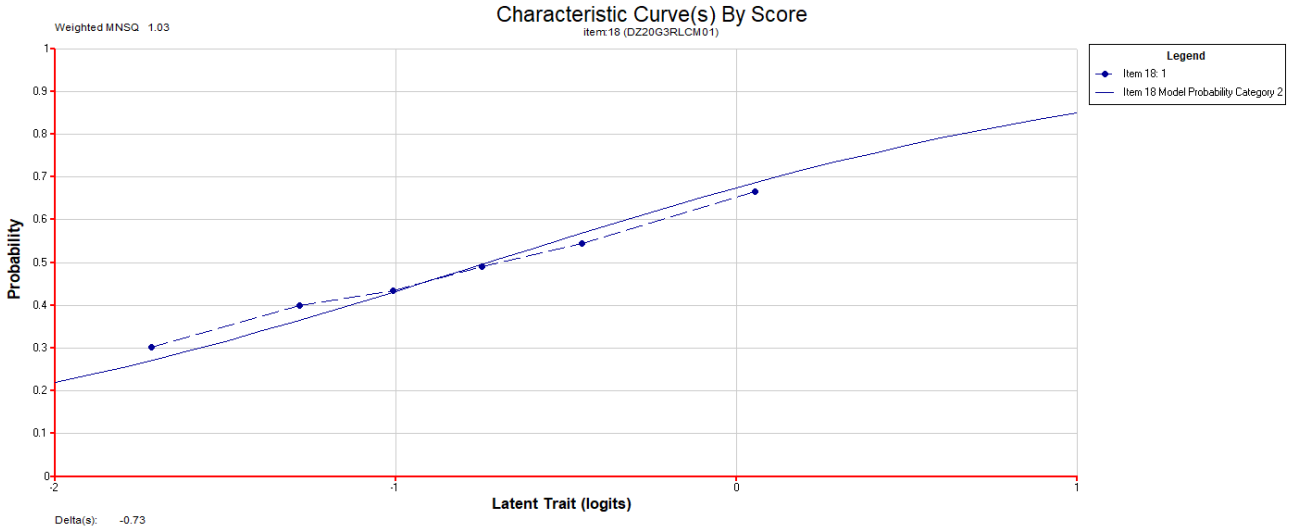
སློབ་སྐྱེན་གྱོས་འཆར།

སློབ་ཕྲུག་ཚུ་ལུ་ ཤེས་ཡོན་སྦྱང་ནིའི་དོན་ལུ་ སློབ་ཁང་གི་ཅ་ཚས་ཚུ་ གཅེམ་ཅིག་ཁག་ཆེཤ་ཚེན་ན་གི་སྐོར་ལས་ ལེགས་ཤོམ་སྦེ་བཤད་པ་རྒྱབ་ཆྱན་ནི་དང་ དཔེ་ཚଌད་པའི་སྐབས་ལུ་ མཐུན་རྐྱེན་ཚུ་ ཡོད་ཅིན་ སྐབས་བདེ་ཀྱག་ཀྱ་ གཅིག་ཁང་ཅ་ཡོད་ན་གི་སྐོར་ལས་ ལེགས་ཤོམ་སྦེ་བཤད་པ་རྒྱབ་ཆྱན་དགོ། དེ་ཁར་ལུ་ སློབ་ཕྲུག་ཚུ་ལུ་ ཆ་རོགས་དང་ལམ་སྟོན་ཀྱི་ཐོག་ལས་ ཡིག་ཐྲིས་མ་འདི་གི་ནང་དོན་ཚུ་ གོས་བསྡུར་འབད་དགོ་པའི་ཁར་ ཡིག་ཐྲིས་མ་འདི་གི་ཅ་འབད་ གཏམ་ཁ་རྒྱབ་ཡོད་པ་ཚེན། ཡིག་ཐྲིས་མ་གི་ནང་དོན་ལུ་ ཁག་ཆ་ཉིད་ཀ་དེམ་ཅིག་ཡོད་པ་ཚེན་ཚུ་ གཅིག་ཁར་སྦྲེ་གོས་བསྡུར་འབད་དགོ་པ་ཚེན།

- དཔེ་ཚଌད་དང་སྐབས་བདེ་ཀྱག་ཀྱ་ བཟོ་མི་ལེ་ཤ་ཡོད་པའི་ནང་ལས་ དཀྱེའི་སྐབས་ལུ་སློབ་ཁང་གི་ཅ་ཚས་ཚུ་ཚེནམ་ སྤྱི་ཚེས་ཤུ་ལྔ་ཚུ་ལུ་ སྦྱོང་ལྡེ་ཚུ་འབད་བཏུག་དགོ།
- ཡིག་ཐྲིས་མ་གི་དོན་ཚན་འདི་ མི་ཚེའི་གནས་སྐྱངས་ནང་ལུ་ ཁག་ཆེ་བས་གཱ? སློབ་ཕྲུག་ཚུ་ལུ་ ཡིག་ཐྲིས་མ་གི་ཁྱངས་དངདགོས་པ་ཚུ་ ལེགས་ཤོམ་སྦེ་ བཤད་པ་རྒྱབ་སྟེ་ ཤེས་ཚུགས་པ་བཟོ་དགོ་པ་ཚེན།
- སློབ་ཁང་ནང་གི་ ཅ་ལ་ཚུ་གིས་ དཔེ་ཚསྟོན་ནི་དང་ དཔེ་ཚལྟ་ནི་ལུ་ སྐབས་བདེ་ཀྱག་ཀྱ་བཟོཤ་ཚེན་ཟེར་བའི་ཐོག་ལུ་ སློབ་ཕྲུག་ཚུ་ གོས་བསྡུར་འབད་བཏུག་ནི།

གནས་སྡུད་ཚེག

๑	ཡིག་ཟིས་མ་གི་མིང།	སྒོ་ཁང་ཅ་ཆས།
๒	ཡིག་ཟིས་མ་གི་ཚད།	২৬ ।
๓	དྲི་བ་ལྟ་ཁག་ཉིད།	རན་ཏོག་ཏོ།
๔	ཡིག་ཟིས་མ་གི་དབྱེ་བ།	རྒྱུད་སྐུལ།
๕	གནས་སྐྱངས།	མཐའ་འཁོར།
๖	དྲི་བ་གི་རིག་རྩལ།	བརྡ་དོན་འཚོལ་ནི།
๗	སྒོ་བ་སྒྲོ་གྱབ་འཐས།	སྟེ་རིམ་๔ པ། ལྷག་ནི་ ๑๐ པ། གནས་རིམ་དང་བསྟུན་པའི་ སྒང་ལྷག་སྟེ་ གོ་དོན་ ལེན་ཚུགས་དགོ།
๘	ཚ་རྒྱེན།	47.0
๙	དྲི་བའི་འཐེལ་མཐུད།	0.19
๑๐	དྲི་བ་དང་དྲི་བའི་འཐེལ་མཐུད་ཀྱི་ བསྟོམས།	0.25
๑๑	ཤེ་ཀྱེད་ ཙེམ་ཙེན་ཙེས་ཀིལ་ (Weighted MNSQ)	1.03
๑๒	དེལ་ཀ། (Delta)	-0.73



Annexure 2.
Sample Items of Cognitive Tests – English Reading Literacy

Level 4

Sample Item

MOUNT EVEREST

Mount Everest is the highest mountain in the world. It is in Nepal. It is 8848 meters tall. In 1953, Edmund Hillary and Tenzing Norgay Sherpa were the first people to climb Everest. As one climbs higher, the air becomes thinner. So, climbers find it difficult to breathe. Even plants and animals do not survive there. Every year lots of people from across the world try to climb the mountain but only a few reach the top.

29 The text was written mainly to

A. tell stories about people.
B. give information to people.
C. ask people to do something.
D. teach people about how to do something.

Item explanation

This item assesses students' ability to identify the main purpose of a short information text. This item is what is referred to as a 'global item' as students need to reflect on the content of the entire text to respond correctly. The distractors are not closely competing as they are clearly incorrect. About 30% of students have responded correctly to this item, however nearly the same proportion of students (about 28%) have selected Option A as their response.

Teaching suggestion

Teachers can help students identify the main purpose of a text by discussing and exploring the question of why a writer has written a text. A series of questions can be explored for simple texts (begin with texts in the textbook):

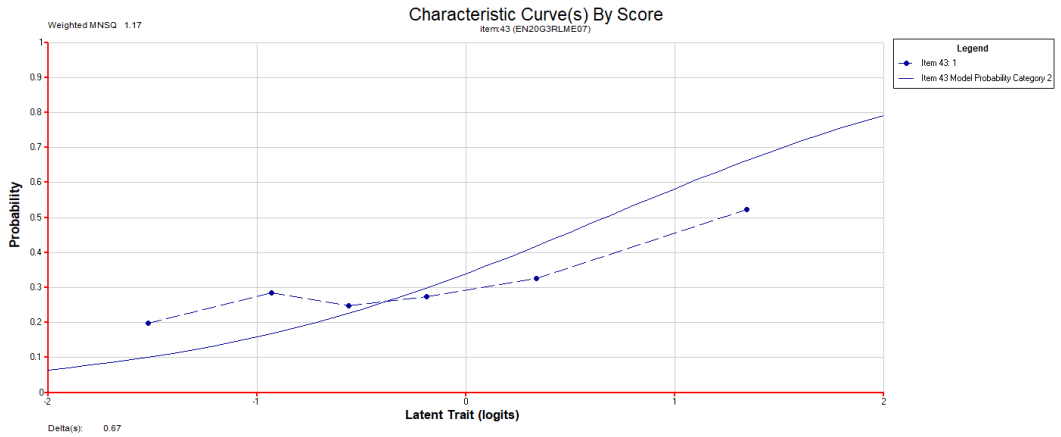
- Is the text a novel, a story, or a poem? If the answer is yes, its purpose is probably to entertain.
- Does the text offer a set of facts? If so, its purpose is probably to inform.
- Does the text provide a series of steps to accomplish a specific task? If so, it is a text that instructs.
- Does the text tell how something works? If so, its purpose is to explain.
- Does the text provide details that allow the reader to form a mental picture? If the answer is yes, it is probably a text that describes.
- Does the text attempt to change the reader's opinion about something or encourage the reader to act in a particular way? If so, it is probably intended to persuade.

Teachers can begin by answering the questions themselves in discussion with students and can gradually allow students to answer the question for themselves.

Meta-data

Meta-data of the Item	Details
Item ID	EN20G3RLME07
Item Type	MCQ
Text Type	Informative
Item Description	Reflect on and identify the main purpose of a short, dense informative text
Skill	Reflect
Context	Global
Learning Outcome	GIII R7
Difficulty Level	Moderate
Facility	30.4
Item-Rest Correlation	0.14
Item-Total Correlation	0.22
Weighted MNSQ	1.17
Delta	0.67

Item Characteristic Curve



Level 3

Sample item

THE BEAR'S ADVICE

Sonam and Dorji were close friends. One day, as they were walking through the forest, they saw a huge bear coming towards them.

At once, Sonam climbed a nearby tree but Dorji did not know how to climb. He laid down on the ground like a dead man. He knew that bears do not attack dead people.

The bear came near Dorji. It smelt his face and left the place.

Then, Sonam climbed down the tree and asked, "Dorji, what did the bear tell you?"

Dorji replied, "The bear told me not to trust a friend like you."

19 Sonam is a

A. bad friend.
B. lazy friend.
C. greedy friend.
D. foolish friend.

Item explanation

The item is intended to assess students' ability to identify the character traits of a main character in a short and simple story. Students need to infer that as Sonam abandoned Dorji in the face of danger he is a bad friend. Less than 40% (38.4%) of students have responded correctly to the item. Option C is the most commonly selected (almost 24%) distractor.

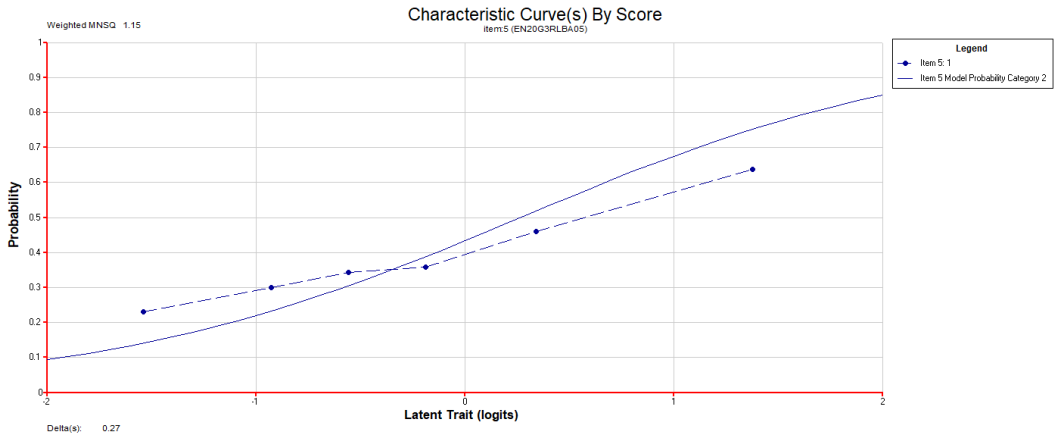
Teaching suggestion

Read a story with a few characters with the students. You can ask students to think of words (adjectives) to describe each of the characters. Ask students to explain why they chose each word. Discuss which words match each character. See if there are several words that can describe each character. Discuss the differences between the characters in the story. Then, discuss the differences between the words used to describe them. Ask students to write down the name of each character, and the word or words that describe each one. Ask students to read the characters' names and the words aloud, to make sure they can read the words.

Meta-data

Meta-data of the Item	Details
Item ID	EN20G3RLBA05
Item Type	MCQ
Text Type	Imaginative
Item Description	Infer the trait of a character in a short simple story
Skill	Infer
Context	Personal
Learning Outcome	GVR10
Difficulty Level	Moderate
Facility	38.9
Item-Rest Correlation	0.22
Item-Total Correlation	0.29
Weighted MNSQ	1.15
Delta	0.27

Item Characteristic Curve



Level 2

Sample item

6 Whose birthday is it?

A. Dawa
B. Tashi
C. Penjor
D. Sonam

Item explanation

This item assesses students' ability to extract simple information by making connections using prior knowledge in simple non-continuous texts. Students need to identify whose birthday party it is by interpreting the sentence – '*You are invited to Tashi's birthday party.*' Only one option is closely competing (Option D. Sonam) as it is mentioned in the text. Only about half the students (49.2%) responded correctly to this item. Option D, as expected, was the most popular distractor attracting nearly 30% of the responses.

Teaching suggestion

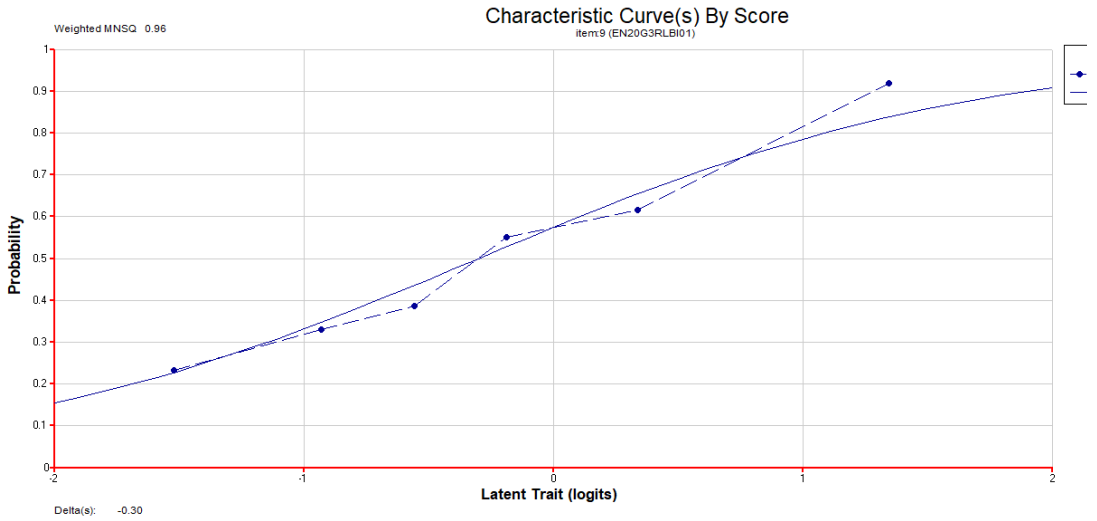
It is important that students are able to read and comprehend simple texts such as birthday invitations. Teachers could familiarise them with different texts in various formats so that students become adept at picking out important information even if it is provided in a slightly unusual manner.

Teachers should also focus on helping students interpret sentences so that students understand what they imply. For instance, if you are invited to someone's birthday party, it is straightforward to interpret whose birthday party it is. Teachers can begin by asking students to interpret simple sentences which are not part of texts. After reading out sentences, questions such as – who, what, when, where, why, how, etc. can be asked and the answers discussed with students. Once students learn to interpret these sentences, they can be asked to do so in texts, as well.

Meta-data

Meta-data of the Item	Details
Item ID	EN20G3RLBI01
Item Type	MCQ
Text Type	Persuasive
Item Description	Interpret information by identifying the reference of a pronoun in a short, simple (non-continuous) persuasive text
Skill	Locate
Context	Local
Learning Outcome	GVR10
Difficulty Level	Easy
Facility	49.8
Item-Rest Correlation	0.40
Item-Total Correlation	0.47
Weighted MNSQ	0.96
Delta	-0.30

Item Characteristic Curve



Level 1

Sample item

2 Circle the words that describe what the boy is doing.

A. cutting a plant
B. watering a plant
C. digging the soil
D. playing with soil

Item explanation

In order to respond correctly to this item, students need to see the picture, comprehend it, and match it to the action provided in the options. The options are closely competing as they all refer to plant/soil related activities. Students found this item quite easy as more than 80% of them answered correctly. All the other options attracted a similar proportion of students, so none of them stand out.

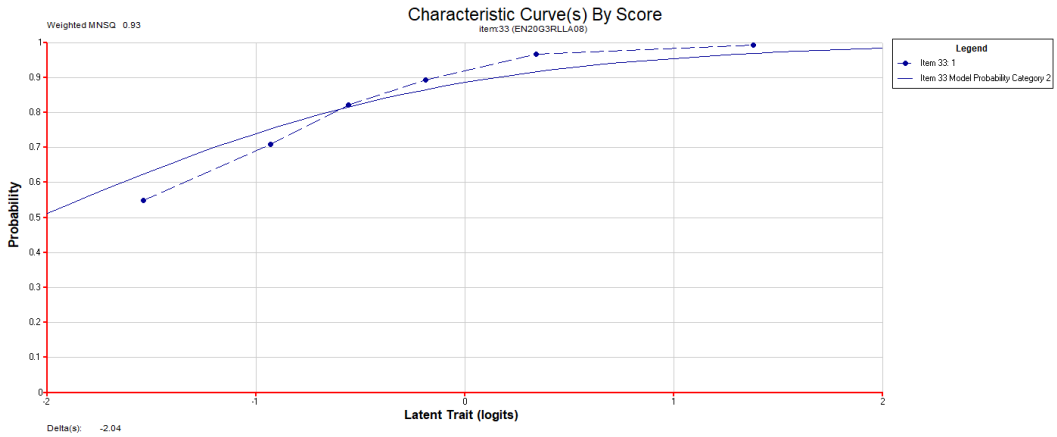
Teaching suggestion

At this level, students may have difficulty identifying verbs that are less familiar. You can ask students to describe what activities they see around them (outside school). They can then be asked to provide the English words for those activities. As their vocabulary improves, they can be shown pictures of activities that they may not see around them and asked to name them.

Meta-data

Meta-data of the Item	Details
Item ID	EN20G3RLLA08
Item Type	MCQ
Text Type	NA (Labelling)
Item Description	Match a picture to a phrase
Skill	NA
Context	NA
Learning Outcome	G1R3
Difficulty Level	Easy
Facility	82.2
Item-Rest Correlation	0.35
Item-Total Correlation	0.41
Weighted MNSQ	0.93
Delta	-2.04

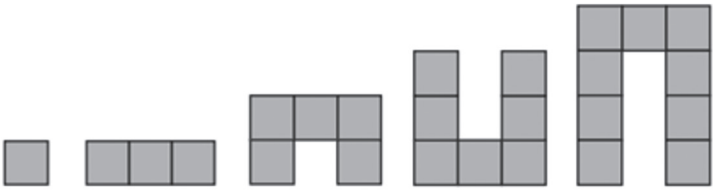
Item Characteristic Curve



Annexure 3.
Sample Items of Cognitive Tests – Mathematical Literacy

Level 5

Sample item



6 Dorji makes 6 pictures using boxes.
Five pictures are shown.

How many boxes will he use to make Picture 6?

A. 6
B. 9
C. 11
D. 12

Item explanation

The sample item illustrates the kind of tasks that students performing at Level 5 are able to do. This item has option C as key. Students performing at Level 5 are likely to answer this question correctly. This selected response item involves mathematical modelling, algebraic thinking, and reasoning across multiple steps, as well as the procedural knowledge of counting and addition.

The mathematical procedural knowledge needed includes counting of identical squares and the comparison of the number of identical squares in each term with the other term in the growing pattern. The comparison of numbers of identical squares shown in each term by succeeding or preceding term in the pattern is the most important procedure and aspect of the item, so it was classified in level 5. The reasoning required includes making a simplifying assumption that the sixth element of the growing pattern contains 11 identical squares arranged in a specific order, recognising that the number of elements can therefore be calculated by subtracting the count of identical squares shown in a term by the count of identical squares shown in just previous term. The modelling skill needed includes selecting an appropriate mathematical model of 11 identical squares for the obtained number.

Teaching suggestion

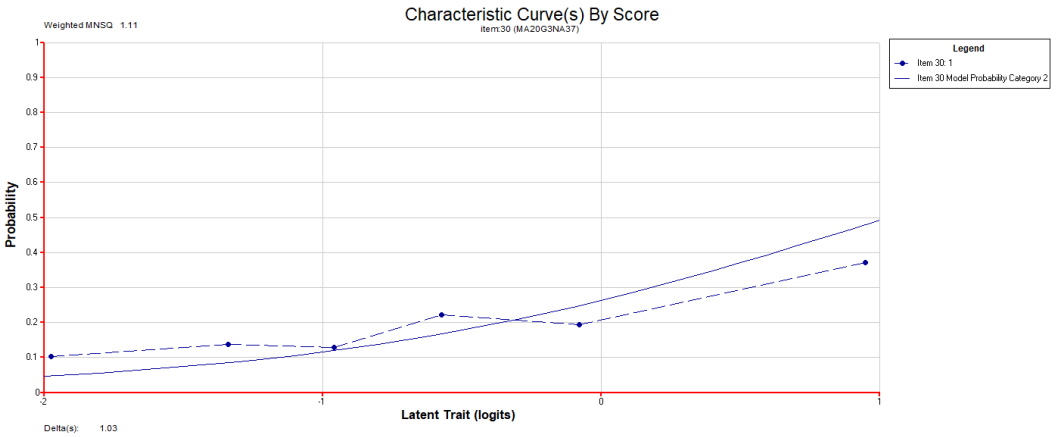
The sample item can be used to stimulate and motivate number patterns involving shapes. For this, start with simple number patterns to reinforce the idea of finding the difference between consecutive terms of a pattern. Practise finding the difference, missing term, next term, and so on. Demonstrate the ways to represent numbers using shapes. Extend this discussion to create a pattern using available 3-D shapes to represent those numbers and working with the pattern formed.

This item could also be used to demonstrate and explore the importance of thinking through what steps might be needed to find the term in the pattern. Start by asking students how they would go about finding the representation of numbers using geometrical shapes to create and find terms of a pattern. Demonstrate and discuss the different mathematical demands imposed depending on which strategy is used.

Meta-data

Meta-data of the Item	Details
Item ID	MA20G3NA37
Item Type	MCQ
Strand	Number and Algebra (NA)
Item Description	Interprets geometric pattern given in a real-life situation
Cognitive Process	Interpreting
Context	Local
Learning Outcome	C3N-16
Difficulty Level	Hard
Facility	19.3
Item-Rest Correlation	0.20
Item-Total Correlation	0.27
Weighted MNSQ	1.11
Delta	1.03

Item Characteristic Curve



Level 4

Sample item

COUNTRY	GOALS SCORED
France	⚽⚽⚽⚽
Croatia	⚽⚽
Brazil	⚽⚽
Belgium	⚽

10 The graph shows the number of goals scored in a world cup match.

One ball = 1 goal
How many goals did France score?

A. 1
B. 2
C. 4
D. 9

Item explanation

Students at this level are typically able to comprehend the data given in a pictograph and answer simple problems based on that. They can interpret texts describing a simple familiar situation. In this item, students need to understand that one ball represents one goal.

The sample item illustrates the kinds of tasks that students performing at Level 4 are able to do. This item has option C as key. Students performing at Level 4 are likely to answer this question correctly. This selected response item involves comprehending data given in a pictograph and then understanding simple problems based on that. This item also involves understanding the value of each symbol to represent data in the pictographs.

Teaching suggestion

The sample item can be used to stimulate the importance of a pictograph to represent the data efficiently in a more readable format. For this, the first step would be to collect data and identify the best way to represent the data efficiently. Practise collecting data from real time situations and choosing a graph type best suited for the data. Students also need to practise comprehending data. Encourage students to represent data using a pictograph by choosing appropriate symbol for numbers and assigning value to each symbol. Extend this discussion by probing questions on data representations done by peers/shown by the teacher.

Meta-data

Meta-data of the Item	Details
Item ID	MA20G3DP19
Item Type	MCQ
Strand	Data Management and Probability (DP)
Item Description	Reads data from the pictograph
Cognitive Process	Applying
Context	Global
Learning Outcome	C3D-02
Difficulty Level	Moderate
Facility	43.4
Item-Rest Correlation	0.52
Item-Total Correlation	0.58
Weighted MNSQ	0.88
Delta	-0.40

Item Characteristic Curve

Level 3

Sample item

Choden goes to her grandparents on 9th August.
She comes back on 23rd August.

AUGUST						Year 2020
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

10 How many weeks did she spend with her grandparents?

A. 2
B. 3
C. 6
D. 8

Item explanation

Students at this level are typically able to apply the knowledge of reading and interpreting the calendar for a month. They can interpret texts describing a simple familiar situation and identify the number of weeks asked by converting days into weeks.
The sample item illustrates the kinds of tasks that students performing at Level 3 are able to do. This item has option A as key. Students performing at Level 3 are likely to answer this question correctly. This selected response item involves conceptual understanding to know how to read a calendar and answer questions based on that. This item also involves the conversion of days into weeks in familiar contexts.

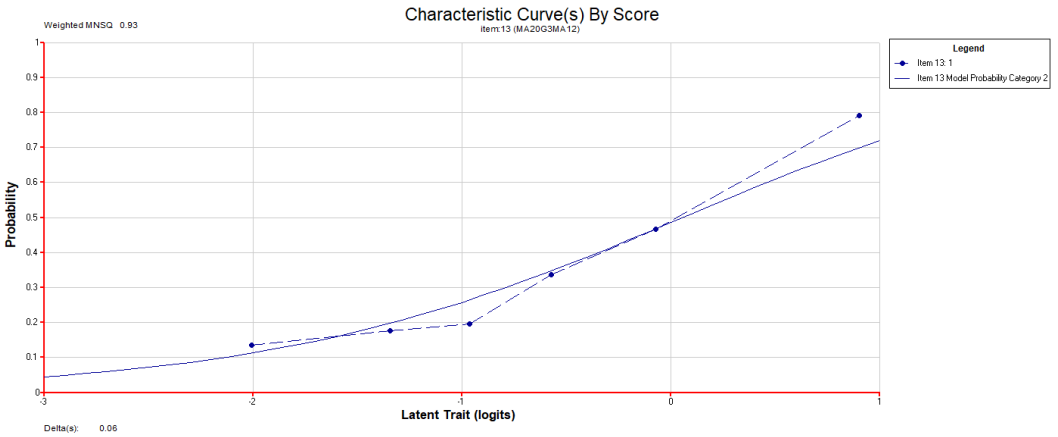
Teaching suggestion

The sample item can be used to stimulate the importance of reading a calendar and its application in real life. For this, start working with introducing questions such as the number of days in a week, month, and year; identifying numbers of days between two dates; and so on. Later, start using with a calendar with discussions on the number of days in a week, number of weeks in a month, and ask questions which involves counting, addition, and multiplication of days. Extend this discussion by asking students to create a calendar for a month and answer questions involving basic mathematical operations.

Meta-data

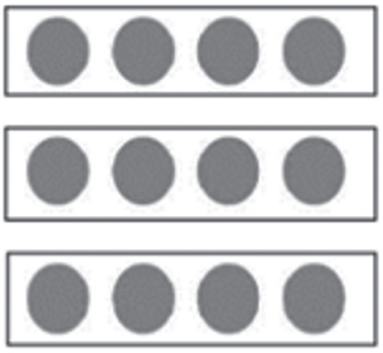
Meta-data of the Item	Details
Item ID	MA20G3MA12
Item Type	MCQ
Strand	Measurement (MA)
Item Description	Relates days and weeks
Cognitive Process	Formulating
Context	Local
Learning Outcome	C3M-03
Difficulty Level	Moderate
Facility	34.4
Item-Rest Correlation	0.45
Item-Total Correlation	0.52
Weighted MNSQ	0.93
Delta	0.06

Item Characteristic Curve



Level 2

Sample item



10 Sonam makes three groups of four balls.
He writes the grouping as 3
Which of these shows the ther way of grouping?

A. 3 ÷ 4 = 12
B. 2 x 6 = 12
C. 12 ÷ 4 = 3
D. 12 x 1 = 12

Item explanation

Students at this level are typically able to carry out basic arithmetic operations (such as multiplication of one-digit numbers by one- or two-digit numbers and division of two-digit number by one- or two-digit numbers). They can interpret texts describing a simple familiar situation and formulate an appropriate calculation and solve it (for example involving multiple ways of grouping of objects to formulate an appropriate division).

The sample item illustrates the kinds of tasks that students performing at Level 2 are able to do. This item has option C as key. Students performing at Level 2 are likely to answer this question correctly. This selected response item involves mathematical thinking and reasoning skills to carry out grouping of objects involving both multiplication and division in familiar contexts.

Teaching suggestion

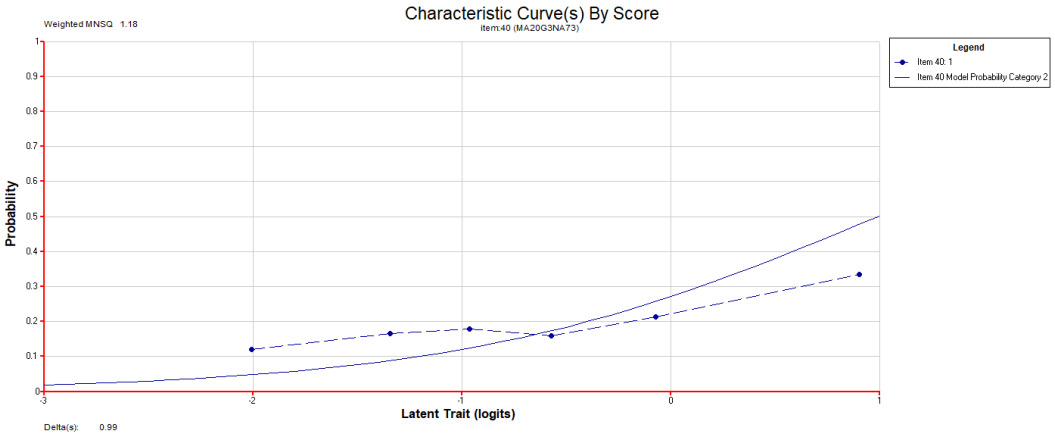
The sample item can be used to stimulate the application of numbers by forming number sentences involving basic mathematical operations (multiplication and division). For this, start working with number sentences involving addition and subtraction in context. Motivate students to devise multiple ways of representing a situation in number sentence. Later, students should start practising with number sentences involving multiplication and division in context. Extend this discussion to write number sentences for a situation involving basic mathematical operations (addition, subtraction, multiplication, and division).

This item could also be used to encourage thinking about numbers in familiar situations and their representations using multiple number sentences for a familiar situation involving different operations.

Meta-data

Meta-data of the Item	Details
Item ID	MA20G3NA73
Item Type	MCQ
Strand	Number and Algebra (NA)
Item Description	Applies the relation between multiplication and division facts
Cognitive Process	Applying
Context	Intra-mathematical
Learning Outcome	C3N-10
Difficulty Level	Hard
Facility	19.3
Item-Rest Correlation	0.12
Item-Total Correlation	0.19
Weighted MNSQ	1.18
Delta	0.99

Item Characteristic Curve



Level 1

Sample item

5 Karma makes a toy by joining two shapes, as shown above.

What shape did he use?

A. cube
B. cone
C. triangular prism
D. triangular pyramid

Item explanation

Students at this level are typically able to relate familiar objects with 3-D shapes. Solving the sample item involves recognition of a standard geometric name for a shape formed by joining two 3-D shapes that would be familiar to many students. The shape is displayed as a three-dimensional graphic representation of cones. The visual interpretation needed would not present a big challenge to students, and many would have no trouble recognising the name 'cone' as the appropriate option from the given list.

The sample item illustrates the kinds of tasks that students performing at Level 1 are able to do. This item has option B as key. Students performing at Level 1 are likely to answer this question correctly. This selected response item involves identifying the name of a combination of two similar 3-D objects.

Teaching suggestion

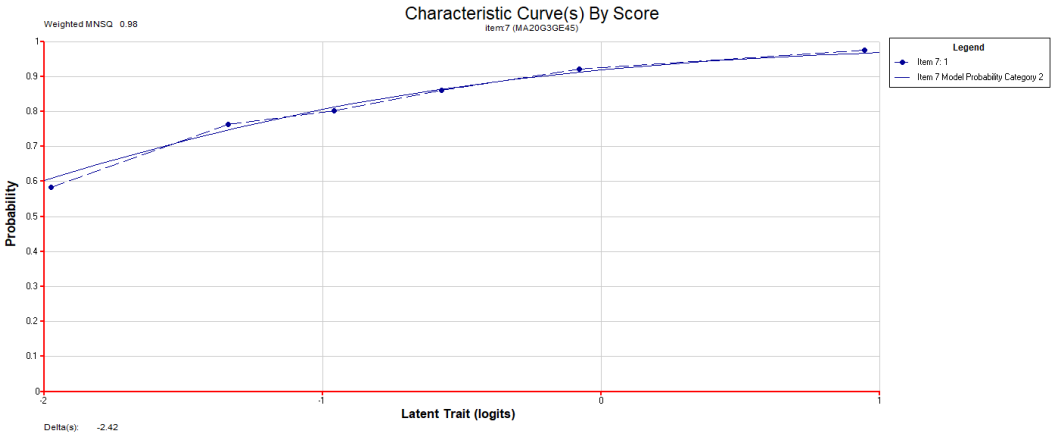
The sample item can be used to stimulate and motivate real life application of geometry involving 3-D shapes. For this, start with a simple combination of two or more 2-D shapes and discussion on the new shape formed. Later, start teaching with different 3-D shapes which first involves combining similar 3-D shapes together and identifying the shapes involved in making the 3-D object. Extend this discussion to create a 3-D object by joining 3-D shapes and identifying the shape of the object and their characteristics.

This item could also be used to demonstrate and explore the importance of thinking about 3-D objects that can be seen in real life situations and classifying them into the respective categories of 3-D shapes.

Meta-data

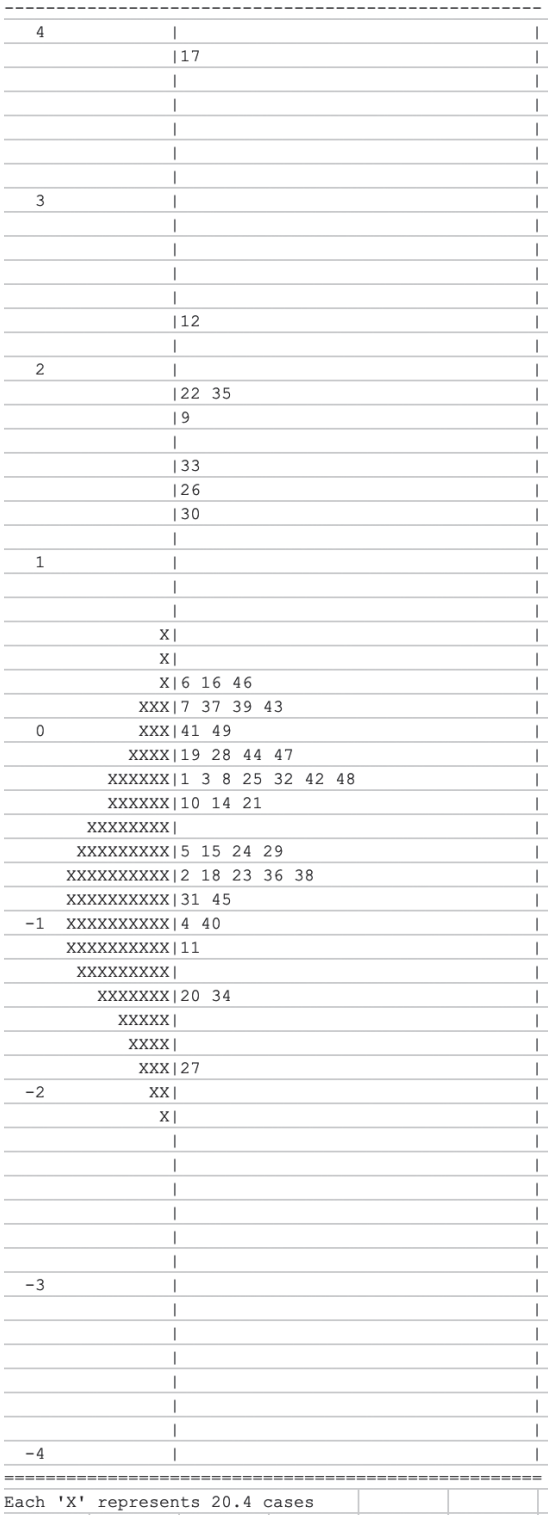
Meta-data of the Item	Details
Item ID	MA20G3GE45
Item Type	MCQ
Strand	Geometry (GE)
Item Description	Identifies the 3- D shape in context
Cognitive Process	Formulating
Context	Local
Learning Outcome	C3G-03
Difficulty Level	Easy
Facility	81.7
Item-Rest Correlation	0.28
Item-Total Correlation	0.35
Weighted MNSQ	0.98
Delta	-2.42

Item Characteristic Curve

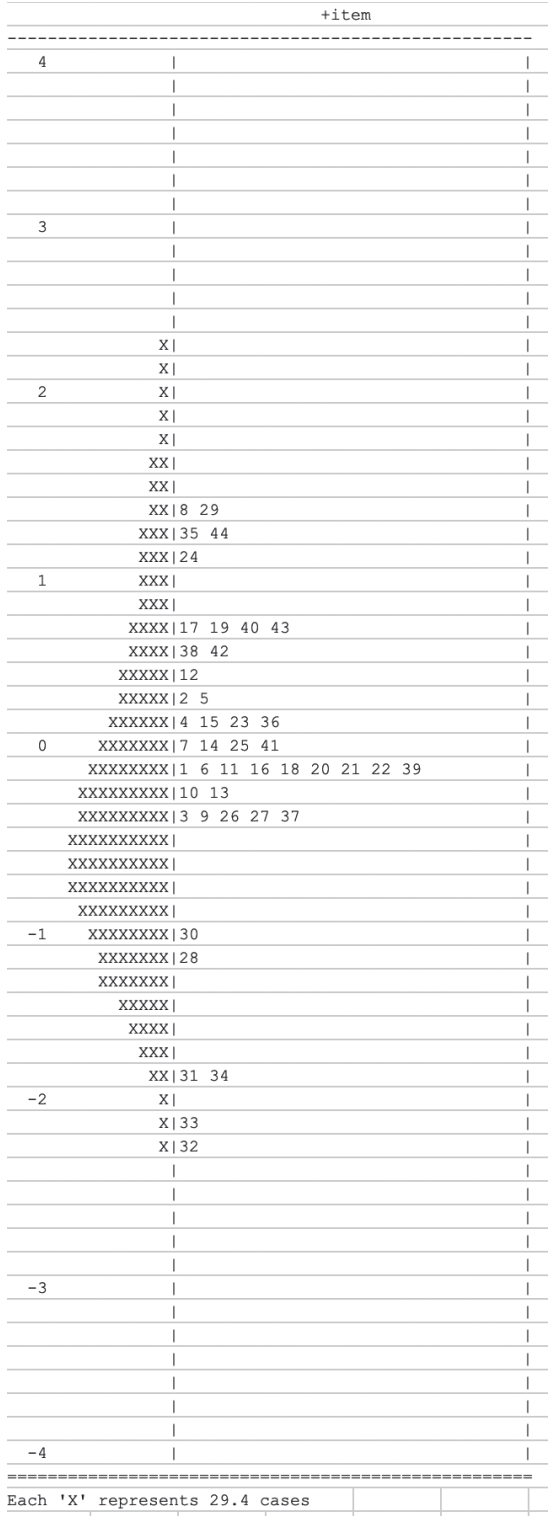


Annexure 4.
Item-Person Maps

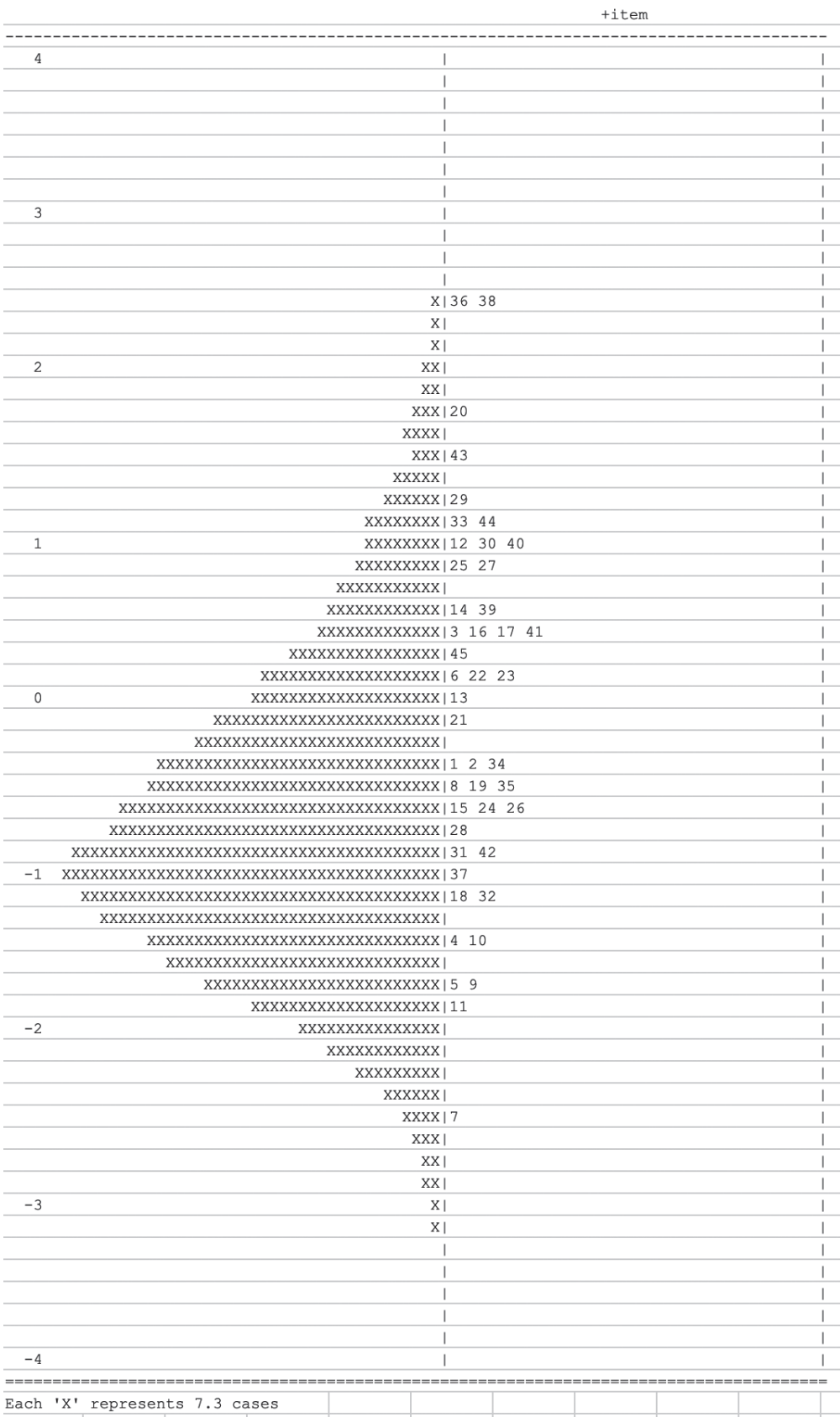
Dzongkha Reading Literacy



English Reading Literacy



Mathematical Literacy



Annexure 5.
Lists of participant involved in the pre-consultation of NEA 2021 Report

NEA 2021 Main Survey Field Operation Staff (25th Nov – 15th Dec, 2021)

Sl. No	Name	School	Dzongkhag
1	Tshewang Dorji	Wangduecholing LSS	Bumthang
2	Passang Dorji	Gangrithang PS	Bumthang
3	Tandin Wangdi	Chapcha MSS	Chhukha
4	Norbu Gyeltshen	Tsimakha MSS	Chhukha
5	Chencho Tshering	Wangchu MSS	Chhukha
6	Chimmi Dorji	Kamji CS	Chhukha
7	Wangchuk	Tsashigatshel PS	Chhukha
8	Ngawang Tenzin	Chumigthang MSS	Pling Throm
9	Sumjay	Pling MSS	Pling Throm
10	Ganesh Subedi	Dagapela MSS	Dagana
11	Chencho Zangmo	Balleygang PS	Dagana
12	Rinchen Karma	Katsho LSS	Haa
13	Sonam Choden	Tshaphel LSS	Haa
14	Tshering Om	Jyenkhana PS	Haa
15	Tshewang Rinzin	Autsho MSS	Lhuentse
16	Tenzin Dawa	Klhuentse PS	Lhuentse
17	Wangdi Dorji	Mongar	Mongar
18	Tashi Dubjur	Ngatshang PS	Mongar
19	Lodey	Gyelpozhing HSS	Mongar
20	Wangda	Yadi CS	Mongar
21	Ugyen Wangmo	Dechentsemo MSS	Punakha
22	Yeshey Tenzin	Lobesa LSS	Punakha
23	Kumar Gurung	Betikha MSS	Paro
24	Kelzang Dorji	Ramchetshekha PS	Paro
25	Khandu Gyem	Shaba PS	Paro
26	Pema Wangmo	Shaba HSS	Paro
27	Tashi Wangmo	Woochu LSS	Paro
28	Namgay Lham	Khangkhu MSS	Paro
29	Yeshey Lhamo	Lango MSS	Paro
30	Dorji Duba	Drukgyel LSS	Paro

31	Cheten Dorji	Drukgyel LSS	Paro
32	Gembo	Drukgyel LSS	Paro
33	Tshering Wangchuk	Dawakha LSS	Paro
34	Thinley Dorji	Pemagatshel MSS	Pemagatshel
35	Karma Chimi	Dechhenling LSS	Pemagatshel
36	Rigzin Dorji	Sarpang MSS	Sarpang
37	Tshering Lham	Dekiling MSS	Sarpang
38	Karan Bdr. Subba	Gelephu MSS	Gelephu
39	Bhim Maya Gurung	Gelephu LSS	Gelephu
40	Damchoe Lhamo	Sengden LSS	Samtse
41	Nima	Dorokha LSS	Samtse
42	Thinley	Mendrupling PS	Samtse
43	Dorji Wangchuk	Yoeseltse MSS	Samtse
44	Gaki Wangmo	Samtse LSS	Samtse
45	Kinley Sonam Chophel	Taba Dramtoe PS	Samtse
46	Nima Wangdi	Martshala PS	Samdrupjongkhar
47	Kelzang Tobgay	Gomdar CS	Samdrupjongkhar
48	Sonam Jamtsho	Samdrupjongkhar PS	Sjongkhar Throm
49	Kado	Tsirangtoe PS	Tsirang
50	Tandin Tshering	Damphu MSS	Tsirang
51	Chencho Tshering	Trashigang MSS	Trashigang
52	Tashi Dorji	Kanglung PS	Trashigang
53	Kinley Dorji	Jampeling CS	Trashigang
54	Thinley Namgay	Khaling LSS	Trashigang
55	Thinley Lhendrup	Thrimshing CS	Trashigang
56	Kinzang	Giongthung MSS	Trashigang
57	Kinley Gyeltshen	Trashiyangtse LSS	Trashiyangtse
58	Dorji Khandu	Khamdang LSS	Trashiyangtse
59	Lekchen	Trongsa PS	Trongsa
60	Sherab Jatsho	Yangchen Gatshel MSS	Thimphu
61	Tshering Dema	Khasadrapchu MSS	Thimphu
62	Tshewang Norbu	Khasadrapchu MSS	Thimphu
63	Kinga Chedup	Wangbama CS	Thimphu
64	Kado Dukpa	Hontsho PS	Thimphu
65	Dorji Wangchuk	Bjemina PS	Thimphu
66	Tshering Dorji	Genekha LSS	Thimphu
67	Dorji Leythro	Sisina PS	Thimphu
68	Rinzin Wangmo	Kuzhugchen MSS	Thimphu
69	Tandin Bidha	Babesa PS	Thim Throm
70	Ugyen Tenzin	Babesa MSS	Thim Throm
71	Ugyen Lhendrup	Wangdue PS	Wangdue
72	Yeshey Namper	Tencholing PS	Wangdue

73	Kuenzang Wangchuk	Nobding PS	Wangdue
74	Purna Bdr. Chettri	Bjimithangkha PS	Wangdue
75	Tshering Pelden	Zhemgang LSS	Zhemgang
76	Karma Wangdi	Goshing PS	Zhemgang
77	Karma Chuki	BCSEA	Focal, Punakha
78	Kinley Namgay	BCSEA	Focal Zhemgang
79	Raju Gurung	BCSEA	Focal Dagana
80	Babita Gurung	BCSEA	Focal, Samtse
81	Ugyen Thinley	BCSEA	Focal, Sarpang/Gelephu
82	Shreeman Gurung	BCSEA	Focal, Trashigang
83	Pema Wangdi	BCSEA	Focal, Bumthang
84	Loden Choiezen	BCSEA	Focal, Mongar
85	Sonam Tshering	DCPD	Focal, Thimphu

Consultation and endorsement of Proficiency Scale for three Domains (17th -20th May, 2022)

Sl. No.	Name of participants	Designation	Dzongkhag
1	Samten Chophel	Teacher	ThimThrom
2	Phub Dorji	Teacher	ThimThrom
3	Passang Lhamo	Teacher	ThimThrom
4	Kindon	Teacher	ThimThrom
5	Karma Lhamo	Teacher	ThimThrom
6	Dorji Zangmo	Teacher	ThimThrom
7	Tshering Nidup	Teacher	ThimThrom
8	Rie K. Dorji	Teacher	ThimThrom
9	Rinchen Pelden	Teacher	ThimThrom
10	Namgyel Thinley	Teacher	ThimThrom
11	Bal Bdr. Chuwan	Teacher	ThimThrom
12	Nimala Sharma	Teacher	ThimThrom
13	Tashi Pemo	Teacher	ThimThrom
14	Anupana Rai	Teacher	ThimThrom
15	Choki Wangchuk	Teacher	ThimThrom
16	Phub Tshering	Teacher	ThimThrom
17	Norbu Wangdi	Teacher	ThimThrom
18	Sonam Choden	Teacher	ThimThrom
19	Sangay Choden	Teacher	ThimThrom
20	Kelzang Seldon	Teacher	ThimThrom
21	Kencho Zam	Teacher	ThimThrom
22	Chungten Meto	Teacher	ThimThrom
23	Tashi Zangmo	Teacher	Thimphu
24	Tashi Wangmo	Teacher	Thimphu
25	Tshombu Lhamo	Teacher	Thimphu
26	Tshering Duba	Teacher	Thimphu
27	Tshewang Pem	Teacher	Thimphu
28	Pempa Tshering	Principal	Gasa
29	Kinley Peldon	Teacher	gasa
30	Yeshi Wangmo	Teacher	Wangdue
31	Tashi Zam	Teacher	Wangdue
32	Gechen Dorji	Teacher	Wangdue
33	Melam	VP	Wangdue
34	Sonam Tshering	VP	Wangdue
35	Tshewang Pem	Teacher	Wangdue
36	Tenzin Wangmo	Teacher	Wangdue
37	Tandin Bidha	VP	Wangdue
38	Tshering Lhendup	Principal	Wangdue
39	Sangay Lhaden	Teacher	Wangdue
40	Karchung	Teacher	Wangdue
41	Leki Wangdi	Principal	Wangdue
42	Tashi Phuntsho	Principal	Wangdue
43	Kinzang Dorji	Teacher	Wangdue
44	Phuntsho	Principal	Wangdue
45	Bal Bdr. Darjee	Principal	Wangdue
46	Karma Dhendup	Teacher	Wangdue
47	Sangay Tenzin	Teacher	Wangdue
48	Dorji Wangchuk	VP	Wangdue
49	Kumbu Lhamo	Teacher	Wangdue

50	Thubten Wangchuk	Teacher	Punakha
51	Jampel Dorji	Teacher	Punakha
52	Karma Chhoden	Teacher	Punakha
53	Karma Dema Sonam	Teacher	Punakha
54	Sonam Penjor	Teacher	Punakha
55	Sangay	Teacher	Punakha
56	Karma Sonam Chophel	CDEO	Punakha
57	Lemo	PDEO	Wangdue
58	Kinley	CDEO	Gasa

Pre-consultation of NEA 2021-Grade III Report (5th Nov- 5th Dec, 2022)

Sl. No	Name of (Teachers, Principal and DEOs)	School Name/ Dzongkhag
1	Choki Dorji	Tendingang ECR (Tang CS)
2	Dechen Loday	Gangrithang PS
3	Jamtsho	Wangdicholing LSS
4	Karma Tshering	Zangtherpo PS
5	Kelzang Penjor	Tangsbji CPS
6	Kinzang Dorji	Zungnyne CPS
7	Leki Phuntsho	Kharab CPS
8	Lhawang Norbu	Ura CS
9	Namgay Tshering	Tang CS
10	Ngawang jamtsho	Jakar HSS
11	Pema Tshering	Wangchuk Academy
12	Sonam Gyeltshen	Kharsat CPS
13	Sonam Gyeltshen	Chumey CS
14	Tandin	Shinnyeer CPS
15	Tara Nidi Chittri	Chungphel CPS
16	Thukten Tshering	Jigmeling CPS
17	Tow Tshering	Chokhortoe CPS
18	Tshewang Dorji	Bebzure ECR (Jigmeling CPS)
19	Ugyen Tashi	Gyatsa PS
20	Yeshi Gyeltshen	Chumey CS
21	Aita Gurung	Alaykha PS
22	Chencho Tshering	Wangchu MSS
23	Chheoku Dorji	Sinchula PS
24	Dawa Drakpa	Kamji CS
25	Dawa Phuntsho	Arekha PS
26	Deki Tshomo	Pakchina PS
27	Dorji Gyeltshen	Shakhu ECR
28	Dorji Tshering	Logchina MSS
29	Dorji Tshering	Getena PS
30	Dorji Wangdi	Dungna LSS
31	Duba Tshering	Tsimakha PS
32	Gangchuk	Rangaytung PS
32	Gem Dorji	Tsimalakha MSS
34	Jigme Dorji	Chapcha MSS
35	Karma Tenzin	Chhukha CS
36	Karma Wangchuk	Arekha HSS
37	Kinzang Wangdi	Chumigthang MSS
38	Leela Bahadur Thara	Pakshikha CS
39	Lhakpa Tshering	Thongling ECR
40	Lhundup Gyeltshen	Meritsemo PS
41	Nima Dorji	Pachu PS
42	Norbu Dradrul	Rinchenling PS
43	Parshuram Chhetri	Chapcha PS
44	Pema Lhamo	Gedu HSS
45	Phub Doley	Samarchen ECR
46	Sangay Ngedup	Tashilakha PS
47	Sonam Choden	Chilauney ECR
48	Sonam Thinley	Gedu HSS
49	Sonam Tshering	Khatoeykha PS
50	Sonam Wangchuk	Lobneykha PS
51	Sonam Wangmo	Gedu HSS
52	Tulsi Prasad Sharma	Darla MSS
53	Tandin Wangchuk	Chungkha PS
54	Tashi Tobgay	Ketokha PS
55	Tashi Wangchuk	Paga PS
56	Ten Dorji	Shemagangkha PS
57	Tshering	Metakha PS
58	Tshering Choda	Gedu HSS
59	Tshering Dorji	Baikunza PS
60	Tshewang Nidup	Chongaykha PS
61	Ugyen Chokey	Gedu HSS
62	Ugyen Dorji	Wangdigatshel PS
63	Ugyen Lhendup	Chimuna PS

64	Ugyen Tshering	Kezari PS
65	Wangchuk	Tashigatshel PS
66	Wangdi	Bongo PS
67	Chhimi Rinzin	Phuntsholing LSS
68	Dorji Tshering	Sonamgang MSS
69	G. Christy Mary	Sonamgang MSS
70	Ganga D. Sharma	Phuntsholing HSS
71	Gangaram Chhetri	Phuntsholing MSS
72	Jigme	Norbu Academy
73	Jigme Dorji	Phuntsholing HSS
74	Jigme Tenzin	Phuntsholing MSS
75	Leela Dhar Adhikari	Phuntsholing LSS
76	Meena Devi Gurung	Phuntsholing HSS
77	Mumta Gurung	Norbu Academy
78	Namgay Choden	Sonamgang MSS
79	Raj Kr. Chhetri	Phuntsholing LSS
80	Sabika Lepcha	Norbu Academy
81	Sangay Penjor	Phuntsholing LSS
82	Sonam Chozom	Phuntsholing MSS
83	Sonam Phuntsho	Yonten Kuenung Academy
84	Sonam Zangmo	Phuntsholing HSS
85	Tashi Lhamo	Phuntsholing LSS
86	Tshewang	Phuntsholing MSS
87	Tshewang Dem	Sonamgang MSS
88	Choki Wangmo	Daga PS
89	Bhim Bahadur Subba	Karmaling CPS
90	Chumpi Dukpa	Gangzor PS
91	Gopal Thingh	Zinchella PS
92	Govinda Oli	Tsangkha MSS
93	Jambay Tashi	Devitar ECR (Lhamoizingkha CS)
94	Karma Wangchuk	Namchella LSS
95	Kinley Lham	Nichula ECR
96	Nidup Dorji	Balleygang PS
97	Nim Dorji Tamang	Panserpo PS
98	Prem Bahadur Limboo	Phuensumgang PS
99	Rin Tshomo	Samey PS
100	Rinchen Dukpa	Drujeygang CS
101	Sonam Dorji	Gumla PS
102	Sonam Tenzin	Lungtengang PS
103	Sonam Tshering	Lhaling PS
104	Tashi Dema	Nimtola PS
105	Tashi wangdi	Namshingang ECR
106	Tenzin	Tashiding LSS
107	Tshering Dorji	Dagana Edu office
108	Tshering Dorji	Phekoma PS
109	Ugyen Dorji B	Daleythang LSS
110	Tshering la	Daga CS
111	Yeshi Dorji	Drujeygang CS
112	Ganesh Subedi	Drujeygang CS
113	Biranran s Kumar Khatiwara	Drujeygang CS
114	Dawa Drukpa	Bjishong CS
115	Dorji Dendup	Bjishong CS
116	Karma Chezang	Bjishong CS
117	Karma Tsheltrim	Gasa PS
118	Karma Tshering	Gasa PS
119	Khedrupla	Laya MSS
120	Kinley Wangchuk	Bjishong CS
121	Kinley Wangchuk	Bjishong CS
122	Lhatu	Gasa PS
123	Pempa tshering	Gasa PS
124	Sonam Drukpa	Lungo ECR
125	Chencho Wangmo	Gongzim UDCS
126	Dophu	Chundu AFPS
127	Dorjee Wangchuk	Katsho LSS
128	Jigme Chado	Katsho LSS
129	Kuenzang Tenzin	Jyenkhana PS
130	Namgay Nidup	Jampeling HSS
131	Nim Tshering	Rangtse PS
132	Passang Gyem	Sangbaykha PS
133	Sonam Chhoden	Chundu AFPS
134	Sonam Chhogyel	Gongzim UDCS
135	Sonam Choden	Tshaphel LSS
136	Sonam Tobgay	Katsho LSS
137	Sonam Tshering	Gongzim UDCS
138	Tandin Wangyel	Tshaphel LSS
139	Tshering Dema	Chundu AFPS
140	Ugyen Tshering	Damthang PS
141	Ugyen Tshomo	Katsho LSS
142	Dechen Wangdi	Domkhar PS
143	Dorji Nidup	Lhuentse HSS
144	Karma Thinley	Wambur PS

145	Karma Tshering	Gortshom PS
146	Karma Wangdi	Khoma LSS
147	Kencho Tshering	Tshochen PS
148	Lungten	Zangkhar PS
149	Rinchen Wangdi	Thimyul LSS
150	Samten Wangchuk	Minjey MSS
151	Sangay Chophel	Autsho MSS
152	Sangay Penjor	Tangmachu HSS
153	Singay Phurpa	Lhuentse PS
154	Sonam Penjor	Ganglakhema PS
155	Sonam Phuntsho	Ney PS
156	Sonam Tobgay	Ladrong PS
157	Tenzin Wangdi	Dungkhar PS
158	Thubten Dorji	Ongar ECR
159	Yeshey Tshewang	Chakzom ECR
160	Akal Kumar Allay	Lingmethang MSS
161	Chedra Jamtsho	Ganglapong PS
162	Dorji Bidha	Yaragla ECR
163	Gonpo Tshering	Daksa PS
164	Jamtsho	Bumpazor PS
165	Jamtsho	Yadi CS
166	Jigme Dorji	Pangthang PS
167	Karma Singye	Thangrong PS
167	Karma Wangchuk	Silambi PS
168	Kinga Rinchen	Mongar HSS
169	Kinley Dorji	Ridaza PS
170	Kinley Rabgay	Yangbari PS
171	Kuenga	Kengkhar MSS
172	Kunzang Chophel	Drametse CS
173	Leki Wangdi	Broksar ECR
174	Neten Lhamo	Gyelponzhing CS
175	Ngajay Tshering	Muhung ECR
176	Ngawang Dendup	Jaibab ECR
177	Nima	Tsamang PS
178	Palden Dorji	Narang PS
179	Pema Rinzin	Kideykhar HSS
180	Phuntsho Wangdi	Chakhar CS
181	Phuntsho Wangdi	Konbar PS
182	Sangay Dorji	Bagging PS
183	Sangay Dorji	Chaskhar ECR
184	Sangay Lethro	Udaric PS
185	Sangay Tashi	Serzhong LSS
186	Sangay Tshering	Tsenzabi ECR
187	Singye	Chali LSS
188	Som Bdr. Mongar	Nagor MSS
189	Sonam Penjor	Soenakhar ECR
190	Tashi Samdrup	Lingkhar ECR
191	Tashi Tenzin	Zunglen PS
192	Tashi Wangdi	Tsakaling PS
193	Tempa Dorji	Kalapang PS
194	Tenpa Rinchen	Banjar ECR
195	Tenzin Kinley	Sangkama ECR
196	Tenzin Wangchuk	Jurmey PS
197	Thinley Namgay	Woop ECR/Zunglen
198	Tsheltrim Dorji	Thridangbi PS
199	Tshering Chophel	Balam PS
200	Ugyen Choeda	Ngatshang PS
201	Ugyen Dorji	Sherab Reldi HSS
202	Ugyen Namgyel	Mongar MSS
203	Ugyen Tshering	Sengor PS
204	Yeshey Dorji	Saling ECR
205	Kinley Tenzin	Jurmey PS
206	Dechen Tshering	Wangsel Inst
207	G.K. Adhikars	Karma Leksheyling
208	Gomchen Tenzin	Khangkhu MSS
209	Kado	Gunitsawa PS
210	Karma	Shari HSS
211	Karma Tshering	Drukgyel HSS
212	Kelzang Wangchuk	Shaba HSS
213	Kinley Om	Paro Elementary School
214	Kumar Gurung	Betikha MSS
215	Madhav Dahal	Rigzom Academy
216	Pema Wangmo	Drukgyel LSS
217	Phurpa Dorji	Rashigang PS
218	Purney Tamang	Karma Academy
219	Rinhen Karma	Woochu LSS
220	Sangay	Issuna PS
221	Sonam Pemjor	Upal Jr School
222	Sonam Wangmo	Doteng LSS
223	Thinley Wangchuk	Taju PS
224	Toujay	Ramchetsekha PS
225	Tshedup Dema	Gaupel LSS
226	Tshering Dorji	Olathang PS
227	Tshering Tashi	Shaba PS

228	Tshering Wangchuk	Dawakha LSS
229	Tshewang Lham	Yoezerling PS
230	Ugyen Dema	Lamgong MSS
231	Yeshi Dorji	Wanakha CS
232	BB Gurung	Wokuna ECR
233	Chador Lhundup	Lakhu PS
234	Dechen Wangdi	Goenshari PS
235	Haki Wangmo	Khuruthang MSS
236	Jambay Gyeltshen	Logodama PS
237	Jamtsho	Tshochasa PS
238	Karma Dema	Mendrelgang ECR
239	Kinley Tshering	Yebesa ECR
240	Kinzang Tshewang	Dashiding HSS
241	Lhatu Dorji	Wolathang PS
242	Namgyal Tshering	Dechentsemo CS
243	Nima Sherpa	Shengana LSS
244	Pema Dema	Bjibjokha LSS
245	Phurba	Mendhagang PS
246	Sangla	Kabesa CS
247	Sherab Tshering	Punakha CS
248	Sonam Tshering	Nawakha PS
249	Tashi Dendup	Talhogang PS
250	Tashi Phuntsho	Thinleygang LSS
251	Thinley Jamtsho	Tsekha ECR
252	Thinley Wangchuk	Lobesa LSS
253	Tshering Norbu	Tashidingkha CS
254	Tsheten Dorji	Khuruthang MSS
255	Tshewang Rinzin	Phulingsum PS
256	Ugyen	Laptsakha PS
257	Chonga Tshering	Khar PS
258	Chusang Wangdi	Shali PS
259	Dampai Chogyel	Gashari PS
260	Dechen Wangdi	Woongchiloo PS
261	Jampa Choda	Thongsa PS
262	Karchung	Dungmin PS
263	Kelzang Chodup	Gonpasingma LSS
264	Kunzang Tobgay	Tsebar LSS
265	Langa Tshering	Chimong PS
266	Leki Tshering	Yurung MSS
267	Pema Wangchuk	Khangma PS
268	Phurpa Wangdi	Dechheling LSS
269	Sangay Phuntsho	Yelchen HSS
270	Sangay Wangdi	Mikuri PS
271	Sonam	Tshatse PS
272	Sonam Norbu	Nganglam HSS
273	Tashi Tshering	Norbugang PS
274	Tempa Gyeltshen	Shumar LSS
275	Thinley Namgay	Choekhorling PS
276	Tshering Norbu	Khothakpa PS
277	Ugyen Duba	Khenadang ECR
278	Wangchuk	Nganglam MSS
279	Yeshi Jamtsho	Pemagatshel MSS
280	Zangpo	Khenzore PS
281	Dorji Wangdrup	Muenselling Institute
282	Jigme Rinchen	Wamrong LSS
283	Kinzang Dorji	Brekha PS
284	Kinzang Dorji	Tsangpo PS
285	Kuenzang Dorji	Phegpari PS
286	Neten Wangchuk	Berdungma PS
287	Ngawang Drukda	Jigme Sherubling HSS
288	Norbu Gyeltshen	Moshi PS
289	Phendey Tshering Chophel	Kurichilo PS
290	Sangay Dorji	Kangpar LSS
291	Tashi Phuntsho	Lumang PS
292	Ten Dorji	Barshong PS
293	Tshering	Jerelemi PS
294	Tshering	Tshogonpa PS
295	Tshering Dendup	Dungmanba PS
296	Tsheten Tshering	Khaling LSS
297	Tsheten Tshering	Thrimshing MSS
298	Tshewang Gyeltshen	Zordung PS
299	Ugyen	Tashitse HSS
300	Yeshey	Thungkhar LSS
301	Ugyen Wangchuk	Thrimshing MSS
302	Cheten Dorji	Merak PS
303	Chewang Dorji	Gongthung MSS
304	Chimi	Ritshangdung PS
305	Chimi Tshewang	Bidung LSS
306	closed	Yingom PS
307	Dorji Tshering	Bikhar LSS
308	Jamyang Gyeltshen	Uzorong MSS
309	Jigme Tenzin	Changmey PS
310	Jigme Tenzin	Thrakthrik ECR

311	Jimba Tharchen	Pakaling PS
312	Karma Rinzin	Rangjung PS
313	Kelzang Tenzin	Pam PS
314	Kesang Wangchuk	Trashigang MSS
315	Kezang Duba	Daliphangma PS
316	Kinlay Dorji	Jampeling HSS
317	Kuenzang Choida	Chaling PS
318	Langa Dorji	Tokshingmang PS
319	Lhacha Wangdi	Chiya PS
320	Lobzang Lhendup	Rangshikhar ECR
321	Nehn Tshering	Rongthung PS
322	Pema Dorji	Yabrang PS
323	Samdrup Gyalpo	Sakteng LSS
324	Sangay Dorji	Kanglung PS
325	Sangay Gyeltshen	Radi MSS
326	Sherab Dorji	Benshingmo PS
327	Sonam Lhendup	Thongrong PS
328	Tara Subba	Dungtse MSS
329	Tashi Wangdi	Bartsham HSS
330	Tenzin Rabten	Phongmey PS
331	Thinley Dorji	Yangnyeer PS
332	Tshering Darjay	Yonphula LSS
333	Tshering Nidup	Jomtshang PS
334	Tshering Phuntsho	Bartsham PS
335	Tshewang Namgay	Galing PS
336	Tshewang Zangpo	Yobinang ECR
337	Ugyen Namgay	Saling PS
338	Ugyen Wangchuk	Rangjung HSS
339	Yeshey Dorji	Joenkhar PS
340	Chenga	Chakidemi PS
341	Cheten Pelzang	Shali PS
342	Cheten Tashi	Lichen PS
343	Dawa Gyeltshen	Gangkhar PS
344	Gayleg Tenzin	Dukti PS
345	Gyelpo Sherpa	Kheni LSS
346	Karma Chojay	Tshaling PS
347	Kencho Tsheten	Tsenkharla HSS
348	Leki Gyeltshen	Melongkhar PS
349	Leki Tshering	Womanang PS
350	Norbu	Baylling HSS
351	Norbu Tshering	Yallang PS
352	Phuntsho	Shingkhar PS
353	Phurpa	Doksum PS
354	Ranbir Tamang	Bumdeling LSS
355	Samten Dorji	Jamkhar PS
356	Sonam Dargay	Khamdhang LSS
357	Sonam Tobgay	Tokaphu PS
358	Sonam Wangda	Jangphutse PS
359	Tandin Wangchuk	Pangtokha PS
360	Tashi Dorji	Tongmijangsa PS
361	Tashi Phuntsho	Trashiyangtse LSS
362	Tenzin Wangchuk	Kunzangling HSS
363	Tenzin Wangchuk	Ramjar MSS
364	Thinley Gyeltshen	Tarphel PS
365	Tshewang Sithar	Langmadung PS
366	Ugyen Palden	Thragom LSS
367	Ugyen Penjor	Tsangphuchen PS
368	Absent	Rabtey PS
369	Kinzang Choden	Yallang PS
370	Chenga Dawa	Bjeezam PS
371	Gyembo	Kella ECR
372	Jigme Norbu	Kuengarabten PS
373	Karma Phuntsho	Trongsa PS
374	Karma Tshomo	Yudrungcholing PS
375	Kencho	Tashidingkha
376	Mohan Kumar Pradhan	Chendebji PS
377	Nidup Gyaltshen	Tshangkha CS
378	Norbu	Nimshong PS
379	Pema Dorji	Baling PS
380	Pema Tobgay	Nabji PS
381	Phuntsho Norbu	Samcholing PS
382	Sonam Jamtsho	Samcholing HSS
383	Sonam Rinchen	Taktse CS
384	Tandin Tshering	Karshong PS
385	Thimpen Rai	Tongtophey PS
386	Tshering Wangchuk	Langthel LSS
387	Tshering Wangchuk	Simphu PS
388	Tshering Tashi	Jangbi PS
389	Tshoki Dorji	Sherubling HSS
390	Ugyen Thinley	Bemji PS
391	Cheku	Rangthangling PS
392	Cheten Wangchuk	Semjong PS

393	Chokey Wangchuk	Mandrelgang CS
394	Dawa Penjor	Doonglagang
395	Gyeltshen Drukpa	Gosaling PS
396	Nidup Wangdi	Phuentenchu PS
397	Passang Dukpa	Nimazor ECR
398	Rigzin Thinley	Mendrelgang PS
399	Sha Bdr subba	Sergithang PS
400	Sonam Tenzin	Tsholingkhag PS
401	Tashi Wangchen	Barshong PS
402	Tek Bdr Kharka	Kilkharthang PS
403	Tsheltrim	Pemathang
404	Tshewang Tenzin	Patshaling PS
405	Deki Dema	Wangbama CS
406	Dorji Wangchuk	Khasadrapchu MSS
407	Jamyang	Hongtsho PS
408	Kencho	Kuzhugchen MSS
409	NP Biswa	Yum Thinley Choden
410	Phurpa Dorji	Lingzhi LSS
411	Tendi Wangdi	Tshaluna PS
412	Tenzin	Barshong PS
413	Tshering Dorji K	Soe ECR
414	Tshering Womling	Yangchen Gatshel HSS
415	Tshewang Lhendup	Sisina PS
416	Ugyen	Genekha LSS
417	Ugyen Jimba	Jemina PS
418	Bir Bahadur Battarian	Dr. Tobgay
419	Dawa Tshering	Lungtenzampa MSS
420	Dawa Tshering	Zilukha MSS
421	Deki Choden	ELC
422	Dorji Wangdi	Jigme Namgyal LSS
423	Jigme Dorji	Thimphu PS
424	Karma Lhamo	Sunshine School
425	Karma Tshewang	Kuenselphodrang PS
426	Kezang tshering	Lungtenphu MSS
427	Kuenzang Thinley	RinchenKuenphel PS
428	Nado Rinchen	Jigme Losel PS
429	Namgay Dorji	Loselling MSS
430	Namgay Thinley	Sersang PS
431	Ngawang Phuntsho	Changriphel PS
432	Nima Wangchuk	Little Dragon School
433	Nyendo	Changangkha MSS
434	P Tashi	Druk School
435	Pem Dechen	Kelki HSS
436	Pema Tshering	Rinchen HSS
437	Rudra Chhetri	Pelkhil School
438	Sangay Dorji	Jungshina PS
439	Sherap Dema	Taba LSS
440	Sonam	Loselling MSS
441	Sonam Phuntsho	Zilnoen Namgay LSS
442	Sonam Thinley	Babesa HSS
443	Sonam Y Chogyal	Deki School
444	Tandin Bidha	Babesa PS
445	Tashi Gyeltshen	Dechencholing HSS
446	Thinley Dendup	Depsi HSS
447	Yesh B Ghalley	YHSS
448	Alop Kumar Rai	Birutar ECR
449	Cheku Dorji	Peljorling HSS
450	Chencho Dorji	Norbugang PS
451	Choney Dorji	Tashicholing PS
452	Dawa Tshering	Gawaling PS
453	Dorji Wangchuk	Samtse LSS
454	Gap Tshering	Gaseling PS
455	Karma Thinley	Bucky PS
456	Kencho Zangmo	Dipujora PS
457	Kezang Cheden	Sang-Ngag Chholing LSS
458	Kinzang Chophel	Tachey CPS
459	Kinzang Chophel	Nigurey ECR
460	Laxuman Gurung	NamgayCholing PS
461	Lungten Jamtsho	tachey (Tashithang PS)
462	Namgay Rinchen	Botaykharka ECR (Ugyentse PS)
463	Namgay Rinchen	Bhoteykharka ECR
464	Nima Dorji	Khandothang PS
465	Passang Wangdi	Thikha ECR
466	Pelden Choden	Lamitar ECR
467	Pema Selden	Mandrani ECR
468	Pema Sherpa	Dorokha LSS
469	Pema Tshewang	Yeoseltse MSS
470	Pembu	Kachin
471	Phub Dorji	Mindruling PS
472	Pratap Tamang	Gomtu HSS
473	Rinchen Pemo	Sombek ECR
474	Rinzin Dorji	Samtse HSS
475	Samit Limbu	Depheling PS

476	Singye	Sengdhen LSS
477	Sonam Wangchuk	Soeltapsa PS
478	Tandin Dorji	Changchu PS
479	Tashi Dargay	Dzongsar PS
480	Tashi Dema	Nangladang PS (Norbugang CS)
481	Tashi Tobgay	Jaringay PS
482	Tashi Tshering	Denchukha LSS
483	Tempa Nima	Samtse HSS
484	Ten Gyeltshen	Sherubgatshel LSS (Dzongsen CPS)
485	Thinley	Panbari PS
486	Tsheltrim Dorji	Samtse HSS
487	Tshering Gyeltshen	Norbugang CS
488	Tshering Phuntsho	Phensum PS
489	Tshering Wangchuk	Ugyentse PS
490	Tshering Wangchuk	Phuntshopelri PS (Gomtu)
491	Tshewang Dorji	Gangthok PS (Namgay-Choling)
492	Udai N Bhattarai	Dorokha CS
493	Ugyen Dorji	Tendruk CS
494	Ugyen Phuntsho	Kyidsa PS
495	Wangchuk Drukpa	Taba Dramtoe LSS
496	Tshering Wangchuk	Gomtu HSS
497	Rinchen Pemo	Ngoedroopling (Sangacholing LSS)
498	Alop Kumar Rai	Phunsum CPS
499	Tashi Tobagy	Phunsum CPS
500	Pema selden	Khandothang Ps
501	Cheten Wangdi	Lharing PS
502	Duptho Ugyen	Jigmeling PS
503	Kencho Tshering	Dekiling MSS
504	Lungten Jatsho	Dechenpelri PS
505	Rinzin Dorji	Samtenling PS
506	Som Nath Darjee	Gakidling Ps
507	Tenzin	Kencholing ECR
508	Tshegyal Dawa	Choekhorling MSS
509	Tshering Samdrup	Singye PS
510	Chenga Dawa	Pelrithang HSS
511	Dorj	Taraythang PS
512	Dorji Gyeltshen	Retey Ps
513	Leki wangdi	Norbuling CS
514	N P Chamlagai	Lhayul PS
515	Rinchen Dorji	Umling MSS
516	Sangay	Chuzagang Ps
517	Sherab Dorji	Jigmecholing Mss
518	Sonam Wangchuk	Jangchubling MSS
519	Tashi Wangdi	Sershong Ps
520	Tshering Dema	Losel Gyatsho Academy
521	Ugyen Loday	Samkhara ECR (Jigme Choling MSS)
522	Cheki Gyeltshen	Rikhey CPS
523	Cheten Tshering	Phuntshothang MSS
524	Dawa Zangmo	Monmola PS
525	Hari Prasad Powdyel	Karmaling HSS
526	Karma Gyeltshen	Sarjung PS
527	Karma Tshewang Dorji	Dungmanma PS
528	Kinga Norbu	Zangthi PS
529	Letho	Yarphu CPS
530	Nima Gyeltshen	Gomdar CS
531	Nima Gyeltshen	Wangphu CPS
532	Nima Wangchuk	Jomotshangkha MSS
533	Nima Wangdi	Martshala PS
534	Norbu Dukpa	Orong CS
535	Pema Gyalpo	Pemathang LSS
536	Sangay Wangdi	Rikhey CPS
537	Sangay Zangmo	Lauri PS
538	Sanjay Dorji	Wooling CPS
539	Sherub Gyeltshen	Khoyar CPS
540	Sherub Lhendup	Rikhey CPS
541	Sonam Dawa	Minjiwoong CS
542	Tenzin Wangchuk	Phuntshothang MSS
543	Thinley Dorji	Garpawoong MSS
544	Tshedar	Jongsa PS
545	Tshering Wangdi	Bazor CP
546	Tshewang	Zamtari PS
547	Tshewang Dorji	Phuntshothang MSS
548	Ugyen Namgyal	Martshala CS
549	Ugyen Penjor	Orong CS
550	Aita Raj Hingmang	Rekubji PS
551	Bal Bahadur Darjee	Sephu PS
552	Deki Wangmo	Gangphel ECR
553	Ganga Ram Gurung	Samtengang CS
554	Khandu	Phetakha PS

555	Kinley Penjor	Damchothang ECR
556	Leki Wangdi	Hebesa PS
557	Mani Dorji	Nahi PS
558	Namgay Dorji	Wangdue
559	Namgay Wangchuk	Singye Namgyal PS
560	Namgyal Dorji	Jalla PS
561	Nima Dorji	Rinchengang PS
562	Norbu	Nobding LSS
563	Pema Rinzin	Shataksha PS
564	Phuentsho	Dangchu PS
565	Phuntsho Rinzin	Ridha ECR
566	Rinchen Tshewang	Phojikha CS
567	Samten	Rubesa PS
568	Sangay Jambay	Gaselo PS
569	Sangay Khandup	Uma PS
570	Shankarla Dahal	Bajo HSS
571	Sherub Dorji	Gogona ECR
572	Sonam Tshering	Wangdue PS
573	Sonam Wangchuk	Phuensum Deki PS
574	Tandin Bidha	Tencholing PS
575	Tandin Norbu	Kazhi PS
576	Tashi Phuntsho	Samtengang PS
577	Tshering Dorji	Bayta PS
578	Tshering Gyembo	Matalungchu ECR
579	Tshering Lhendup	Bjimthangka PS
580	Tshewang Thinley	Khotokha PS
581	Ugyen Lhaden	Dranghal ECR
582	Yeshi Jamtsho	Ramechen PS
583	Yonten Jamtsho	Bejena PS
584	Deki Lhamo	Tshanglajong PS
585	Dorji Lungten	Kikhar PS
586	Jangchuk Dorji	Digala ECR
587	Mitse Dorji	Langdurbi Ps
588	Neema Dorji	Tingtibi lss
589	Pema Chogyel	Buli cs
590	Pema Rinchen	Yebilaptsa mss
591	Pema Wangchuk	Tali ps
592	Pema Wangdi	Tshaidang PS
593	Sangay Tenzin	Khomshar PS
594	Sonam Chophel	Nimshaong Ps
595	Tenzin Norbu	Thrisa PS
596	Tenzin Yeshi	Dungmang PS
597	Thinley Lhendup	Goling Ps
598	Tshering Tobgay	Shingkhar PS
599	Ugyen Wangdi	Bardo PS
600	Choney Dorji	Deputy CDEO
601	Chencho Tshering	DCDE
602	Ugyen Pem	CDEO
603	Kinley	CDEO
604	Kinley Gyeltshen	CDEO
605	Tshering Penjor	PDEO
606	Kunzang Tenzin	DCDEO
607	Rinchen Phuntsho	PDEO
608	Tshering Dorji	CDEO
609	Norbu Gyeltshen	DEO
610	Sherab Gyeltshen	DEO
611	Bumpa Tshering	PDEO
612	Tshechu	DCDEO
613	Karma Sonam Chophel	CDEO
614	Tashi	Dungkhag, ADEO
615	Thinley Dorji	CDEO, Dzo. Edu Office
616	Dorji Gyalpo	PDEO, Dzo. Edu Office
617	Sonam Choden	CDEO
618	Kencho Wangdi	Dzo. Edu Office
619	Chada Jamtshok	Dzo. Edu Office
620	Lham Tshering	PDEO
621	Kinzang Dendup	CTEO
622	Pema Choidar	PTEO
623	Chimi Tshewang	DEO
624	Kinley Wangchuk	DEO
625	Dorji Passang	CDEO
626	Lemo	PDEO

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