ARF Project

Development of Grade Level Assessment Test in Science for Upper Primary School Children (VI-VIII)

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Introduction

National Education Policy, 2020 and its idea about school assessment

National Education Policy 2020, highlights and emphasizes that education is a fundamental right of every individual helping them to achieve their full potential thereby developing an equitable justice and a developing nation. Quality education not only nurtures the individual but also a key factor to economic growth, social justice and equality, scientific advancement, national integration and cultural preservation. A high quality educational program will help in shaping the future of our country.

The policy also encourages optimal learning environments and supports students by providing effective and relevant curriculum as per the current learning situation followed by assessments which are formative in nature along with adequate support. It also highlights the need for a regular curricular upgrading which is in alignment with the latest knowledge requirements and meeting specified learning outcomes.

The policy also brings about a need for scientific based assessments which tests the application of knowledgeandwiththe introduction of the current choice based credit system has made the assessment procedure new and flexible. The assessment pattern should encourage student achievement based on the learning goals for each program, thereby making the system fairer and outcomes more comparable. The assessment should aim at more continuous and comprehensive evaluation rather than high-stake examination.

Importance and need of assessment in the teaching- learning process

Assessment and learning are the two sides of the coin. It is a key component. Assessment when used properly becomes a strong tool in determining the learning which is taking place in the children, thereby motivating them. Just as assessment helps students, it also helps teachers. Assessment is a global term used for observing, gathering information, recording and

interpreting information thereby helping to make legal as well as instructional decisions about students. It is an integral aspect of instruction. It also helps educators to measure or to evaluate the learning progress, skill acquisition, academic readiness, behavioral development and brings out skills and educational needs of children. It is also used to identify individual students' strengths and weaknesses to provide additional academic support as well as to modify and evaluate the current teaching and learning activities. Assessment would help teachers to identify where the difficulties in learning arises and how it could be altered. Furthermore, assessment will also help teacher as well as parents & school personnel to interpret the collected information for making decisions about students. The assessment carried out by the teacher will also help to understand as to whether the children have disabilities or not. Teacher made test or a standardized tool would be used for assessing the students' knowledge.

The major function of assessment is to measure the knowledge, comprehension, application and skill in the subject area. The form and content of assessment should be consistent with the intended purpose. The goal should be set appropriately for the assessment and it should be guided by the goals set for student learning. Appropriate methods in assessment should be taken care to avoid invalidity and bias. It enables instructors to measure the effectiveness of their teaching by linking student performance to specific learning objectives. As a result the teachers are able to institutionalize effective teaching choices and revise ineffective ones in their pedagogy (Fisher, M R,n.d.)

Wiggins and McTighe (2005), in their books 'Understanding by Design' proposed a concept called as the "Backward Design" which emphasized and highlighted the role of assessment. According to them, assessment enables the service provider's i.e the teachers with an opportunity to determine the student understanding of the learnt content as well as proficiency in learning.

Assessment also gives an opportunity to document the evidence needed as well as to validate meaningful learning occurring in the classroom. It provides the teachers and curriculum planners an opportunity to serve as an assessor for designing the pedagogy as well as specific units and lessons and also to determine if students have attained the desired understandings of the lesson or not.

Assessing students also enhances the quality of critical reflective teaching. Good teachers would like to incorporate critical reflection into one's teaching which is an essential part of developing oneself as a teacher population as well as it would also lead to enhanced learning experience of students. Critical reflection made by the teacher on herself will provide benefits like development of rationale for teaching practices. Teachers work under the position of informed commitment, wherein it enables them to measure the effectiveness of their teaching, and also the rational for pedagogical choices in the classroom. As per the report from India today, there are 7 immediate changes needed in the Indian Education system which being rote learning, equal respects to all the subjects, better training of educators, introduction of technology, personalize education along with improving the evaluation by which it states that marks still continue to play the most important card in deciding the future of children and this often comes down upon students as a burdening factor. The pressure of marks often makes students underperform. Instead of focusing the evaluation on a three- hour exam, the focus of evaluation should be classroom participation by a student projects, communication, leadership skills and extra-curricular activities.

Role of Assessment in improving the teaching-learning process

Assessment when used appropriately is not only useful and beneficial to the learner, but it is also useful for the teachers. Teachers who engage themselves in developing constructive assessments

are also in the position to provide corrective instruction to the students thereby giving them a second chance to improve student learning.

Assessment also helps teachers to analyze the student's performance at individual level. It can also help teachers in bringing about classroom improvement. An ideal assessment will help the teacher to bring about the best in their students and also to help them review their teaching. Teachers need to view their assessments as an integral part of the instruction process and a crucial component for helping students learn. However, despite its importance in the teaching and learning process, few teachers receive much formal training in assessment design or analysis. It is also understood that the best classroom assessments also serve as meaningful sources of information for teachers, helping them identify what they taught well and what they need to work on. Assessing the children and determining the level of functioning is not sufficient, the teacher also needs to follow a high-quality, corrective instruction designed to remedy whatever learning errors the assessment identified. (Guskey, 1997)

Usefulness of assessment for students

Many a times students experience a mismatch between what they learn and what the teachers assess (Guskey, 2000) Students should not consider assessment as a threat or a surprise in assessing their understanding, but they should consider it as a reflection of the concepts and skills that the teacher emphasized in class. The assessments can also help the students identify their own self learning problems. It can also determine an awareness among the students about their learning and awareness thus created could be used for adjusting and advancing their learner thereby becoming responsible learner.

Research and experience show that student learning is best supported when

- Both instruction as well as assessment are based on clear learning goals.

- Students learning needs are kept in mind and hence instruction and assessment are differentiated.
- According to evidence as well as experience, student learning is best supported when emphasis is laid on good quality work , receiving and using descriptive feedback so as to adjust their performance.
- Not only students, but parents are also benefited by a good assessment wherein the information about their child's learning will help in planning and providing appropriate support in school learning

Thus a good assessment will not only enhance the teachers teaching but also improve the students learning.

Qualities of good assessment tool

A good summative assessment should have the following characteristics so as to make it a useful and product oriented assessment tool. The qualities are as follows;

1. **Valid:** it should measure what it is supposed to be measuring at the appropriate level in the appropriate domains.
2. **Fair:** It should be fair in nature, non-discriminatory and matches expectation.
3. **Transparent:** It should be transparent both in terms of its processes and documentation which includes assessment briefing and marking criteria
4. **Reliable:** The developed assessment tool should be accurate, consistent and repeatable
5. **Feasible:** Here feasibility means the tool or the test should be practicable in terms of time, resources and student numbers.
6. **Educational impact:** The assessment should result in learning what is important and is authentic and worthwhile.

A few assessment principles are discussed below, which was created as a part of the REAP i.e. Reengineering Assessment Practices Project which looked into reevaluating and reframing assessment and feedback practice. This set of principles in particular is referred to here as it serves as the basis for many assessment strategies. The principles are as follows:

- Classify good performance
- Encourage time and effort on task
- Deliver high quality feedback information that helps learners self- correct
- Encourage positive motivational beliefs and self- esteem
- Encourage interaction and dialogue around learning (peer and teacher student)
- Facilitate the development of self-assessment and reflection in learning
- Help teachers adapt teaching to student needs.

Assessment Pattern in the current Indian Education system

The Indian education system is designed to assess the knowledge rather than their practical skills. It is true that India has developed good infrastructure, designed process and policies, but the ultimate output i.e. the graduates are not capable enough or prepared enough to face the industry requirement. A triennial international survey called the Programme for International Student Assessment (PISA) evaluated the educational system worldwide by testing the skills and knowledge of 15 year old students in 2015, over half a million students representing 28 million 15 year old in 72 countries and economies took the two hour international test. Students were assessed in the different courses of science, mathematics, reading, collaborative problem-solving and financial literacy. Succeeding the result of the 2015 assessment, the result was published on 6th December 2016 and India ranked 71 out of 73 nations. The result clearly indicates that there

is a need to re-study our Indian education system so as to change or improve either its infrastructure input or process.

Nath (2016) in his study on the Educational Scenario in Indian Context: Access & Quality reports that the assessment practice in our country is summative in nature which is being conducted in the form of semester end examination which is incapable to measure the real learner achievements. He suggests that more transparent procedure should be developed and used for assessment and feedback. It is suggested to use the Rubric based and portfolio assessment international model; this enhances the quality and transparency in assessment. The existing system provides very limited scope for feedback to learners, which is of high significance as the accurate feedback at right time is required for improving performance.

Grade level assessment and its importance in the teaching learning process

As it is explained, assessment is a way to measure the learning progress of the students. There are many learners who have difficulty in processing information that is presented to them auditory or visually. Children are dropping out from schools due to difficulties in learning. As per the report published by Statista Research Department (2020), the annual dropout rate was the highest for secondary schools in India which was about 17.06 percent in 2016. This increased dropout rates could be due to low levels of reading literacy among the eighth graders, due to which fairing well in the secondary school classes could be challenging. As it is mandatory in many schools in India that students get promoted till 7th class even though they are poor in scholastic performance. Students with learning difficulties are usually exempted from the board examination due to their inability. Teachers should realize that identifying the learning problems in the correct time and remediating it at an appropriate age is essential and important for the overall progress of the child. A good grade level assessment test will help in identifying the

specific learning problems and helping the teachers to provide appropriate intervention. It is also necessary that the students should be placed grade or class appropriate rather than placing them as per their chronological age i.e the ability or the level of students should be assessed initially before determining their grade level. To meet these necessities Grade level assessment for each subject should be carried out to identify the grade appropriateness of the students and also to identify the learning difficulties with other psychological issues. Regardless of the learning difficulties children with normal motor abilities and intellectual abilities will show discrepancy in the performance of a particular subject or overall with the expected one. Teachers will face difficulty in analyzing the performance of these children and the cause for performance which is unexpected. Grade level assessment will help teachers to measure the age appropriateness, grade appropriateness, subject appropriateness, content appropriateness for the students. Each child should be able to perform the assessment equally irrespective of their ability.

Types of assessment used in classroom teaching

Science is a concept that is simple in theory and challenging in terms of practical implementation in practical. As educators, we want all the children to learn science regardless of their level, so as to attain critical skills needed to make decisions based on logic and to understand the processes that underlie the science that come across in the news and in daily life. Research in science education across levels identifies gaps in foundational understandings of science among students and to the public in general. To correct these problems lies not with the public but it is the role of faculties of science not only to teach the content but it is necessary to provide and to motivate students to value scientific knowledge and skills for this pursuit. According to the National Science Education Standards (NSES), scientific literacy is “the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic

and cultural affairs, and economic productivity. Hence, the learning of science becomes all the more essential.

For any instructional program to be successful teacher must use the strengths of the students at the task level and understand the deficits in the daily educational programs. To achieve this, it is essential that assessment includes two components namely the level of functioning and process of learning. Hence it is necessary that assessments are not superficial in nature; but also helps the teacher gather information about the level of functioning and the process of learning. This information would help us learn how much the child deviates from normal and in what specific aspects the child deviates thus providing platform for beginning remedial measures or for assessing the instructional program. Wallace and McLoughline (1975), pointed out that the trend in assessment is to be more preventive than totally remedial, more predictive than demonstrated and more developmental than crisis intervention.

Science Curriculum at Upper Primary Stage (VI to VIII)

Scientific concepts are gradually introduced in this stage. Transition from environmental studies to science education will be started at this stage. Experiments/ activities will be arrived for concepts in science at this stage lecture method or inductive approach alone will not be necessarily enough. Low cost materials/ materials readily available can be used for experiments and can be implemented in all schools. Learning of science at the primary stage should be such that children are observing their surrounding and not learning in the rigid way. Primary stage science is different from secondary stage .Each has its roles clearly defined. Technology component of science curriculum could also be included in the part of teaching different mechanical and electrical devices. Exposure of traditional experimental method and technology could develop interest and also the need will be addressed.

Engaging students at this stage is very important as pedagogic practice which should be carried out in a meaningful way is done appropriately. The students can be encouraged to collect information for a particular topic through various modes like newspapers, talking to knowledgeable person, peer- interactions, etc. projecting information gathered from students in classroom will ensure a larger participation of students and provide learning outcomes. The pedagogy of science teaching should enable students for self-learning from this upper primary stage.

An ideal assessment format should be such that it should be done continuously and comprehensively, it should contain both internal and external board examination at the upper primary stage. The assessment should be done based on various components like child's practical and problem solving skill, knowledge, skill, comprehension, analysis & application, etc., with no pass or fail grade at this stage. The assessment should have both written and experimental components included in it.

Science subject and its significance in School learning

The aim of science education is alsoframed to meet the modern advancements in science. The fast-changing world has taught us that learning need to take place in such a way that it meets the current societal requirements. Similarly, science education should facilitate the learning of facts and principlesof science, understand the science process skills, nurture curiosity and creativity. The learner showing his interest towards learning science should know the historical and developmental perspective of science, its relation to environment and nurture scientific interest (NCERT, 2006). To achieve the aims of science education, there need to be a shift from the traditional assessment practices which was based on lower level of cognition to the modern ways of assessing the children.The modern ways of assessing which includes not only understanding

the facts and concepts but also includes learning of higher order skills as well as problem-solving and developing appropriate scientific attitudes..If assessment in science needs to be supportive and enhancing then learning in science cannot be a periodic event, but has to be in practice. Rather assessment has to be a continuous and an integral part of the teaching-learning process. In fact, good assessment tasks can be interchangeable with good learning tasks.The role of assessment is not only to help the teacher determine what has been learnt but it should also help in determining students' learning and their progress. An assessment which is alternative in nature provides opportunity to gain insight about how students' learning has extended. It helps to develop higher order thinking skills in science (Driver et al., 1994). Assessment will provide the teacher with an opportunity to design learning experiences for the learners to challenge their existing frameworks so as to help teachers modify the scientific concepts in lines with the scientifically accepted concepts. For better classroom learning, it is essential to bring about a change in the form and content of assessment. The current assessment practice should be such that it helps in giving immediate feedback about the performance to the learner. The current feedback pattern just provides information about whether the answer is right or wrong. However, a good assessment as well as feedback should help learners to self-correct and improve without harming their confidence and motivation.

Need for the study

The traditional way of assessing the children using a summative assessment tool provides superficial information about marks/grades scored by the students. It will not give an understanding of the exact problems or difficulties faced by the students in answering the questions. The developed Grade level assessment tool is a systematic attempt which has been made in selection of questions based on the knowledge, comprehension and application.

On reviewing the available Science tests, it was understood that it assesses the overall performance of the children taking the test. Most of the tests are not diagnostic in nature.

However this project was taken up with the purpose to develop assessment tool which is both diagnostic and achievement in nature. The selection of the items across all the Science chapters as well as across all the grades are done in such a way that teacher who uses it will be able to collect the following details.

- The teacher can determine whether the learning outcomes are achieved
- Helps in identifying the poor performers and the areas which require improvement
- Teachers an also review which concept has to be retaught from the students point of view
    - The students can evaluate their performance
    - It can also help them in self studying as most of the questions are objective

Thus keeping in view the above benefits, a need was felt to undertake the study. Moreover, in the Indian Context, a meaningful testing procedure like Grade Level Assessment tool in key curricular areas like science for upper primary school learners is essential.This tool will serve as an effective tool for assessment of learner understanding and academic performance. A good assessment tool will help in making decision about placing children with hearing impairment in an appropriate educational setting. It would also help teachers identify the child's short comings and hold on his strengths. A standardized tool will help in making an appropriate educational placement, thereby planning and making innovative and effective measures in science teaching. A standardized test will help in bridging the gap between what is being taught and what is being tested. The recent pandemic also highlighted the need to develop testing materials in digital form. Since the study was conducted during the pandemic time when the schools were working in the online mode, the entire tool was digitized which could be used by anyone anywhere.

Aims and Objectives

The aim of the study is to develop grade level assessment test for upper primary school children (VI-VIII) in science subject.The following objectives were realized for the study:

- To identify areas of competencies under the domains namely Knowledge, comprehension and application necessary for Grade-VI, VII and VIII in Science subject.
- To develop and validate a Norm Reference Test on the selected domains in Science subject of Grade-VI, VII and VIII
- To administer the developed tool on typically developing children studying in Grade VI, VII and VIII in Schools in Mysore
- To identify the areas of difficulties in domains like Knowledge, comprehension and application for Grade-VI, VII and VIII.
- To establish a range (lower bound and upper bound) to determine whether children of Grade-VI, VII and VIII are performing as per their Grade in science subject

Operational Definition: For the following study, following were the terms used

1. **Grade appropriateness:** For the study Grade appropriateness means children who are performing as per their Grade requirement in the three different domains namely knowledge, comprehension and application.
2. **Normal school:** For the present study, normal school means the regular school where children without any disability and without any special needs are attending to meet their educational needs.
3. **Typically developing children:** Those children who do not have any disability as well as any special requirement while learning.

Review of Literature

Assessment and Evaluation in school subject

NPE(2019)recognizes the importance of assessment. According to the policy, assessment should reflect the developmental and educational level of the children. It also reflects the need for a rigorous continuous and comprehensive developmental evaluation programme. It also highlights that identification of students with learning difficulties, developmental challenges and other kinds of needs should be carried out within schools and must involve teachers and parents and must be done sensitively.

Vlasta Hus, JasminaMatjasic (2017) conducted a study on “Evaluation and Assessment in Early Social Science”. The study was based on the authenticity and alternative forms of evaluation and assessment done in schools. The survey method was done to the teachers handling Social Science subject in Slovenia to identify whether the evaluation and assessment is only knowledge based and also to identify the authenticity and alternative forms of evaluation and assessment. The study has discovered that the teachers were assigned the two important goals for evaluation: "a teacher obtains feedback for continuous monitoring of pupils’ progress" and "earners are provided with feedback on development and progress". In authentic form of evaluation teachers choose most commonly the research followed by experiment, interview, etc. Among the alternative forms of evaluation teachers slightly more often choose simulation and projection. The majority of teachers use summative Knowledge evaluation, and little less diagnostic and even less formative evaluation.

Arend E Carl and Theopolina AN Negumbo, (2017) carried out a study on “Underperformance in Social Studies in Grades 5–7 in Namibian primary schools: A case study” and the study focuses on possible factor of underperformance of learners in Social Studies for primary schools in Namibia. The target population of the study was the teachers and principals and the data was

collected through questionnaires, interviews and by observation. The major suggestion of the study was the teachers need to be empowered to address the factors and implement the curriculum effectively. The result of the study was that there are too many possible causes for underperformance of learners in social studies. The causes were the Supervision of principal is just a class visit, Lack of motivation to teachers, English as a medium of instruction-comprehension is good for learners but the expression in test & examination is lacking, Transition from grade to grade- without achieving the basic requirement in subject the children were promoted tonext grade, Lack of parents involvement and Lack of supportive material for teaching and learning in schools. The recommendation referred by the researcher is to consider the language policy of education, empowerment for untrained teachers in Social subject and the policy makers should consider the promotional and non- promotional policy since the negative impact is majorly on the transition from grade to grade.

Dr Tapas Kumar Sarkar,(2012) carried out a study on "Assessment in Education in India" the major focus of the study is about Indian Education system and the quality of assessment. The study has traced its aim in three different view, firstly India assessment system in Education from primary to university level, secondly about the legislation and SarvaSiksha Mission (Education for all), finally about different International Assessment used in Indian schools. Keeping in view of this aim the study has survey about the different examination in India, conducted exams in different subject for students from primary to university level based CBSE and ICSE criteria. There is different assessment system in India and so many National councils like NCERT, NCTE, IMC, AICTE, etc are directly involved in this system. The key factor for the system and the educational institutions is to establish equilibrium between measuring and assessing achievements and the practical consequences on the teaching -learning process. There are some

global standard norms and criteria for the learners to be accessed, some Universities and Academic Institutions of national and international reputation are introducing their own admission or entrance test tests.

Jeyanthi Narayanan (1997) carried out a project on "Grade Level Assessment device for children with learning problems in schools from Class I- IV. The major aim of the study was to identify the children with learning problems in schools and also to assess the grade appropriateness of the children. The tool was developed for three subjects English, Hindi and Mathematics. The tool was administered on children studying from class UKG to IV and there were totally 1197 children from five different schools were selected. The test includes both verbal and written performance. The performance of children were ranged into three intervals below 40%, 40%-70% and70% above considering these points the children were categorized as 70% above as independent functioning, 40%-70% as instructional level functioning and below 40% as frustrational level functioning. The study concludes that the tool is very useful for teachers as well as for the students to know their academic performance, the content for developing the tool was selected from ICSE, CBSE and state board syllabus but this tool is more useful for children who are studying in English medium schools.

Frances Edwards (2013) carried out a study on "Quality assessment by science teachers: Five focus areas", the aim of the study is to know the specialist knowledge skills of teachers in assessment. The five focus areas of the study were teaching, students, evidence of learning, future decision- making and impact. The study has targeted the teachers teaching science in school and techniques used by them for assessment. The five focus areas enable the science teacher to consider the assessment within the wider context, technical and sociocultural aspects needs to be acknowledged, to meet the requirements of their employing authority, develop the

pedagogical content knowledge and to broaden the factors of assessment. For a good teaching practice, quality assessment is one among that. Assessment should be meaningful for the students learning and development.

Assessment through learner writing and portfolios which includes the process of learning, quality of the work done by the learners and academic achievement provides a means for teachers to help learners take a longer view of their learning in science. Portfolios itself is not an assessment are not just collections of learner performance but depend upon written products by learners to interpret, explain, and generally give the learner's perspective of the collected works. The works of the learners may be represented as by photographs, diagrams, drawings, and even hi-tech records such as computer documents or video and audio tapes. Assessment depends on the teachers' judgment of the materials and performance of learners with respect to a set of criteria (Flick, 1993). The may be developed in schools and which allows teachers and learners to work and learn together; it also provides opportunities for reflection and self-assessment; helps redefining traditional learner and teacher roles in relation to the science curriculum; emphasizes the culture in which teaching and learning occurs; and empowers both learners and teachers with respect to science learning (Tippins& Dana, 1992).

Swang (1993) suggests science learners and teachers to keep two types of portfolios, namely, work portfolio and exhibit portfolio. Learners can maintain both portfolios in printed form and on computer disks for the future references in assessment. It is also suggested using the work portfolio could be helpful to assess learner work in progress. These includes rough drafts of scientific research, class notes and research notes, data tables, notes from scientific literature on a topic of study, and notes of encouragement from the teacher. In this the author uses the work portfolio to monitor the learners work and understanding of the subject. However,

no grade is given to this portfolio. The portfolio is usually prepared by the higher education students since they have more research work, it can be followed in school level too. The learner prepares a more formalized report for this portfolio. Finally, it is concluded that portfolio is helpful in determining the students learning standards their grade appropriateness and also to find their academic requirements.

Concept maps are one of the techniques used in psychology and are an effective way to assess learning from hands-on science. In psychology many studies have worked on concept mapping. Markham, Mintzes, and Jones (1994) suggested in one of the study of college biology learners that for evaluating the learners the science education concept maps can be used as a powerful and psychometric tool. Hein (1987) recommends a variety of approaches be used in assessing hands-on learning and science education which includes observing learners work, examining the manipulation in work, and evaluating the subject related drawing and writing. The other assessment techniques which are used for higher education or for the jobs include group discussion, journaling, and learner interviews (Gaffney, 1992; Tippins& Dana, 1992). Small & Petrek, (1992) suggested that some assessment task should be done by learner teams to build group skills. It is often beneficial to have learners score their peers' group work (Culp & Malone, 1992).

There are different studies which have different findings in their subject area. The major reviews referred for this study were about the assessment and evaluation procedure followed in Indian schools and across nation. Assessment should be meaningful and should have impact on teaching and learning process. Proper assessment and evaluation will help teachers to identify the need of the students and encourages them by providing stimulating environment which develops values and skills among children. Science Assessment should majorly focus on practical area

where the students could able to develop skills and apply it in their day to day life. The importance and effectiveness for assessment in science subject were depicted and from that the researcher has undertaken the study for Grade VI, VII and VIII students.

The contributing factor for a valid assessment in Science subject in school will be knowledge, comprehension and application. Application is the most important factor to be achieved in the upper primary level in Science. The importance of these factorswere noticed and implemented in the study and it also emphasises the assessment should able be identify the grade appropriateness of the students as well the difficulties for students in learning science.

Some of the studies were suggesting the students to maintain the portfolio which assures the quality of the learning process. The portfolios can be formalised and maintained by students for the self evaluation. The grade level assessment test material will help students to identify their ability in learning science and the factors which are difficult for them to learn in the classroom. It alsohelp teachers as well as student to identify the teaching learning needs and also help to develop curiosity and interest among students in doing test. The structured and standard assessment is a proper guide for learning especially the Science subject. From the reviewed literature it is found and helpful that most of the schools were assessing the knowledge of the students than the application level of students and it is not the standardized test which is common for all, it is mostly a teacher made assessment.

The concept in Science subject is common around the nation and has its own speciality compared to the other subject. Most of the students will not likely choose science subject in their higher studies since the foundation was not strong and interesting in upper primary level. The school assessments are very much restricted and it could be applicable for only learners with typically developing. The developed grade level assessment can be help for entire students

irrespective of their disability. There were very less studies found in grade level assessment, since most of the schools were focusing only on promoting students to the next grade rather than assessing the grade appropriateness and ability. From this study, an effort has been taken to develop and standardize the grade level assessment tool for upper primary students in science subject. In general there is a myth that the grade level assessment should be used only special education field but the fact is it could be used for any learners since every learners are unique and the needs are different.

Method

The methodology of the study comprises research method, population, sample, tool, procedure of data collection, and procedure of data analysis.

Research Design

After the development of the Grade level assessment test, a descriptive research design was undertaken to study the performance of typically developing children of Grade VI, VII and VIII

3.0. Description of the tool employed and details of sample selection and the participants:

The tools and techniques used for the study as well as the details and the sample selection are discussed in this section. This section gives a detailed description of the selection of the participants as well as the tool employed.

3.1 Selection of the participants:

The study was conducted in two phases namely:

- The pilot study for finalizing the tool for the study
- The final study for the purpose of standardization of the tool.

As the aim of the study was to develop Grade level Assessment test in science for Upper Primary Level, hence students studying in Grade VI, VII and VIII were selected for the study and hence they became the participants of the study. These participants were studying in CBSE [Central Board of Secondary Education] regular school in Mysore district. More details regarding the board selection for tool development is given in section 3.2.1

The students were selected based on the following inclusion criteria

3.1.1Inclusion Criteria:

- Students from CBSE and Karnataka State board school at Mysore

- Medium of instruction should be English
- Students who have passed Grade VI, VII & VIII in June 2020
- Schools which are providing online classes (Details provided in section 3.1.4 As the data was collected digitally due to the pandemic situation).
- Typically developing children from regular school

The CBSE and State board schools were selected for administering the tool. Following tables will show the details of participants involved in the study.

3.1.2. Participants involved in pilot study

For the purpose of finalizing the tool after validation from the experts, it was decided to conduct a pilot study for finalizing the test material. The below table shows the details of number of children selected from each school and the number of children studying in each grade.

Sl. No	**Name of School**	**Grade VI**	**Grade VII**	**Grade VIII& IX**	**Total**
1	School 1	05	05	10	**20**
2	School 2	05	05	11	**21**
3	School 3	05	07	10	**22**
	Total	**15**	**17**	**31**	**63**

Table 3.1: Details of participants involved in Pilot Study

A total of 63 participants were selected from 3 schools for the purpose of pilot study. A minimum of 5 children from each grade had been selected based on their regular classroom performance as per the information received from the teacher. The selected participants were typically developing children whose classroom performance was above average, average and below average (2- above average, 1- average, 2- below average) for the pilot study. The

developed tool should be applicable to all the children including children with special needs and any children should be capable to do the test without having much difficulty. Furthermore for assessing the learning among the children, the test was conducted in the following way: for Grade-IX children, Grade VIII test material was provided for pilot study, for Grade-VII, Grade-VI test material was presented, for Grade VIII, Grade -VII test material was presented. The total number of participants in each grade was 15 students i.e. from Grade-VI 17 students, from Grade-VII 15 students and from Grade-VIII and Grade-IX16 students were selected.

3.1.3. Participants involved in final study

The pilot study helped in finalizing the tool which was used for the final purpose of standardization. A total of 446students from seven schools participated in the final study. The school-wise and Grade-wise break-up of the students across all the three grades is given in table 3.2.

Sl. No	**Name of School**	**Grade VI**	**Grade VII**	**Grade VIII**	**Total**
1	School 1	27	44	18	**89**
2	School 2	-	-	11	**11**
3	School 3	51	29	13	**93**
4	School 4	32	33	35	**100**
5	School 5	-	-	31	**31**
6	School 6	10	-	-	**10**
7	School 7	-	-	112	**112**
	Total	**120**	**106**	**220**	**446**

Table 3.2: Details of participants involved in final data collection

It could be observed in the above table that schools 2, 5, 6 and 7 didn't have online classes for those grades and hence data was not collected from them. Some schools were providing online classes only for higher grades and in some schools the children regularity in attending online class was less. Even though all schools teach science subject as it is a mandatory subject, the reason for only including seven schools for the study is given in section 3.1.4.

3.1.4. Selection of the school for data collection during the COVID-19 pandemic

The initial plan of conducting the actual data collection post the pilot study for the purpose of standardization was to visit the schools, take official permission from the concerned authorities, followed by administering the final tool personally by the researcher on the students of Grade VI, VII and VIII. However, the unpredictable situation of the pandemic made the principal investigator as well as the researcher to find out various options for data collection. Hence the tool finalized after the pilot study was digitized using the Google forms. However, only those schools which were providing online classes were selected for the final study. All schools in Mysuru were not providing the online classes due to reasons being non-availability of mobile phones, no technical assistance etc. Those schools which were not providing the online classes were providing recorded videos to their students and hence they were not included in the study. Those schools which were providing online classes were finally selected for conducting the test and collecting the data. The criteria of selecting only those schools providing online class was essential to have a close monitoring on the students when the test is being conducted. Hence only seven schools were selected finally for the final data collection.

3.2 Description of the tool developed

For the purpose of assessing Grade appropriateness of the students studying in Grades-VI, VII and VIII, a grade level assessment tool was developed in Science subject based on the

syllabus of the Central Board of Secondary Education. The tool was developed to determine whether the students studying in Grade VI, VII and VIII are performing appropriately in terms of Knowledge, comprehension and application, moreover, the tool developed should help to determine whether the participants are performing age appropriately or not. And hence, those students who have completed VI and currently in Grade VII and similarly those students currently studying in grade VIII and IX were selected for administering the test of Grade VII and VIII respectively. For the purpose of developing the tool, the following procedure was employed.

3.2.1. Selection of Content

The State board and CBSE syllabus were compared for selecting the contents. Since Science subject has a common content State board and CBSE schools were following the same syllabus. Since, most of the schools in Mysuru were following the Central Board, it was decided to follow the CBSE science curriculum for the purpose of developing the tool.All the contents/lessons in the textbook were considered for developing the test material.

3.2.2. Development of the Blueprint

The tool was developed based on the three learning domains in Science subject such as Knowledge, Comprehension and Application. A blueprint was developed based on the learning domains like knowledge, comprehension and application. The three dimensional chart namely the blue print was based on weightages given to the science lessons and the forms of questions. It depicts the distribution of marks given to each of them. The more weight age was given to comprehension and application as compared to knowledge, because the purpose of learning science in upper primary is to learn and do science in the right perspective. It also requires gradual transition from environmental studies of the primary stage to elements of science and technology (NCF, 2005). The test items were selected and prepared in such a way keeping in

mind the different types of leaner's who will be using the test, hence the test items had both open ended and close ended questions. Open-ended questions allow respondents to answer in open text format so that they can answer based on their complete knowledge, feeling, and understanding. It means that the response to this question is not limited to a set of options. Moreover, open-ended question allows you to probe deep into the respondent's answers, gaining valuable information about the subject at hand. The responses to these questions can be used to attain detailed and descriptive information on a topic. Unlike a closed-ended question that leaves survey responses limited and narrow to the given options. Moreover for the ease of scoring and objectivity, the questions were framed in both open-ended and close-ended format. The minimum mark for each item is 1 and maximum mark is 2. The blueprint was developed for 100 marks for each grade. The developed blue print for each grade is appended.

3.2.3. Development of the Test material in Science for Grade-VI, VII and VIII

The test material for the study was developed based on the CBSE Syllabus of Grade VI, VII & VIII. As explained in section 3.1, the data was collected in two phases, the pilot study for finalizing the tool and the final study for the purpose of standardization. Hence for the purpose of tool validation, and finalization of the tool, the developed test material was given for validation 12 validators like 3 experts in science subjects, 7 general educators who were handling science subject in school as well as to 2 special educators who has opted science as the core subject in their graduation. There were totally 5 schools around Mysore has been selected for validation of tool. The questions selected for the purpose of test material development were based on the blueprint for each lesson for Grade VI, VII & VIII. The question paper was set for 100 marks for each grade; however after the validity and reliability of the items, which was done by the experts, the tool was finalized for 80 marks. The test material contained different sections which included

items like choose the correct answer, fill in the blanks, unscramble the words, answer in a word or two, think and answer, name the following and match the following.

3.2.4. Digitization of test material

The validated and finalized tool was set ready for the final data collection, due to the COVID 19 pandemic the tool was digitized for the online test. The developed test material got digitized in Google forms. The test material was set for 80 marks for each grade and some modifications were incorporated in the questions to fit into the digital mode. Since it was decided to conduct the test digitally, the test material was adapted in such a way that the students had to select from the options given and very less scope for them to type elaborate answers. The digitized material was used for the final data collection since the schools were providing online class during this pandemic.

3.3 Procedure for Collection of the Data

The data collection was done for the typically developing children studying Grade VI, VII & VIII. A total of 7 schools from Mysore were selected for data collection. There were very less schools which were providing online mode class to the students and most of the schools were sending the recorded class to their respective class students. The reason for selecting only seven schools is described in section 3.1.4. However**,** some more schools were approached for the data collection that were providing online mode class but since the students were not comfortable giving an online test they were not included in the study**.** Data pertaining to Grade VI, VII & VIII student's performance on Science subject was collected through the test material. The data collection for pilot study was done directly with the students of Grade VI, VII & VIII. The final data collection was done through online mode due to COVID 19 pandemic. The finalized tool after incorporation of suggestions from the validators was finalized. The finalized tool was

converted into a digital form using the Google Forms. The generated link was shared with those schools who expressed their willingness to participate in the study as well as those schools who were providing the online classes. The link was sent to the schools and the schools have sent the test material to the students through online. The student's response was automatically recorded in Google forms and it was converted to Microsoft Excel. The test was for 80 marks for Grade VI, VII & VIII and the duration of the test was 1 hour. The test was conducted under the supervision of the teachers from the schools who participated in the study.

3.4. The data collected from all the three grades were subjected to both qualitative and quantitative analysis. The qualitative analysis gave the researcher an insight into the difficulties faced by the students in the different questions and its domains, where as the quantitative analysis helped in determining the upper and lower range for establishing Grade appropriateness.

Results and Discussion

The data collected was statistically analyzed using SPSS software. This chapter has detailed presentation of data analysis and its related discussion. The major aim in carrying out this study is to know the grade appropriateness in Science subject for Grade VI, VII & VIII students and also to find the comparison of the areas concentrated in teaching Science subject at school.

Qualitative Analysis for Item-wise difficulty for Grade-VI

The questions/tool developed for Grade-VI was subjected to qualitative analysis to find out the difficult items/questions. The frequency table for each item was analyzed to find the validity and difficulty of the item. The selected domains i.e. knowledge, comprehension and application carried different weightage. The weightage under each domain is given below.

Sl.No	**Domain**	**Weightage**
1	Knowledge	20
2	Comprehension	30
3	Application	30
	Total Marks	**80**

Table 4.1: The three domains and its weightage

Each domain carries different weightage in the test material, for knowledge domain the total mark is 20, for comprehension and application the total mark is 30 each (K=20 + C=30 + A=30). After the analysis based on the frequency table, the domain-wise details and the scores obtained by the participants in each domain was analyzed for the difficulty. Those items wherein a greater number of participants attempted incorrectly were found to be difficult and hence removed from the main tool for the purpose of further analysis. The table below shows the details of those items in all the three domains wherein more participants found it difficult and performed below 50%.

A total of 74 items for 80 marks was finalized which was administered on the participants. Frequency table analysis was done to identify the difficult and valid items. Following table will show the details of items removed from the tool after the frequency of item analysis

Domain	***No. of items***	***No. of difficult items***	***Total marks***	***Marks to be removed***	***Retained marks***	***Details of questions/concepts in terms Knowledge, comprehension and application***
Knowledge	20	2	20	2	18	Body movements & Motion and measurement
Comprehension	26	6	30	7	23	Water, Air around us,Garbage In and Out, The living organisms- Characteristics of habitats, Light, shadows & reflections
Application	28	4	30	4	26	Changes around us & Electricity and circuits
Total	74	12	80	13	67	

Table 4.2: ***Details of difficult and valid items in Science for Grade VI***

From the table 4.2 it is found to be clear that the difficult items from each domain was removed based on the frequency tables. The total number of difficult items in the tool was 12 among which there were six difficult items were found in comprehension area and 4 in application area. The total marks for further analysis was reduced to 67.Table 4.2 Shows the students faced more difficulty in comprehension as six questions were removed from the comprehension component and application as four questions were removed from the application component as compared to two questions from the knowledge component. The items which were found to be difficult were from concepts like Body movements and Motion and measurement of distances, Water, Air around us, Garbage In and Out, The living organisms- Characteristics of habitats and Light, shadows & reflections, Changes around us, Electricity and circuits. The above information regarding the concepts removed from the tool shows that students were facing difficulty in concepts which requires environmental observation as well as hands-on experience and skill

development, lack of performance in those concepts shows that there is less exposure for students in application level at school. The result thus revealed the need for reviewing the science teaching process in school wherein more importance should be laid on developing the comprehension and application along with knowledge. As per the National Curriculum Framework (2005), the purpose of learning science at the upper primary stage is to provide the students an opportunity to learn science through the application of powerful abstract concepts that reinforce previous learning and experience. The upper primary science curriculum (VI-VIII) should also aim to develop many processes and problem- solving skills such as observing and describing, classifying and organizing, measuring and charting, etc. However, it is essential to ensure that at the upper primary stage, children should be given the opportunity to revisit and reconstruct their existing concepts. It should be taken care that concepts are not formed incorrectly or inappropriately. Therefore it is essential to design suitable teaching- learning experiences involving children actively. However, in most of the schools, Science is still taught in the usual chalk and board methods. The same could be observed in this result also as more difficulty could be observed in comprehension and application which requires analytical and problem- solving skills.

Domain-wise performance in Science for Grade-VI

The present study confirmed the findings about the grade appropriateness and performance in each domain of Grade-VI children. The raw scores were converted into percentage score for the purpose of analysis. The figure given below shows the percentage score obtained in each domain.

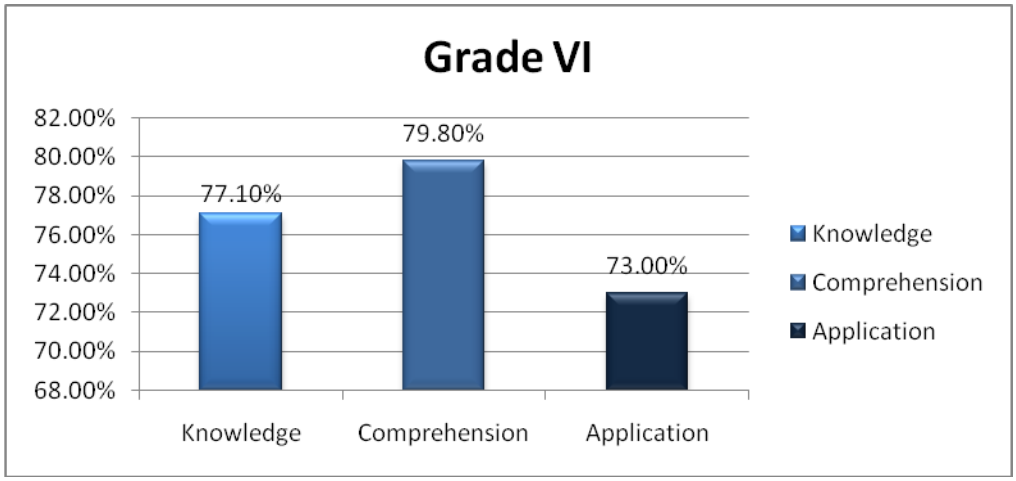


Figure 4.1: Domain wise performance in Science subject for Grade VI

Since the standard deviation is lower the mean percentage is considered for each domain in Science subject. In Figure 4.1 the mean percentage of Grade-VI students in each domain have been depicted. The students have scored 77.10% in knowledge domain, 79.8% in comprehension and 73% in application domain. Among the three domains the students have scored more in comprehension area than knowledge and application. Science is a subject which requires the students to get more practical exposure than theoretical, and the concepts taught in the subject should further develop skills which should be applicable in their regular life. From the above figure it is more evident that there is a significant difference between the performances of each domain and there is a lack of exposure in application domain. This less score in application domain could be due to the limited exposure provided in hands on training, experimentation, observation and other scientific skills. Herron (1971) opines that for developing the appropriate scientific attitude among the pupils, it is essential to develop skills like inquiry, as well as exposure to laboratory activities with sufficient degree of openness, etc. However most of the time this is not provided in the actual classroom learning situation.

In the test of normality the performance percentage of each domain was analyzed. The below graph shows the distribution of variables based on the Grade-VI students performance.

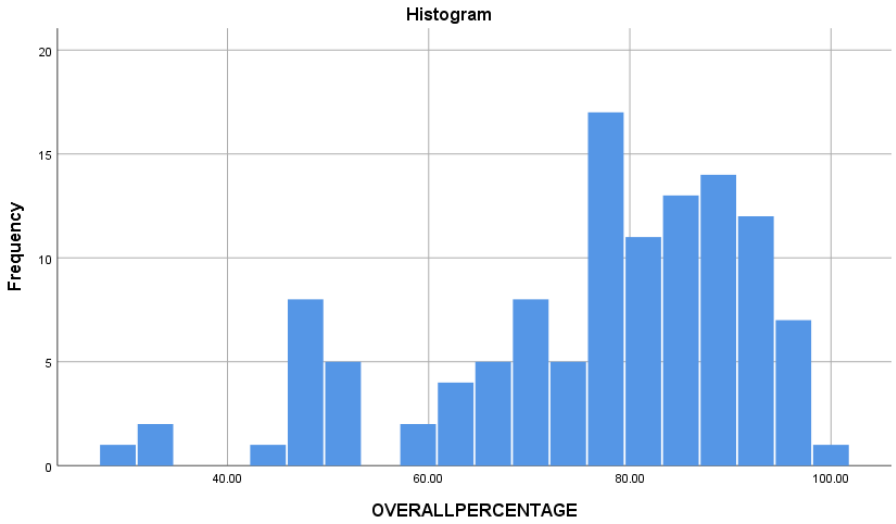


Figure 4.2: Test of normality for Grade VI

When analyzing the total percentage, the data is concentrated more to the upper end and it is skewed wherein the students were expected to score more. Figure 4.2 shows that more data was distributed above 60 marks and thus most of the student's performance in Grade -VI is above 60%. Further non-parametric test was done for the comparison of performance in each domain.

Domain-wise comparison based on Friedman's non-parametric test (PerK, PerC&PerA) for Grade-VI in Science subject

The Friedman's test is a non-parametric alternative to the one-way ANOVA with repeated measures. It is used to test for differences between groups when the dependent variable being measured is ordinal. Here it is used to find out the difference in performance between percentage knowledge, percentage comprehension and percentage application.

Related-Samples Friedman's TEST	
Total N	116
Test Statistic	21.496
Degree Of Freedom	2
Asymptotic Sig.(2-sided test)	.000*

Significant as p value is less than .05

Table 4.3 Friedman Non-parametric test for Grade VI

H0- there is no significant difference between the performance of knowledge, comprehension and application of Grade-VI students

Ha- there is a significant difference between the performance of knowledge, comprehension and application of Grade-VI students

The analysis of variance for Grade-VI in all the domains is shown in Table 4.3. From the table it is evident that the p-value (.000) is less than the significance value (.05) and hence the null hypothesis is rejected and alternate hypothesis is accepted as there is a significant difference between the performances of Grade-VI students in each domain. While comparing the mean percentage the difference in the performance of each domain is significant. The findings of the test shows that there is less significant difference between the students' performance in each domain and it also shows that students have scored more in comprehension domain as compared to knowledge and application domain.

Table 4.4 Pairwise comparison for the performance of Knowledge, Comprehension and Application for Grade -VI students

Pairwise Comparisons					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
PerA-PerC	.466	.131	3.545	.000	.001
PerA-PerK	.569	.131	4.333	.000	.000
PerC-PerK	-.103	.131	-.788	.431	1.000

Significance level at 0.05

H0- There is no significant difference between the performances of application and comprehension component of Grade VI students

There is no significant difference between the performances of application and knowledge component of Grade VI students

There is no significant difference between the performances of comprehension and knowledge component of Grade VI students

Ha-There is a significant difference between the performances of application and comprehension component of Grade VI students

There is a significant difference between the performances of application and knowledge component of Grade VI students

There is a significant difference between the performances of comprehension and knowledge component of Grade VI students

To measure the above, Bonferroni correction was applied, the purpose of which being that it adjusts the probability (p) value because of the increased risk of type I error of making multiple statistical test. For the present study it is used as it is applied for pairwise comparison. From the table it is observed that the related performance of knowledge, comprehension and application component for Grade-VI is shown. The p-value is compared with the significance level @ 0.05. The detailed illustration about the performance is discussed below. While comparing the performance of application and comprehension component the p-value is less than the significance level (.001<.05) therefore the null hypothesis is rejected and alternate hypothesis is accepted as there is a significant difference between the performance of application and comprehension component in Science subject of Grade-VI students. For the comparison of application and knowledge component the p-value is less than the significance level (.000<.05)

and hence the null hypothesis is rejected and the alternate hypothesis accepted as there is a significant difference between the performance of application and knowledge component. The p-value for comprehension and knowledge component is greater than the significance level (1.000>.05) therefore the null hypothesis is accepted as there is no significant difference between the performance of comprehension and knowledge component of Grade-VI students in Science subject. While comparing the mean percentage, the scores for knowledge and comprehension have very less significant difference. On the whole it is observed that there is less significance between the performance of knowledge, comprehension and application domain of Grade-VI students.

Determining Grade Appropriateness of Grade-VI students in Science subject

In general the students are graded based on the classroom and academic performance in the school. The schools generally follow various criteria in grading the students. The NCERT has a standardized grading pattern as 1/8 of students performance from top to bottom will be categorized in different grade as A, A1, B, B1, C, D, E and which is been followed in many schools. Overall performance of the students can be categorized as below average, average and above average. For the present study, the Grade Appropriateness of Grade-VI students were analyzed with the + or - standard deviation from the mean percentage. For determining the appropriateness, the overall percentage of students should fall within the + or - standard deviation scores. Figure 4.3 will show the details of number of students who performed grade appropriately based on the analysis as well as it has also helped in determining the lower and upper bound . The students scoring more than the lower bound of (–) standard deviation were considered to be grade appropriate or expected appropriateness for that grade and subject. The plus or minus standard deviation score obtained for Grade-VI was between 60.6% - 92.2%, the

students scoring more than 60.6% were considered to be performing grade appropriately and the students who have scored less than 60.6% were performing less than the expected range. The range for Grade appropriateness for Grade-VIwas determined between 60.6%-92.2%. This range of grade appropriateness is essential as this is a standardized test and will help in providing information about the students' achievement in a wider context (Seifert and Sutton,2009). The data was collected from 120 participants among whom 4 participants were removed from the study due to lack of response for the questions. The students who have attempted 80% of questions were considered for the study. There were totally 116 students participated in Grade-VI assessment, following figure will show the details of the number of students who have performed grade appropriately and below the expected range according to the finding.

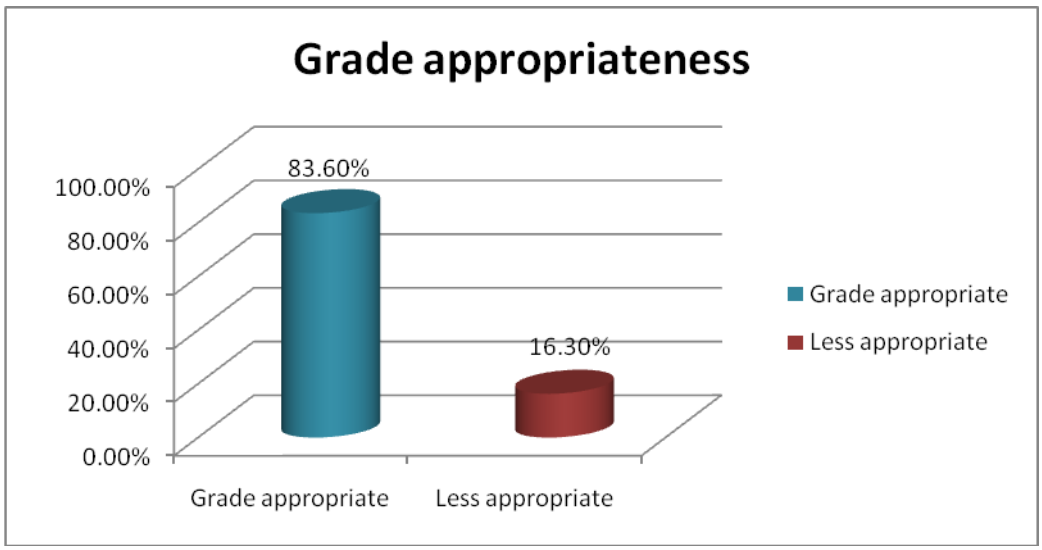


Figure 4.3 Details of grade appropriateness of Grade VI students in Science subject

From the figure it is observed that among 116 participants 83.60% of participants have performed grade appropriately and 16.30% of students have performed less than the expected range or not up to the expected level of performance. The range thus established will help the teachers in identifying the strength and weaknesses of the learner. Moreover, the developed grade level test was conducted online due to the pandemic situation. The learners had learnt these

concepts previously and since the test was conducted without any prior intimation, the test result clearly indicates the level of retention as well as the learning occurred among the students of Grade-VI.

Qualitative Analysis for Item-wise difficulty for Grade-VII

The selected domains i.e. knowledge, comprehension and application carried different weightagefor Grade-VIIand was subjected to qualitative analysisto find out the difficult items/questions. The weightage under each domain is given below.

Sl.No	**Domain**	**Weightage**
1	Knowledge	28
2	Comprehension	22
3	Application	30
	Total Marks	**80**

Table 4.5: The three domains and its weightage for Grade VII

Each domain carries different weightage in the test material, for knowledge domain the total mark is 28, for comprehension 22 and for application the total mark is 30 (K=28 + C=22 + A=30). The frequency table for each item was analysedto find the validity of the item. The students who have scored more than 50% in each item where considered to be valid and less than 50% of each item where considered to be difficult and removed for the further analysis. There were totally 65 items in the Grade VII test material and the total mark of the tool is out of 80. From the above distributed marks the difficult items from each domain is removed based on the frequency table. Following table will show the details of items removed from the tool.

Domain	**No. of items**	**No. of difficult items**	**Total marks**	**Marks to be removed**	**Retained marks**	***Details of questions/concepts in terms Knowledge, comprehension and application***
Knowledge	27	7	28	8	20	Weather, Climate and adaptation of animals to climate, Waste water story, Winds, storms and cyclones, Water- A precious resource, Forests- our lifeline
Comprehension	17	6	22	6	16	Wind, storms and cyclones, Soil, Water- A precious resource, Fibre and Fabric, Electric current and its effect, Nutrition in animals
Application	21	6	30	9	21	Forests- Our lifeline, Respiration in organisms, Fibre and Fabric, Physical and Chemical changes and Wastewater story
Total	65	19	80	23	57	

Table 4.6: Details of difficult and valid items in Science for Grade VII

The table 4.6 shows that all the three domains were equally difficult, the total number of difficult items in the tool was 19 among those 7 items from Knowledge domain, from comprehension and application domain 6 items were removed based on the frequency table analysis. The total marks for the test material were reduced to 57 for further analysis and standardization. Seven questions from knowledge domain were removed and the items were from the concepts like Weather, Climate and adaptation of animals to climate, Waste water story, Winds, storms and cyclones, Water- A precious resource, Forests- our lifeline. Six items from the comprehension domain were removed and the questions were from the concepts such as Wind, storms and cyclones, Soil, Water- A precious resource, Fibre and Fabric, Electric current and its effect, Nutrition in animals. From application domain six items were removed from the concept like Forests- Our lifeline, Respiration in organisms, Fibre and Fabric, Physical and Chemical changes and Wastewater story. The students have faced difficulty in all the areas. The most difficult items

were from the part of Biology and Physics concepts. In general, students will get more practical exposure in Biology and Physics concept, the application of those concepts in the regular life is very minimal while comparing the result. The students were facing much difficult in application and knowledge area in those two part of Science subject. The difficulty in attempting to Biology questions as observed in the above results clearly indicates that biology is a subject which involves the use of lots of scientific names, complexity of the topics as well as the student learning habits. The same was also reported in a study by Hadiprayitno, Muhlis&Kusmiyati (2019). The study highlighted the difficulties faced by students in learning Biology which being biology material being presented in an abstract form, overload of material and also method of teaching has an impact on learning biology. Moreover, the test was conducted without prior information during the COVID-19. Science subject need more practical exposure than theory through online class students could avail only the theoretical part which could be a cause for lack of performance in application area.

Domain-wise performance in Science for Grade-VII

The raw scores of mean were converted into percentage for Grade-VII students. The student's score in each domain were shown in below figure.

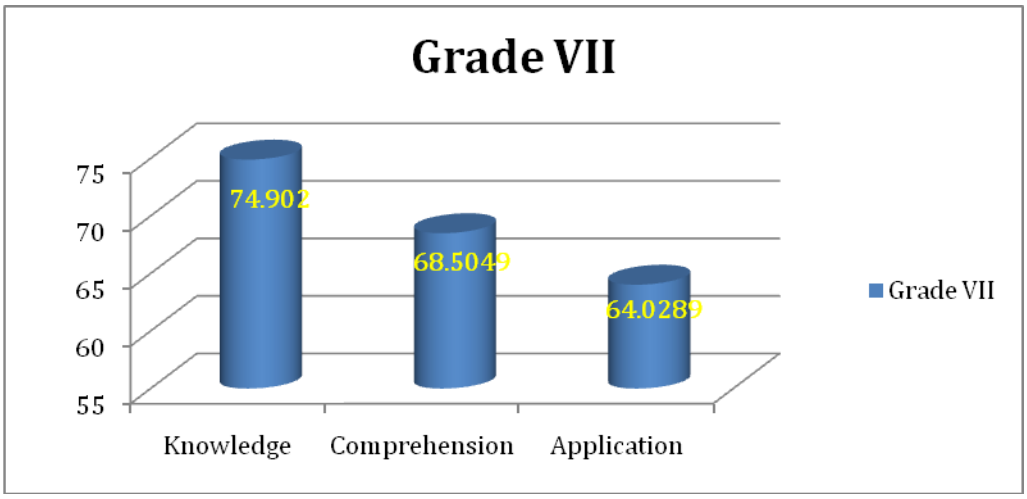


Figure 4.4 Domain wise performance in Science subject for Grade VII

Since the standard deviation is lower, the mean percentage is considered for each domain in Science subject for Grade-VII. The mean percentage of Grade-VII students in knowledge, comprehension and application domain were been shown in Figure 4.4. From the figure it is more evident that the students have scored more in knowledge domain compared to comprehension and application domain. The students have scored 74.9% in knowledge domain, 68.5% in comprehension and 64% in application domain. There is a significant difference between the performances of each domain. While analyzing the above result the students were more focused on knowledge area compared to comprehension and application area. The teachers should provide opportunities for the students to develop their skill rather than developing their knowledge especially in Science subject. As per the report of Research Development and Consultancy Division on Science at the Upper Primary level, it is clearly mentioned that the purpose of learning science at the upper primary stage is to enjoy science through application of powerful concepts that reinforce previous learning and experience. This could be done by finding ways and means of integrating concepts from various themes and applying science to real life situations for experiential learning. However, most of the schools, the old method of teaching is used thereby providing limited opportunity to apply science in daily living. Hence, the same could be observed that as the grade is increasing, students are performing better in knowledge as compared to application.

The overall performance percentage of each domain was analyzed using the test of normality. The below graph shows the distribution of variables based on Grade-VII students performance.

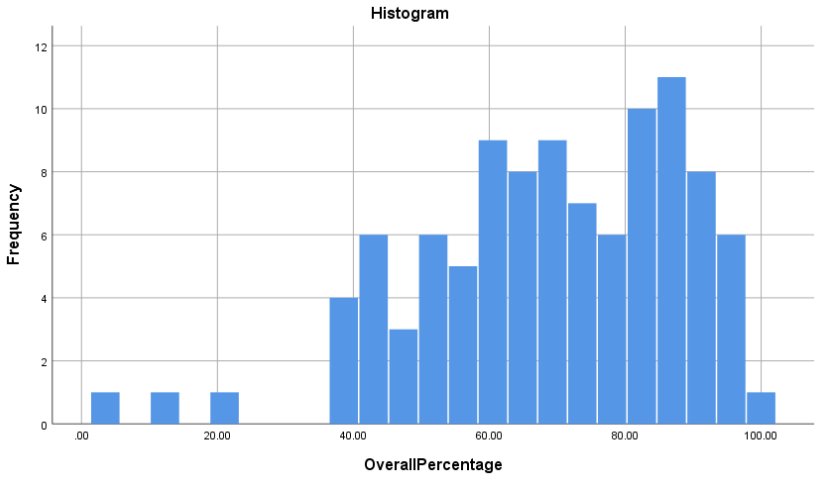


Figure 4.5: Test of normality for Grade VII

The data of Grade VII students were more concentrated to the upper end and the data is skewed and they were expected to score more, which means the tool is found to be valid for assessing the students. From the above figure, more data was distributed above 40 and thus more number of student's performance in Grade VII is above 40%. Further non-parametric test was done for the comparison of performance in each domain.

Friedman's non-parametric test in comparison of the entire domains (PerK, PerC&PerA) for Grade-VII in Science subject

The difference between the performances percentages of each domain were compared using the Friedman's non- parametric test for Grade VII.

Related-Samples Friedman's TEST	
Total N	102
Test Statistic	27.906
Degree Of Freedom	2
Asymptotic Sig.(2-sided test)	.000

Significant as p-value is less than .05

Table 4.7 Friedman Non-parametric test for Grade VII

H0- there is no significant difference between the performance of knowledge, comprehension and application of Grade VII students

Ha- there is a significant difference between the performance of knowledge, comprehension and application of Grade-VII students

The analysis of variance for Grade-VII domains were shown in Table 4.7. Since the p- value is less than the significance value the researcher rejects the null hypothesis and accepts the alternate hypothesis as there is a significant difference between the each domains performance of Grade-VII students. While comparing the mean percentage the difference in the performance of each domain is significant. The findings of the test shows that there is a significant between the student's performance in each domain and the students have scored more in knowledge domain compared to comprehension and application domain.

Table 4.8 Pairwise comparison for the performance of Knowledge, Comprehension and Application for Grade-VII students

The difference in the performance among the domains was analyzed using the pairwise comparison test.

Pairwise Comparisons					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
PerA-PerC	.397	.140	2.836	.005	.014
PerA-PerK	.735	.140	5.251	.000	.000
PerC-PerK	.338	.140	2.415	.016	.047

H0- There is no significant difference between the performances of application and comprehension component of Grade VII students

There is no significant difference between the performances of application and knowledge component of Grade VII students

There is no significant difference between the performances of comprehension and knowledge component of Grade VII students

Ha-There is a significant difference between the performances of application and comprehension component of Grade VII students

There is a significant difference between the performances of application and knowledge component of Grade VII students

There is a significant difference between the performances of comprehension and knowledge component of Grade VII students

The Bonferroni correction is applied for pairwise comparison,the purpose of which being that it adjusts the probability (p) value because of the increased risk of type I error of making multiple statistical test. From the above table 4.8 it is observed that the related performance of knowledge, comprehension and application component for Grade-VII is shown. The p-value is compared with the significance level @ 0.05. The detailed illustration about the performance is discussed below. While comparing the performance of application and comprehension component the p-value is less than the significance level (.014<.05) therefore the null hypothesis is rejected and alternate hypothesis is accepted as there is a significant difference between the performance of application and comprehension domain in Science subject of Grade-VII students. In comparison of application and knowledge component the p-value is less than the significance level (.000<.05) and hence the null hypothesis is rejected and the alternate hypothesis is accepted as there is a significant difference between the performance of application and knowledge component. The p-value for comprehension and knowledge component is less than the significance level (.047<.05) therefore the null hypothesis is rejected and accepted alternate hypothesis as there is a significant difference between the performance of comprehension and knowledge component of Grade-VII students in Science subject. On the whole it is observed that the p-value is less than the significance level in all the pairwise

comparison and also there is a difference in mean percentage, hence it is concluded that there is a significant difference between the students performance in each domain.

Determining Grade Appropriateness of Grade-VII students in Science subject

The grade appropriateness of Grade-VII students were analyzed with the + or - standard deviation from the mean percentage. The overall percentage of students should fall within this + or - standard deviation scores. The below figure will show the details of number of students who are grade appropriate based on the analysis. The students scoring more than the lower bound of – standard deviation were considered to be grade appropriate or expected appropriateness for that grade and subject. The + or – standard deviation of the grade were 49.9% to 88.3%, the students scoring more than 49.9% were considered to be grade appropriate and the students who have scored less than 49.9% were considered as less appropriate to the grade. There were totally 106 students participated in Grade-VII assessment, out of which 4 participants were removed from the study due to lack of response for the questions. The students who have attempted 80% of questions were considered for the study. The total number of students considered for further analysis was 102. The following figure will show the details of the number of students who have performed grade appropriately and less appropriately according to the finding.

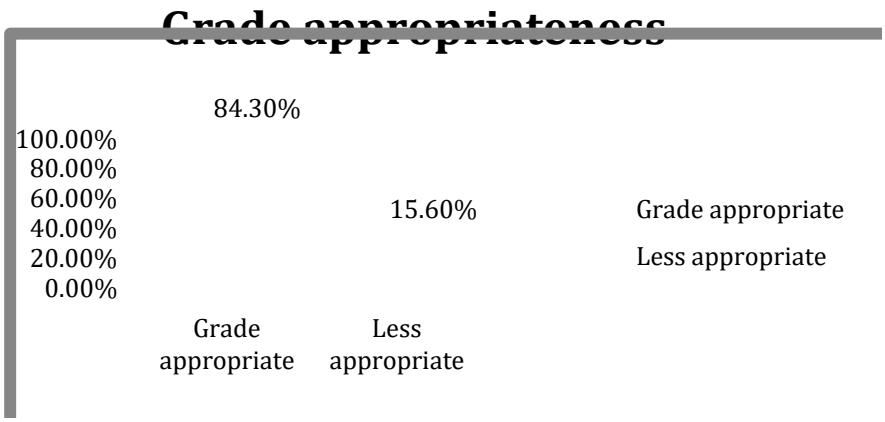


Figure 4.6 Details of grade appropriateness of Grade VII students in Science subject

From the figure 4.6 it is observed that among 102 participants 84.30% of participants had performed grade appropriately and 15.60% of students have performed less appropriate or not up to the expected level of performance. When comparing the average, above average and below average performers 16 students have scored less than 50%, 17 students have scored more than 88% and 69 students have scored between 50% - 88%. The more number of students were falling between the + or – standard deviation that is the average bond. There is a significant difference between the performances of students in the science subject.

Qualitative Analysis for Item-wise difficulty for Grade-VIII

The frequency table for each item was analyzed to find the validity and difficulty of the item. The selected domains i.e. knowledge, comprehension and application carried different weightage for Grade-VIII and was subjected to qualitative analysis to find out the difficult items/questions.

Sl.No	**Domain**	**Weightage**
1	Knowledge	18
2	Comprehension	28
3	Application	34
	Total Marks	**80**

Table 4.9 The three domains and its weightage for Grade VIII

The students who have scored more than 50% in each item were considered to be valid and less than 50% of each item where considered to be difficult and removed for further analysis. There were totally 61 items in the Grade-VIII test material and the total mark was out of 80. The knowledge domain carries 18 mark, comprehension carries 28 marks and application carries the 34 marks (K=18 + C=28 + A=34). Since it is a higher grade more weightage is given for comprehension and application domain. From the above distributed marks the difficult items from each domain is removed based on the frequency table. Following table will show the details

of items removed from the tool. The item which has less than 50% validity were removed for the further analysis.

Domain	**No. of items**	**No.of difficult items**	**Total marks**	**Marks to be removed**	**Retained marks**	***Details of questions/concepts in terms Knowledge, comprehension and application***
Knowledge	18	-	18	-	18	-
Comprehension	19	1	28	2	26	Reproduction in animals
Application	24	-	34	-	34	-
Total	61	1	80	2	78	

Table 4.10: Details of difficult and valid items in Science for Grade VIII

The above table shows that the test material is not much difficult for the students to perform. While analyzing the knowledge and application domain there were no items removed from the tool for analysis. The comprehension domain has one item to be removed due to difficulty of the item which carries 2 marks and the item was from the concept called Reproduction in animals. Understanding the concept from Biology area is finding little difficult for the students at this grade. The students from Grade-VIII have performed comparatively better since the online classes have started early for the higher class and the students have attempted some online test from their schools also, so for this grade there were no limitation of online exam.

Domain-wise performance in Science for Grade-VIII

The raw scores of the students were converted into percentage scores. The mean percentage of the domains for Grade VIII students were given below.

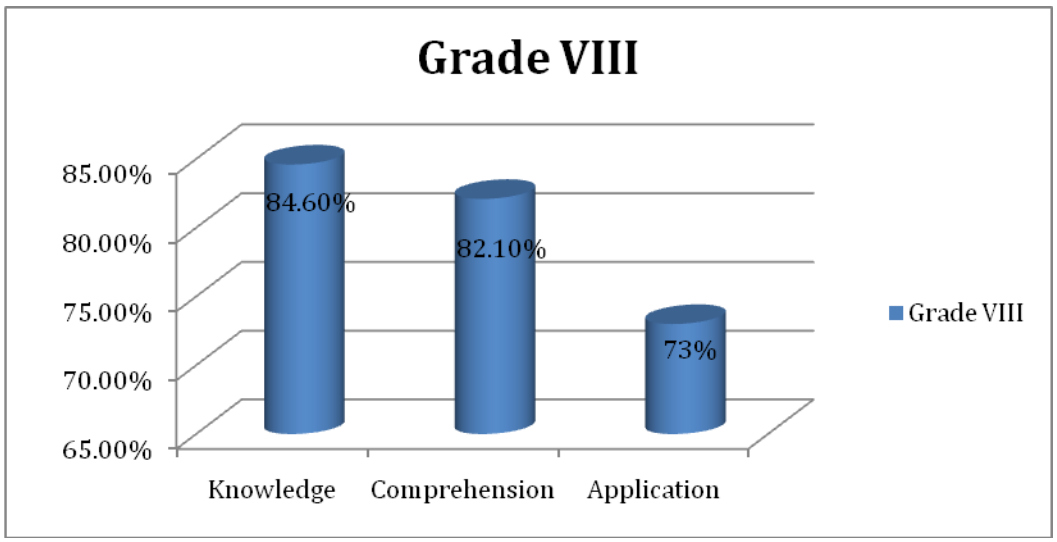


Figure 4.7 Domain wise performance in Science subject for Grade VIII

The above figure shows that the performance of students is more in knowledge domain rather than comprehension and application. The students have scored 84.6% in knowledge domain, 82.1% in comprehension domain and 73% in application domain. When comparing the overall findings there is less scoring in application domain that is more important for the development of life skills. Looking at the above performance of the students in the application level it could be discussed here that as per the National Focus Group on teaching of Science (2005), the problems faced by science education is that even if develops competence , it does not encourage inventiveness and creativity among the learners. Moreover, schools should encourage stimulating investigative ability, inventiveness and creativity rather than just rote learning.

The test of normalityfor the overall performance percentage and distribution of variables for Grade-VIII is given in the below graph.

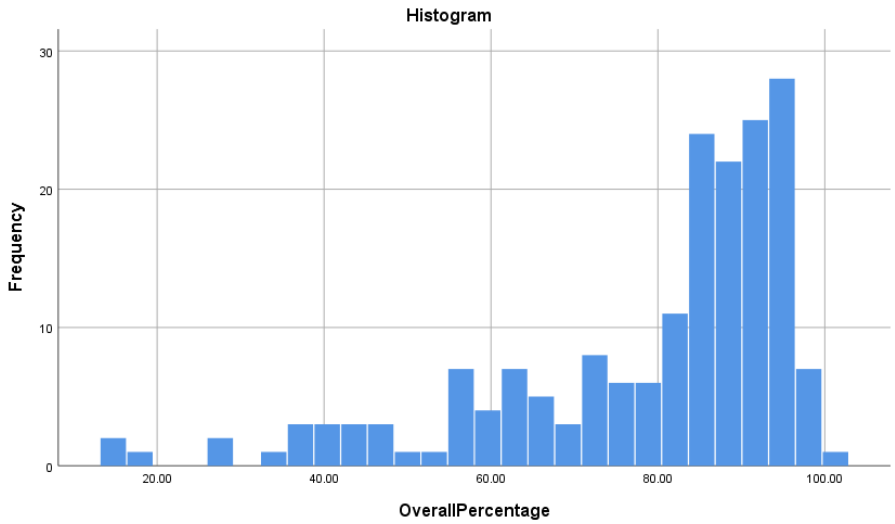


Figure 4.8: Test of normality for Grade- VIII

The data of Grade-VIII students were more concentrated to the upper end and the data is skewed and they were expected to score more, which means the tool is found to be valid for assessing the students. From the Figure more data was distributed above 60 and thus more number of student's performance in Grade VIII is above 60%. There is also a significant difference between the performance of the students in each domain. Further non-parametric test was done for the comparison of performance in each domain.

Friedman's non-parametric test in comparison of the entire domains (PerK, PerC&PerA) for Grade VIII in Science subject

Related-Samples Friedman's TEST	
Total N	184
Test Statistic	71.308
Degree Of Freedom	2
Asymptotic Sig.(2-sided test)	.000

Significant as p-value is less than 0.05

Table 4.11 Friedman Non-parametric test for Grade VIII

H0- there is no significant difference between the performance of knowledge, comprehension and application of Grade VIII students

Ha- there is a significant difference between the performance of knowledge, comprehension and application of Grade VIII students

The above table shows the result of the comparison of entire domains for Grade VIII students in Science subject. The p value (.000) is less than the significance level @.05 and hence the null hypothesis is rejected and the alternate hypothesis is accepted as there is a significant difference between the performance of Grade-VIII students in the entire domain. The mean percentage score also clearly shows that there is a difference in the performance of students in each domain.

Table 4.12 Pairwise comparison for the performance of Knowledge, Comprehension and Application for Grade-VIII students

Pairwise Comparisons					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
PerA-PerC	.554	.104	5.317	.000	.000
PerA-PerK	.864	.104	8.288	.000	.000
PerC-PerK	.310	.104	2.971	.003	.009

Significant as p-value is less than 0.05

H0- There is no significant difference between the performances of application and comprehension component of Grade VIII students

There is no significant difference between the performances of application and knowledge component of Grade VIII students

There is no significant difference between the performances of comprehension and knowledge component of Grade VIII students

Ha-There is a significant difference between the performances of application and comprehension component of Grade VIII students

There is a significant difference between the performances of application and knowledge component of Grade VIII students

There is a significant difference between the performances of comprehension and knowledge component of Grade VIII students

The Bonferroni correction is applied for pairwise comparison for the purpose of adjusting the probability (p) value because of the increased risk of type I error of making multiple statistical test. From the above table it is observed that the related performance of knowledge, comprehension and application component for Grade-VIII is shown. The p-value is compared with the significance level @ 0.05. While observing the comparison of the performance of application and comprehension domain the p-value is less than the significance level (.000<.05) therefore the null hypothesis is rejected and accepted alternate hypothesis as there is a significant difference between the performance of application and comprehension domain in Science subject of Grade-VIII students. In comparison of application and knowledge component the p-value is less than the significance level (.000<.05) and hence the null hypothesis is rejected and accepted the alternate hypothesis as there is a significant difference between the performance of application and knowledge component. In comparison of comprehension and knowledge component the p-value is less than the significance level (.009<.05) therefore the null hypothesis is rejected and accepted alternate hypothesis as there is a significant difference between the performance of comprehension and knowledge component of Grade-VIII students in Science subject. The p-value is less than the significance level in all the pairwise comparison and also it is observed that there is less significant difference between the comprehension and knowledge component. On the whole there is a difference in mean

percentage and in pairwise comparison, hence it is concluded that there is a significant difference between the Grade-VIII students performance in each domain.

Determining Grade Appropriateness of Grade-VIII students in Science subject

The grade appropriateness of Grade-VIII students were analyzed with the + or - standard deviation from the mean percentage. The overall percentage of students should fall within this + or - standard deviation scores. The below figure will show the details of number of students who are grade appropriate based on the analysis. The + or – standard deviation of the Grade-VIII were 60.3% to 97.1%. There were totally 189 students participated in Grade VIII assessment, out of which 5 participants were removed from the study due to lack of response for the questions. The students who have attempted 80% of questions were considered for the study. The total number of students considered for the further analysis was 184. The following figure will show the details of the number of students who have performed grade appropriately and less appropriately according to the finding.

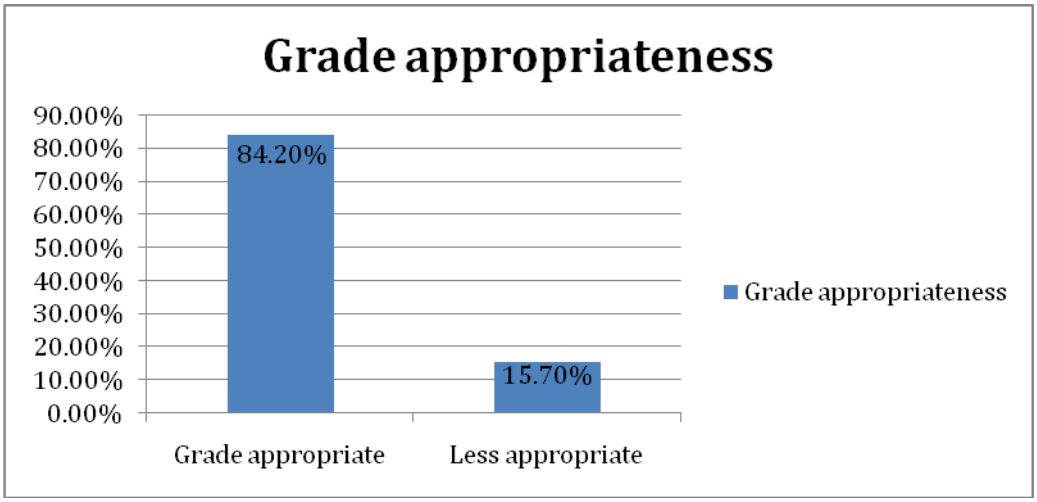


Figure 4.9 Details of grade appropriateness of Grade VIII students in Science subject

The figure 4.9 shows that among 184 participants 84.20% of participants were performed grade appropriately and 15.70% of students have performed less appropriate or not up to the expected

level of performance. When comparing the average, above average and below average performers 29 students have scored less than 60.3%, 21 students have scored more than 97.1% and 134 students have scored between 60.3% - 97.1%. The more number of students were falling between the + or – standard deviation that is the average bond. There is a significant difference between the performances of students in each domain in the science subject.

Determining Grade Appropriateness of Grade-X students on Grade-VIII toolin Science subject

Science curriculum in school has been framed in a way where the students can get the practical and theoretical exposure as well as there is a continuity of the concept from one grade to the next grade. A Grade-VIII test material was administered on few Grade-X students to identify whether there is a continuation of the concepts is been implemented properly at school and also to identify their grade appropriateness. The Lower and Upper bound for Grade-VIII were 60.3% to 97.1% and the same bound were taken for Grade-X students also. A total of 31 students have participated in the administration of test. The below figure will show the details of Grade-X students who have performed grade appropriately according to the finding.

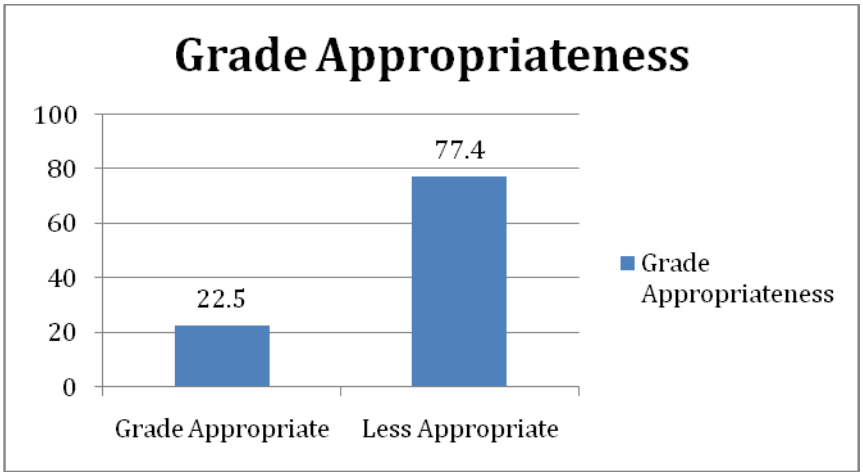


Figure 4.10 Details of performance of Grade X students

Figure 4.10 shows that there is huge difference in the performance of the Grade-X students in Grade-VIII science subject. Out of 31 students only 7 students i.e. 22.5% of students have performed grade appropriately and remaining 77.4% of students were less appropriate in the performance. From the above findings it is shown that the Grade-X student's performance is very less in Grade-VIII science subject tests. There might be various impacts on the performance of the students; it may be due to lack of exposure in application and practical part where the students will avail the experiential learning which leads to successful transition of concepts from one grade to other grade. The schools should focus on developing application and practical skills rather than developing theoretical knowledge especially in Science subject.

Overall performance (mean percentage) of the students in Grade-VI, VII and VIII pertaining to Knowledge, Comprehension and Application

Grade	**Domains**		
	Knowledge	**Comprehension**	**Application**
VI	77.10%	79.80%	73.00%
VII	74.9%	68.5%	64%
VIII	84.6%	82.1%	73%

Table 4.13 Details of overall performance of Grade VI, VII and VIII students

From the table 4.13, it is realized that students from the upper primary class were merely concentrated and exposed to knowledge domain than application domain. The performances of knowledge domain in the entire three grades were higher than the application and comprehension domain. There are many professional courses in the higher education which is mostly dependent on the Science subject in Schools. The performance in science subject decides the profession of students in future and those professions need more of practical knowledge than theoretical. This practical vision is essential to help our nation to solve most of its social as well as economic problems. And this is possible by making science learning interesting and logical. Thereby it is

huge responsibility on the schools to take application skills in Science subject among students in the upper primary level itself.

Calculation of + or – standard deviation to identify Lower bound and Upper bound based on the performance of Grade-VI, VII and VIII students

Grade	Mean percentage	Standard deviation percentage	Lower bound percentage	Upper bound percentage
VI	76.4	15.8	(76.4-15.8)=60.6	(76.4+15.8)=92.2
VII	69.1	19.2	(69.1-19.2)=49.9	(69.1+19.2)=88.3
VIII	78.7	18.4	(78.7-18.4)=60.3	(78.7+18.4)=97.1

Table 4.14 Details of Lower bound and Upper bound of Grade VI, VII and VIII

The lower bound and upper bound were decided based on the performance of students in the respective grade test. Since the standard deviation is less the mean percentage were taken for the further analysis of the data. The + or – standard deviation on mean percentage was analyzed for identifying the lower and upper bound. The + or – standard deviation method was chosen for the analysis since more number of performers could fall into this bound. The idea is to provide chance to any learners to fall in this minimum bound irrespective of their disability. Since the learners with disability will have less performance compared to the typically developing learners especially in science subject. This bound would help all the learners to perform grade appropriately and achieve in their academics.

To conclude the result highlights that most of the students from Grade-VI, VII, VIII are falling above the minus standard deviation. From the result it is more evident that more than 80% of students are grade appropriate in all the three grades. There is also a significant difference between the performances of students in all the domains. While analyzing the entire result the students have most of the students from Grade- VI, VII and VIII have performed good in knowledge component than the application component. Science is an interesting subject which

is more of practical part than theory part but from the overall findings it is observed that the students performance in application domain is less and there is need to concentrate more on developing skill to survive in the day to day life it. Thus it could be concluded that teaching-learning and assessment tasks should be carried out in such a way that it tests the way child's understanding of a subject as well as his/her ability to apply learning in an appropriate way. Learning in science should be meaningful and contextual to a student. The learning among students should happen in such a way that knowledge will be applied in the world beyond the classroom (Wazalwar,2014).

Summary And Conclusion

PROCESS OF THE RESEARCH

FOR TEACHERS AS FOR STUDENTS, THE MOST EFFECTIVE EVALUATION COMES FROM SOMEONE WHO SITS BESIDES US AND HELP US GROW

CAORL TOMLINSON

Keeping the above in mind, the study titled '***Development of Grade Level Assessment Test in Science for Upper Primary School Children (VI-VIII) was taken up.*** Science is about making sense of the world around us. The more we understand about biology, chemistry, geology, astronomy, physics and other sciences, the better equipped we are to understand who we are and why things are the way they are. In the process of learning science, it is assumed that all children are natural discoverers and as teachers our job is to provide a platform to allow children to make sense of their discoveries. However, in this process of teaching and learning, the component of assessment cannot be missed out. Assessments embedded in the curriculum serve at three purposes namely determining the students' initial understandings and abilities, to monitor students' progress and to collect information to grade student achievement. An appropriate assessment will not only be beneficial for the learner, the teacher and the parents, but also in general to the society at large to identify gaps in the teaching and learning process and ways to bridge the gaps. The available science tools are either teacher-made test or standardized test, which might not serve the purpose of identifying the grade appropriateness among the children. Moreover, the assessment device might not also give the areas in which the children are lagging behind. Hence the present study was undertaken to identify the grade appropriateness of students studying in Grade-VI, VII & VIII. The study also involved standardizing the developed

tool and establishing arrange of performance for determining Grade appropriateness among the upper primary children (Grade VI, VII & VIII). The details pertaining to the objectives, the method employed and the outcome of the study is described below.

Objectives of the Study:

Aims and Objectives

The aim of the study was to develop grade level assessment test for upper primary school children (VI-VIII) in science subject.The following objectives were realized for the study:

- To identify areas of competencies under the domains namely Knowledge, comprehension and application necessary for Grade-VI, VII and VIII in Science subject.
- To develop and validate a Norm Reference Test on the selected domains in Science subject of Grade-VI, VII and VIII
- To administer the developed tool on typically developing children studying in Grade VI, VII and VIII in Schools in Mysore
- To identify the areas of difficulties in domains like Knowledge, comprehension and application for Grade-VI, VII and VIII.
- To establish a range (lower bound and upper bound) to determine whether children of Grade-VI, VII and VIII are performing as per their Grade in science subject

Methodology The following methodology was employed for the study.

The study was carried out with the following procedures.

Stage I: Preparation of tool

Step 1: Selection of the participants:

The study was conducted in two phases namely:

- The pilot study for finalizing the tool for the study
- The final study for the purpose of standardization of the tool.

As the aim of the study was to develop Grade level Assessment test in science for Upper Primary Level, hence students studying in Grade VI, VII and VIII were selected for the study and hence they became the participants of the study. These participants were studying in CBSE regular school in Mysore district[Central Board of Secondary Education].

The students were selected based on the following inclusion criteria

Inclusion Criteria:

- Students from CBSE and Karnataka State board school at Mysore
- Medium of instruction should be English
- Students who have passed Grade VI, VII & VIII in June 2020
- Schools which are providing online classes
- Typically developing children from regular school

The CBSE and State board schools were selected for administering the tool. Following tables will show the details of participants involved in the study.

Participants involved in pilot study

For the purpose of finalizing the tool after validation from the experts, it was decided to conduct a pilot study for finalizing the test material. The below table shows the details of number of children selected from each school and the number of children studying in each grade.

Sl. No	Name of School	Grade VI	Grade VII	Grade VIII& IX	Total
1	School 1	05	05	10	**20**
2	School 2	05	05	11	**21**
3	School 3	05	07	10	**22**
	Total	**15**	**17**	**31**	**63**

Table 5.1: Details of participants involved in Pilot Study

A total of 63 participants were selected from 3 schools for the purpose of pilot study. A minimum of 5 children from each grade had been selected based on their regular classroom performance as per the information received from the teacher. The selected participants were typically developing children whose classroom performance was above average, average and below average (2- above average, 1- average, 2- below average) for the pilot study. The developed tool should be applicable to all the children including children with special needs and any children should be capable to do the test without having much difficulty. Furthermore for assessing the learning among the children, the test was conducted in the following way: for Grade-IX children, Grade VIII test material was provided for pilot study, for Grade-VII, Grade-VI test material was presented, for Grade VIII, Grade -VII test material was presented. The total number of participants in each grade was 15 students from Grade VI, 17 students from Grade VII, 15 Students from Grade VIII and 16 students from Grade IX.

Participants involved in final study

The pilot study helped in finalizing the tool which was used for the final purpose of standardization. A total of 446students from seven schools participated in the final study. The school-wise and Grade-wise break-up of the students across all the three grades is given in table 5.2.

Sl. No	Name of School	Grade VI	Grade VII	Grade VIII	Total
1	School 1	27	44	18	**89**
2	School 2	-	-	11	**11**
3	School 3	51	29	13	**93**
4	School 4	32	33	35	**100**
5	School 5	-	-	31	**31**
6	School 6	10	-	-	**10**
7	School 7	-	-	112	**112**
	Total	**120**	**106**	**220**	**446**

Table 5.2: Details of participants involved in final data collection

It could be observed in the above table that schools 2, 5, 6 and 7 didn't have online classes for that grades and hence data was not collected from them. Some schools were providing online classes only for higher grades and in some schools the children regularity in attending online class was less. Even though all schools teach science subject as it is a mandatory subject, the reason for only including seven schools for the study is discussed below (Step1 of Stage III)

Step- 2: Selection of Content

The text books from schools following NCERT, CBSE and State Board syllabus were collected for comparing the content/ lesson in Science subject. The syllabus for Science subject is common in all the schools since the concept in Science is common all over the world. In India the syllabus developed by CBSE is been followed throughout every schools especially in Science and Mathematics and the same is followed in Karnataka State. Blueprint was developed for each content/lesson for Grade-VI, VII&VIII based on learning domains like Knowledge, Comprehension & Application.

Step- 2: Development of test material

The test material was developed based on the three learning domains like Knowledge, Comprehension & Application and the blue print (Appendix-1). The selected items from each lessons were organized and items were reframed while developing the tool. The tool was

developed for 100 marks which contains both open ended and close ended questions. The questions included in the test materials were fill in the blanks, choose the correct answer, one word answer questions, matching, naming, think and answer, crosswords, label the picture, short answers has been constructed.

Step- 3: Validation of developed tool

The developed test material was given for validation to 3 experts in science subjects, 7 general educators who were handling science subject in school as well as to 2 special educators who had opted science as the core subject in their graduation. There were totally 5 schools around Mysore has been selected for validation of tool. The test material developed for Grade-VI, VII & VIII was validated by the respective Science teachers in the schools. A checklist was developed and provided to teachers to mark the appropriateness of each item. Items having more than 80% of validity were retained for finalization of the tool.

Stage II: Pilot Study

Step 1: Selection of School

Three schools were selected for the pilot study based on the teaching learning performance as below average, average and above average. The developed tool should be applicable to all the children including children with special needs and any children should be capable to do the test without having much difficulty.

Step 2: Administration of pilot study

Five children from each grade were selected based on their performance as average performer, below average performer and above average performer. This information was collected from the respective teachers teaching that particular class. The selected students were administered in a

separate classroom for the duration of one hour. The total marks for pilot study were 100 marks for each grade.

Step 3: Evaluation & analysis of data for finalization of the tool

The administered test material was evaluated for Grade- VI, VII & VIII. The scores were entered in the excel software for further analysis of the data. For standardization procedure validity index and difficulty index was done. The validity index and difficulty index was calculated to eliminate the difficult items. The difficulty index and item validity were analyzed using J. C Flanagan's table of normalized biserial co-efficient originally prepared for the co-operative test service. The 27% of top performance and 27% of bottom performance were considered for validity index and average performance percentage on the top and bottom been referred in the Flanagan's table. The validity indices of .20 or more are regarded as satisfactory, less than .20 and negative validity were discarded from the test material. The average of two percentage (top & bottom) to find the difficulty index, the easiest and the more difficult item have been removed from the tool. The final tool was cut down to 80 marks after the item and difficulty analysis.

Stage III: Procedure for final data collection

Step 1: Selection of the schools

The initial plan of conducting the actual data collection post the pilot study for the purpose of standardization was to visit the schools, take official permission from the concerned authorities, followed by administering the final tool personally by the researcher on the students of Grade-VI,VII and VIII. However, the unpredictable situation of the pandemic made the principal investigator as well as the researcher to find out various options for data collection. Hence the tool finalized after the pilot study was digitized using the Google forms. However, only those schools which were providing online classes were selected for the final study. All

schools in Mysuru were not providing the online classes due to reasons being non-availability of mobile phones, no technical assistance etc. Those schools which were not providing the online classes were providing recorded videos to their students and hence they were not included in the study. Those schools which were providing online classes were finally selected for conducting the test and collecting the data, the criteria of selecting only those schools providing online class was essential to have a close monitoring on the students when the test is being conducted. Hence only seven schools were selected finally for the final data collection.

Step 2: Digitization of tool

Due to COVID 19 the tool got digitized and converted to Google forms for Grade VI,VII& VIII. Trial of filling the test through Google Docs was given to the Special educators and to the children of Special Educators.

Step 3: Administration of online test

A total of seven schools around Mysore wereselected for the study. These were those schools that were providing online classes to the children and not sending recorded class. A link of the tool was sent to the respective schools for administration of test. The Science teachers were oriented about the online test, date and time for conducting test since the response once submitted by the children will be auto saved in the Google forms. The saved response was downloaded in the Excel format for further evaluation.

Step 4: Evaluation of the final data

The evaluation was done in Microsoft excel software since the response of the online evaluation was converted to the excel document. Evaluated the collected response for Grade-VI, VII & VIII and the scores of the students were then entered in excel software for the further analysis of the data. Table below gives the details of the Grade and the total marks of the test

Sl.No	Grade	Total Marks
1	**VI**	**67**
2	**VII**	**57**
3	**VIII**	**78**

Table 5.3 Grade-wise total marks

MAJOR FINDINGS OF THE STUDY

As the study was aimed to develop grade level assessment test for upper primary school children (VI-VIII) in science subject and appropriate strategy was established to determine the range of performance for Grade-VI, VII and VIII. The table below shows the lower bound and upper bound performance of Grade-VI, VII and VIII based on their performance.

Lower bound and Upper bound performance of Grade-VI, VII and VIII students based on the + or – standard deviation

Grade	Mean percentage	Standard deviation percentage	Lower bound percentage	Upper bound percentage
VI	76.4	15.8	(76.4-15.8)=**60.6**	(76.4+15.8)=**92.2**
VII	69.1	19.2	(69.1-19.2)=**49.9**	(69.1+19.2)=**88.3**
VIII	78.7	18.4	(78.7-18.4)=**60.3**	(78.7+18.4)=**97.1**

Table 5.4 Details of Lower bound and Upper bound of Grade VI, VII and VIII

The lower bound and upper bound were decided based on the performance of students in the respective grade test. Since the standard deviation is less the mean percentage were taken for the further analysis of the data. The + or – standard deviation on mean percentage was analyzed for

identifying the lower and upper bound. The + or – standard deviation method was chosen for the analysis since more number of performers could fall into this bound. The idea is to provide chance to any learners to fall in this minimum bound irrespective of their disability. Since the learners with disability will have less performance compared to the typically developing learners especially in science subject, this bound would help all the learners to perform grade appropriately and achieve in their academics. Moreover, since it is a standardized test and needs to be administered on a wider population, it was essential to follow the above mentioned procedure of + and – standard deviation. Thus from the above table it could be concluded that for Grade-VI, those students who fall in the range between 60.6 and 92.2 were considered to be Grade appropriate and less than 60.6 were seen as performing less than the expected range. Similarly, for Grade-VII the range established was 49.9 and 88.3 and for Grade-VIII, the range established was 60.3 and 97.1. This clearly indicates that those students falling below the lower bound is not performing as per their grade and needs improvement. The table below gives the details of the percentage of students in all the three grades that are performing Grade appropriately and below the grade.

Grade	Grade Appropriate	Less appropriate
VI	83.60%	16.30%
VII	84.30%	15.60%
VIII	84.20%	15.70%

Table 5.5 Grade appropriateness of Grade VI, VII and VIII

Table 5.1 shows that more than 80% of students from Grade VI, VII and VIII have performed grade appropriately and less than 16% of students have performed less appropriate.

The study also wanted to determine in which domain would does the students face more difficulty across the three grades. The table below shows the mean percentage across the three domains in all the three grades.

Grade	**Domains**		
	Knowledge	**Comprehension**	**Application**
VI	77.10%	79.80%	73.00%
VII	74.9%	68.5%	64%
VIII	84.6%	82.1%	73%

Table 5.6 Overall performance of Grade VI, VII and VIII students pertaining to domain

From the above table 5.6it is shown that there is a difference in the domain wise performance of Grade-VI,VII and VIII students. While observing the result it is found that the student's performance is good in knowledge domain compared to application and comprehension domain. As observed in the above able, the performance in application domain is less as compared to Knowledge and comprehension. Thus it is a clear indication that while teaching science subjects to students would be to teach in a manner which arouses their interest and curiosity. Although there are many approaches to how science could be taught, it is proposed that teachers can help students learn better by providing them with hands-on learning and by creating opportunities for visual learning, so as to help them apply their classroom teaching in real-life situation (Stewart & Kluwin,2001)

Limitation of the study

The current study undertook the development of grade level assessment tool in Science subject for Grade-VI, VII and VIII. The study has its own limitations in terms of time and number of participants. Following were the consequence of the limitation

- Only seven schools were selected for collecting the data due to COVID-19 pandemic situation.
- The data was collected through online and there is no direct contact with the students who were doing test
- The tool was not administered on children with special needs since the special schools were not providing online classes during this pandemic.

Implications

The outcome of the research might lead to

- The developed tool is standardized and it can also be used as diagnostic and achievement test material for Grade VI, VII and VIII students
- The tool could help teachers and teacher trainees to use in the classroom since it is a question bank which includes the entire chapters in Science subject of Grade VI, VII and VIII
- There is no region restriction in using the tool since the tool is developed in science subject most of the schools around Mysore and India were following the common syllabus especially in Science subject. Any schools/board like CBSE, NCERT and State board can use the tool irrespective of their region.

Recommendation

- Further research can be done with same tool among children with special needs. If there is any adaptation needed for implementing the tool on children with special needs that could be covered in future research.
- More broad-based research should be undertaken to develop the assessment tool in different curricular areas and for different grades.

References

1. A.K Wazalwar (2014). Analysis of CBSE Question papers at the Higher Secondary Stage for the years 2012 to 2014 (Mathematics) *School Science* 52, 3 pp 5-11.
2. Arend E Carl, Theopolina AN Negumbo (2017) Underperformance in Social Studies in Grades 5-7 in Namibian primary schools: a case study. *Yesterday & Today, No.17*. Retrieved from file:///C:/Users/ACER/Downloads/Underperformance_in_Social_Studies_in_Grades_5-7_i%20(1).pdf on 10.04.2020
3. Culp L. & Malone, V. (1992). Peer scores for group work. *Science Scope, 15*(6), 35-36, 59. Retrieved from https://eric.ed.gov/?id=EJ458212 on 19.09.2020
4. Devender Kumar (2018) A study of Current education scenario in India and Expectation from Corporate Social Responsibility. *CASIRJ: Vol. 9, Issue 3, ISSN 2319-9202*. Ph. D Thesis, RDVV, Jobalpur.
5. Dr Tapas Kumar Sarkar (2012) Assessment in Education in India. *SA-eDUC JOURNAL Volume 9, Number 2.* Retrieved from http://www.nwu.ac.za/files/files/p-saeduc/New_Folder_1/1_Assessment%2520in%2520Education%2520in%2520India.pdf on 17.08.2020
6. Flick, L. B. (1993, Winter). 'The Meanings of Hands-on Science'. *Journal of Science Teacher Education, 4*(1), 1-8.
7. Frances Edwards (2013) Quality assessment by science teachers: Five focus areas. *Science Education International: Vol. 24, Issue 2* Retrieved from https://files.eric.ed.gov/fulltext/EJ1015826.pdf on 12.10.2020

8. Frances Edwards (2013) Quality assessment by science teachers: Five focus areas. *Science Education International, Vol. 24, Issue 2*. Retrieved from https://files.eric.ed.gov/fulltext/EJ1015826.pdf on 12.08.2020
9. G. Hadprayitno et al (2019). Problems in learning biology for senior high schools in combok Island. *Journal o Physics: Conference Series*. Retrieved from iopscience.iop.org/article/10.1088/1742-6596/1241/1/012054/pdf on 20.01.2021
10. Gaffney, K. E. (1992). Multiple assessments for multiple learning styles. *Science Scope, 15*(6), 54-55.
11. Gulikers, J., Bastiaens, T., & Kirschner, P. (2004). A five-dimensional framework for authentic assessment. *Educational Technology Research and Development, 52 (3), 67-85*. Retrieved from https://www.imperial.ac.uk/staff/educational-development/teaching-toolkit/assessment-and-feedback/good-assessment/ on 02.12.2020
12. Guskey, T. R (1997) Implementing mastery learning -2nd edition. *Belmont*, CA: Wadsworth.
13. Hein G. E. (1987). The right test for hands-on learning. *Science and Children, 25*(2), 8-12.
14. Henry E. Garrett, R. S. Woodworth (1979) Statistics in Psychology and Education. *David McKay Company New York, 9th edition*.
15. Herron, M. D (1971) The nature of Scientific enquiry. *School Review*, 79.171-212
16. Jeyanthi Narayan, (1997) Grade Level Assessment Device for Children with learning problems in Schools. *National Institute for the Mentally Handicapped*. Retrieved

from http://niepid.nic.in/Grade%20Level%20Assessment%20Device%20For%20Children.pdf on 18.07.2020

17. Manitoba, “Role of Assessment in learning” Retrieved from https://www.edu.gov.mb.ca/k12/assess/role.html on 03.12.2020.
18. Markham, K. M. Mintzes J. J., & Jones M. G. (1994). The concept map as a research evaluation tool: Further evidence of validity. *Journal of Research in Science Teaching, 31*(1), 91-101.
19. National Curriculum Framework (2005) Position Paper, National Focus Group on Teaching of Science. *National Council of Educational Research and Training*
20. National Education Policy, (2020) *Ministry of Human Resource Development*. Retrieved from https://www.education.gov.in/sites/uploadfiles/mhrd/files/NEPFinalEnglish_0.pdf on 24.09.2020
21. Nava, FeJosefa&Camarao, Micheal (2017). High school students difficulties in Physics. *Paper presented at the national Conference on Research in Teacher Education, (NCRTE)2017*, Nov- 9-11, 2017, Quezon City, The Philippines. Retrieved from https://www.researchgate.net/publication/320980117 on 21.01.2021
22. Qualities of a good assessment. *Imperial College, London*. Retrieved from https://www.imperial.ac.uk/staff/educational-development/teaching-toolkit/assessment-and-feedback/good-assessment/ on 02.12.2020
23. Science at the Upper Primary Level- Chemistry (2019) *Research Development and Consultancy Division (RDCD) Council for the Indian School Certificate*

Examinations, Module II. Retrieved from https://cisce.org/UploadedFiles/PDF/Chemistry%20at%20Upper%20Primary%20Level.pdf on 20.01.2020

24. Seifert, K and Sulton, R (2009). Educational Psychology. *Saylor Foundation*. Retrieved from https://open.umn.edu/opentextbooks/BookDetail.aspx?bookid-153 on 12.01.2021
25. Small, L &Petrek, J. (1992). Teamwork testing. *Science Scope, 15*(6), 29-30.
26. Swang J. (1993). Portfolios: Windows on Learning. *Learning 93, 21*(8), 24-27.
27. Thomas R. Guskey (2003) How classroom assessment improve learning? *Educational Leadership: Vol. 60, Number 5.*
28. Tippens, D. J & Dana, N. F. (1992). Culturally relevant alternative assessment. *Science Scope, 15*(6), 50-53.
29. Vlasta Hus, JasminaMatjasic (2017) Evaluation and Assessment in Early Social Science. *Universal Journal of Educational Research 5(4): 664-670.* Retrieved from https://files.eric.ed.gov/fulltext/EJ1137714.pdf on 13.04.2020
30. Wiggins, Grant and Jay Mc Tighe (2005) Understanding By Design,*2nd Expanded edition*. *Alexandria VA: Assn for Supervision and Curriculum Development*

Appendix I

GLAT Sc6- Blue Print

S. No	Title	Knowledge Number of items (Weightage)		Comprehension Number of items (Weightage)		Application Number of items (Weightage)		No. of items	Total		Total Marks
		(1M)	(2M)	(1M)	(2M)	(1M)	(2M)		1 M	2 M	
1	Food: Where does it come from	2	-	1	-	1	1	5	4	2	6
2	Components of food	2	-	1	-	1	-	4	4	-	4
3	Fibre to Fabric	1	-	2	-	1	1	5	4	2	6
4	Sorting materials into group	2	-	1	2	1	-	6	4	4	8
5	Separation of substances	1	-	2	-	-	1	4	3	2	5
6	Changes around us	-	-	1	1	2	1	5	3	4	7
7	Getting to know plants	2	-	2	-	2	1	7	6	2	8
8	Body movements	2	-	1	-	1	-	4	4	-	4
9	The living organisms- Characteristics and Habitats	1	-	1	2	1	-	5	3	4	7
10	Motion and Measurement of distances	2	-	-	1	2	1	6	4	4	8
11	Light, Shadows and Reflections	-	-	-	2	2	1	5	2	6	8
12	Electricity and Circuits	2	-	1	-	1	1	5	4	2	6
13	Fun with magnets	2	-	-	1	1	2	6	3	6	9
14	Water	1	-	-	1	-	-	3	1	2	3
15	Air around us	2	-	1	-	1	-	4	4	-	4
16	Garbage In and Garbage Out	3	-	2	-	-	1	6	5	2	7
	Total							**80**	**58**	**42**	**100**
	Percentage	25%		35%		40%					100%

GLAT Sc7- Blue Print

S. No	Title	Knowledge Number of items (Weightage)		Comprehension Number of items (Weightage)		Application Number of items (Weightage)		No. of items	Total		Total Marks
		(1M)	(2M)	(1M)	(2M)	(1M)	(2M)		1 M	2 M	
1	Nutrition in Plants	2	-	1	-	1	1	5	4	2	6
2	Nutrition in Animals	1	-	1	-	1	-	3	3	-	3
3	Fibre to Fabric	1	-	1	-	1	1	4	3	2	5
4	Heat	2	-	2	1	1	-	6	5	2	7
5	Acids, Bases and Salts	1	-	1	-	-	1	3	2	2	4
6	Physical and Chemical changes	-	-	1	1	1	1	4	2	4	6
7	Whether, Climate and Adaptations of Animals to climate	1	1	2	1	2	1	8	5	6	11
8	Winds, Storms and cyclones	2	-	1	-	1	-	4	4	-	4
9	Soil	1	-	1	1	1	-	4	3	2	5
10	Respiration in organisms	2	-	-	-	2	1	5	4	2	6
11	Transportation in animals and plants	1	-	1	1	2	1	6	4	4	8
12	Reproduction in plants	1	-	1	-	1	1	4	3	2	5
13	Motion and time	2	-	-	1	1	1	5	3	4	7
14	Electric current and its effect	1	-	1	1	1	-	4	3	2	5
15	Light	2	-	1	-	1	-	4	4	-	4
16	Water: A precious resource	1	-	2	1	-	1	5	3	4	7
17	Forests: Our Lifeline	1	-	1	-	1	-	3	3	-	3
18	Wastewater story	1	-	1	-	-	1	3	2	2	4
	Total							**80**	**60**	**40**	**100**
	Percentage	25%		35%		40%					100%

GLAT Sc8- Blue Print

S. No	Title	Knowledge Number of items (Weightage)		Comprehension Number of items (Weightage)		Application Number of items (Weightage)		No. of items	Total		Total Marks
		(1M)	(2M)	(1M)	(2M)	(1M)	(2M)		1 M	2 M	
1	Crop production and management	2	-	-	1	1	-	4	3	2	5
2	Microorganisms- Friend and Foe	1	-	1	-	1	-	3	3	-	3
3	Synthetic Fibres and plastics	1	-	-	1	1	2	4	2	6	8
4	Materials- Metals and Non-Metals	1	-	-	1	1	-	3	2	2	4
5	Coal and Petroleum	1	-	1	-	-	1	3	2	2	4
6	Combustion and Flame	-	-	1	1	1	1	4	2	4	6
7	Conservation of plants and animals	-	1	2	1	1	1	6	3	6	9
8	Cell- Structure and Functions	1	-	1	-	1	-	3	3	-	3
9	Reproduction in animals	1	-	1	1	1	-	4	3	2	5
10	Reaching the age of Adolescence	1	-	-	-	2	1	4	3	2	5
11	Force and Pressure	1	-	1	1	1	2	6	3	6	9
12	Friction	2	-	1	-	1	1	5	4	2	6
13	Sound	1	-	-	1	1	1	4	2	4	6
14	Chemical effects of Electric current	1	-	1	1	1	-	4	3	2	5
15	Some natural phenomena	1	-	1	-	1	2	5	3	4	7
16	Light	1	-	1	1	-	1	4	2	4	6
17	Stars and the solar system	1	-	1	-	1	-	3	3	-	3
18	Pollution of Air and Water	1	-	1	1	-	1	4	2	4	6
	Total							**73**	**48**	**52**	**100**
	Percentage	20%		35%		45%					100%

Appendix II

GLAD VI- SCIENCE

Duration: 1 hour **Total marks: 67**

Demographic Details

Name of the Student

……

Standard/Grade

……

Medium of Instruction

……

Name of the School

……

Section- A

I. Choose the correct answer **(1x6= 6)**

1. Which of the following joints is immovable?

◯ Shoulders and Arm

◯ Knee and Joints

◯ Upper jaw and Skull

◯ Lower jaw and elbows

2. The distance between Delhi and Mumbai is usually expressed in units of

◯ decametre

◯ metre

◯ centimeter

◯ kilometre

3. Wells receive water from

◯ Pond water

◯ lake water

◯ rain water

◯ ground water

4. The part which helps in the upward movement of water and minerals to other parts of the plant.

◯ Stem

◯ Leaves

◯ seeds

◯ flower

5. The process where water comes out of leaves in the form of Vapor

◯Respiration

◯Transpiration

◯Venation

◯photosynthesis

6. The components of air which are harmful to living beings are

◯ nitrogen and carbon dioxide

◯dust and water vapour

◯dust and smoke

◯smoke and water vapour.

II. Fill in the blanks from the given option (1x10=10)

(north & south, soluble, synthetic fiber, threshing, current, energy giving foods, paper, fused, magnetic material, bangles)

1. Food containing fats and carbohydrates are also called……..

2. Polyster, nylon and acrylic are examples of……..

3. When a substance completely dissolves in water, it is…….in water

4. An object which is made of glass or plastic or metal is called……..

5. The method of separating seeds of paddy from its stalks is called……..

6. The bulb glows only when…….flows through the circuit.

7. Sometimes an electric bulb does not glow even if it is connected to the cell. This may happen if the bulb has……

8. The Materials which are attracted towards a magnet are called……

9. A magnet always has……poles.

10. ……can be recycled to get useful products

Section- B

I. Observe the picture and answer the following questions **(1x4=4)**

1. Identify and name the picture

……..

2. What is the name of the insect?

……..

3. Write the nutrients we get from milk**…….**

4. Why is the police man putting a cover on his nose?

……

II. Answer in a word or two **(1x7=7)**

1. Given are few ingredients: Select the items which is required to prepare for the food given below

	Wheat	Egg
Chapathi	☐	☐
Omlet	☐	☐

2. A piece of iron is heated till it becomes red-hot. It then becomes soft and is beaten to a desired shape. What kind of changes is observed in this process?

◯ Reversible

◯ Irreversible

Write one example of each

3. Trees……..

4. Creepers……

Unscramble the given words below to get the correct word using the clues given against them

5. Roucdprentoi- **……** (Living beings giving birth to its same kind)

Answer the following

6. Correct the definitions of certain terms given below by changing only one word with the given clue (i) Compost: Substances converted into manure for use in industries.

◯Water

◯Agricultural fields

7. Give example of the change which occurs on heating but can be reversed

……..

III. Think and answer **(1x10=10)**

1a. How does the animals and bird move from place to place?

	Walk	Fly
Cow	☐	☐
Crow	☐	☐

1b. Name the body part which is used for moving for the given animal and bird

	Leg	Wings
Cow	☐	☐
Crow	☐	☐

2a.What is the ingredients used to make Chapati/Roti?

……..

2b.What is the ingredients used to make Tea/coffee?

……

3. List out two major nutrients found in the food

1.……

2.……....

4. Classify the fibers as natural or synthetic by selecting the correct option

	Natural	Synthetic
Nylon	☐	☐
Wool	☐	☐
Cotton	☐	☐
Silk	☐	☐

5a. List the materials which are used to make plate

……

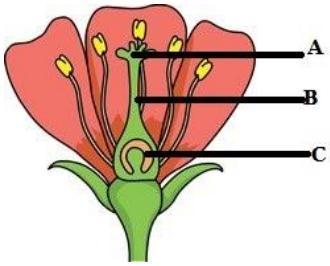
……

5b. List the materials which are used to make Dining Table

……

……

6. Select the parts of the flower appropriately.



	Stigma	Style	Ovary
A	☐	☐	☐
B	☐	☐	☐
C	☐	☐	☐

7. Arrange the following lengths in their increasing magnitude: 1 metre, 1 centimetre, 1 kilometre, 1 millimetre.

…….

8. Rearrange the boxes given below to make a sentence that helps us understand opaque objects.

shadows	object	opaque	makes

……..

9. In a completely dark room, if you hold up a mirror in front of you, will you see a reflection of yourself in the mirror?

◯Yes

◯No

10. Using the following words, write the habitat of each animal given in Figure.

(Grassland, Mountain, Desert, Pond, River)

……..

Section- C

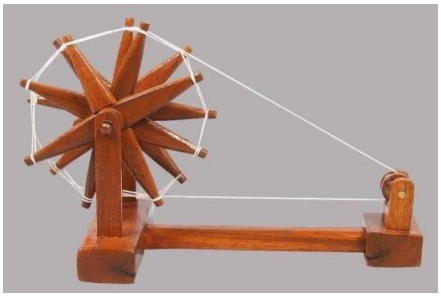
I. Answer in a word or two **(2x10=20)**

1a. Name the picture from the given option

◯ Charkha

◯ Tukli

1b.



◯ Charkha

◯ Tukli

2. Mention whether the options given below could be reversed or not

	Yes	No
Raw egg to boiled	☐	☐
Batter to idli	☐	☐
Wet clothes to dry clothes	☐	☐
Stretched rubber bands to normal size	☐	☐

3. Names of plant parts are hidden in this grid. Search them by going up, down, diagonally, forward or backward. Write the answer below

O	V	U	L	E	L
S	T	A	M	E	N
T	V	E	I	N	O
E	L	A	P	E	S
M	I	D	R	I	B

……

……

……

……

4a. Using the following words, write the habitat of each animal given in Figure.

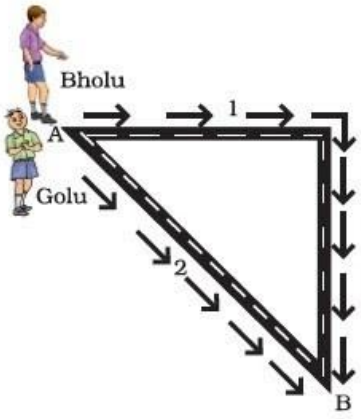
(Grassland, Mountain, Desert, Pond, River)

……

4b. (Grassland, Mountain, Desert, Pond, River)

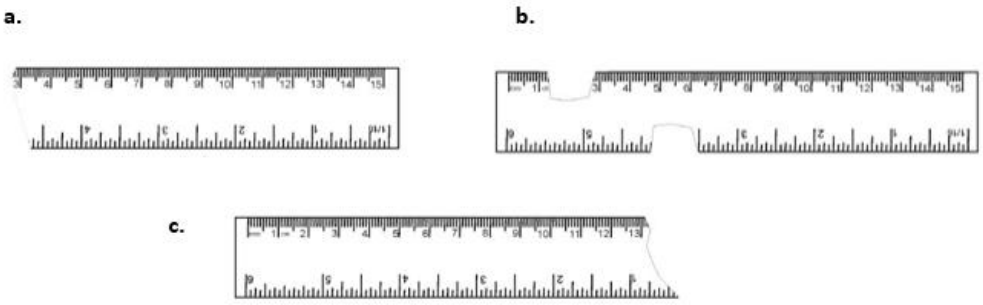
……

5. Bholu and Golu are playing in a ground. They start running from the same point A in the ground and reach point B at the same time by following the paths marked 1 and 2 respectively as shown in Figure. Whose distance is longer in the situation?



……..

6. You are provided three scales given below to measure a length of 10 cm. Select which scale can be used for correct measurement of 10cm below.

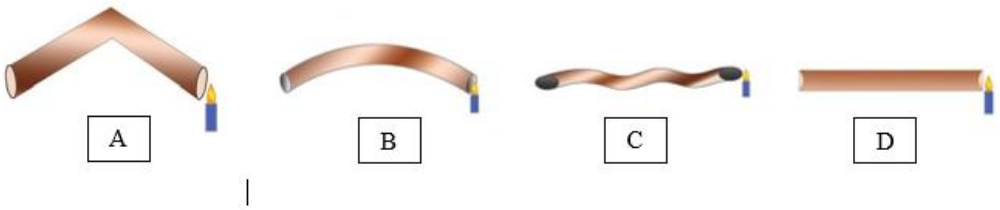


◯ a

◯ b

◯ c

7. Four students A, B, C and D looked through pipes of different shapes to see a candle flame as shown in Figure. Select the correct option



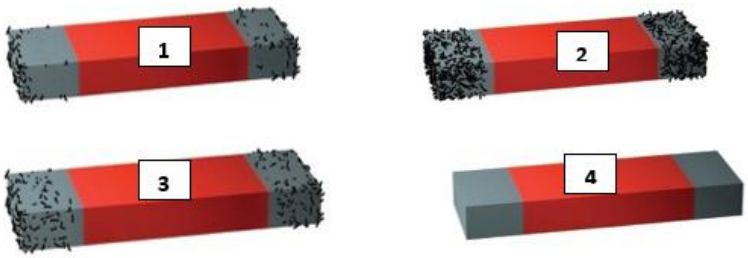
◯ A

◯ B

◯ C

◯ D

8. Four identical iron bars were dipped in a heap of iron filings one by one. Figure shows the amount of iron filings sticking to each of them. Which of the iron bars is not a magnet? Select the correct answer.



◯1

◯2

◯3

◯4

9a. Look at the Figure and Write down the activities shown in the figure in which water is being used.

……..

……

9b. From the above figure write any one activity which require less than one bucket of water.

……..

10. Select Yes or No, against the garbage items given in Table which could be converted into manure.

	Yes	No
Plastics make manure or not	☐	☐
Egg shells make manure or not	☐	☐
Dry leaves make manure or not	☐	☐
Left over food makes manure or not	☐	☐

II. Answer briefly **(2x5=10)**

1 (a). Given below are the names of some objects and materials:Water, basketball, orange, sugar, globe, apple and earthen pitcher. Group them as: (a) Round shaped and other shapes

	Round Shaped	Other Shaped
Water	☐	☐
Basketball	☐	☐
Orange	☐	☐
Sugar	☐	☐
Globe	☐	☐
Apple	☐	☐
Earth Pitcher	☐	☐

1. (b) Eatables and non-eatables

	Eatables	Non - Eatables
Water	☐	☐
Basketball	☐	☐
Orange	☐	☐
Sugar	☐	☐
Globe	☐	☐
Apple	☐	☐
Earth Pitcher	☐	☐

2. (a) Write the objects that comes into your mind which is made of the Wood

……

2. Write the objects that comes into your mind which is made of the Plastic

……

2. (b) Write the objects that comes into your mind which is made of the Glass

……

2. Write the objects that comes into your mind which is made of the Leather

……

3. Mention where a) Separation and (b) Filtration methods are used in our lives

	Separation	Filtration
Removing impurities from rice	☐	☐
Dirty water to clean water	☐	☐

4. Change of a bud into a flower is a change which cannot be reversed. Give four more such example.

……. ……. ……. …….

5. Name some materials which magnet get attracted

…… …… ……

Appendix III

GLAD VII- SCIENCE

Duration: 1 hour **Total marks: 57**

Demographic Details

Name of the Student

……

Standard/Grade

……

Medium of Instruction

……

Name of the School

……

Section- A

I. Choose the correct answer (1x9= 9)

1. The organisms which makes food for themselves from simple substances is called

○ Heterotrophs

○ Autotrophs

○ Saprotrophs

2. Some organisms live together and share both shelter and nutrients. This relationship is called

○ Symbiosis

○ Host

○ parasite

3. The materials which do not allow heat to pass through them easily are called

○ Conductors

○ Insulators

○ convection

4. In addition to the rock particles, the soil contains

○ air and water, water and plants

○ minerals, organic matter, air and water

○ water, air and plants

5. Mature ovary forms the

○ Seed

○ stamen

○ pistil

6. When the electric current is switched off, the coil generally loses its magnetism, such coils are called

○ electric current

○ electromagnets

○ electric bells

7. Any polished or a shining surface acts as a

○ Light

○ sound

○ mirror

8. The change of direction by a mirror is called

○ Image

○ reflection of light

○ object itself

9. Which part of the tongue detects taste of a food?

○ Tip

○ Bud

○ Lingual tonsil

II. Fill in the blacks from the option given below (1x4= 4)

(excretion, temperature, neutral solutions, animal)

1. Silk and wool are…….. fibres

2. Thermometer is a device used for measuring……..

3. A solutions which do not change the colour of either red or blue litmus are ……

4. The process of removal of wastes produced in the cells of the living organisms is called…….....

III. Name appropriately for the following pictures from the option given below (1x7= 7)

(Stomata, Thermometer, Sand clock, Concave lens, Spiracles, Laboratory Thermometer, Wall Clock)

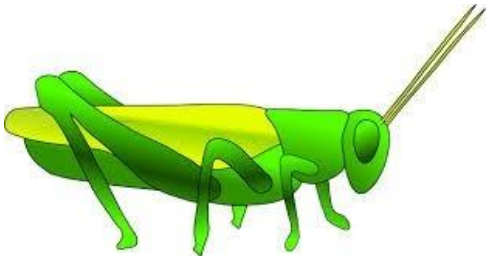
1.

……..

2.

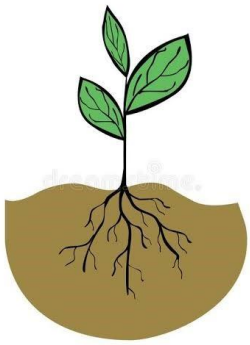
……..

3. Insects breath through



……

4. Plants breath through

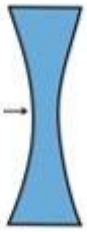


……

5.

……

6.



……

7.

……

Section- B

I. Answer the following in a word **(1x2=2)**

1. Acid + Base → Salt + Water …… is evolved

○ Salt

○ Acid

○ Heat

2. (a). Name the process and the organ involved in removing the following wastes from the body. Select the given option;

	Stomach	Digestive tract
Undigested Food	○	○

2. (b). Name the process and the organ which helps in removing the following wastes from the body from the given option;

	Hair	Skin
Sweat	○	○

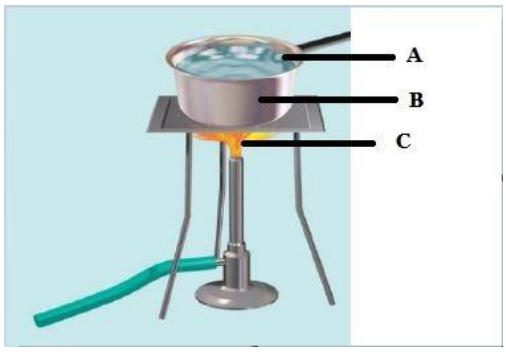
II. Mark the appropriate option for the following **(1x3= 3)**

	Canopy	Gaseous	chemical changes
1.Burning of substance	○	○	○
2.Water vapor	○	○	○
3.Roof over other plants	○	○	○

III. Think and Answer **(2x3= 6)**

1. Mark where the heat is being transferred by conduction, by convection and by radiation.

   Select appropriately from the following



	Conduction	Convection	Radiation
A	○	○	○
B	○	○	○
C	○	○	○

2. List out two electrical appliances used in your school

……

……

3. List out 2 roles that can be played by you to save water

……

……

IV. Classify the following **(2x2= 4)**

1. Select appropriately for the following regions

	Polar Region	Tropical Region
Canada	○	○
Indonesia	○	○
Greenland	○	○
Uganda	○	○
Iceland	○	○
India	○	○
Norway	○	○
Kenya	○	○

2. Select appropriately for the following changes

	Physical Changes	Chemical Changes
1. Breaking a bottle	○	○
2. Cooking an egg	○	○
3. Melting an ice cube	○	○
4. Rusting of an iron pan	○	○
5. Mixing hydrochloric acid and sodium hydroxide to make salt and water	○	○
6. Crushing a can	○	○

Section- C

I. Think and Do **(1x7= 7)**

1. List out the three components of food

…….....

…….

…….

2. Select the animal which is reared for wool

A

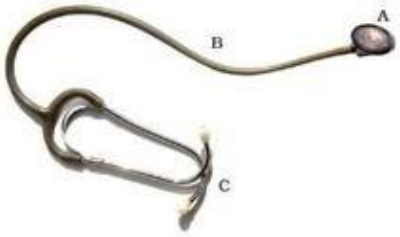
B

C

3. Name the electric appliance which is used to remove wrinkles from your clothes

……..

4. Observe the figure and Name the instrument



……

5. Does the picture given below describe vegetative propagation?

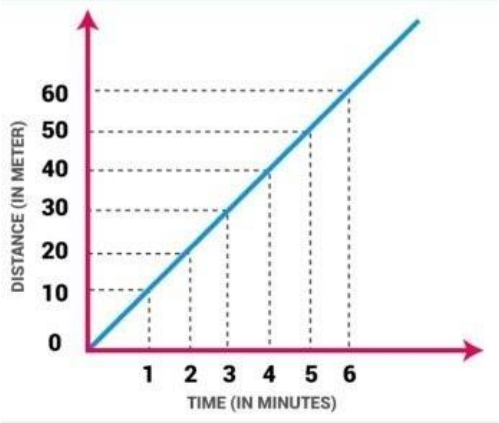
○ Yes

○ No

6a. Answer the following questions by observing the graph, a) At what time does the object in motion cover 30 meters

……..

6b. How much distance will be covered by the object in 6 minutes?



……

7. Write the colors of the rainbow by re-arranging from the colors given below.

☐ red	☐ pink	☐ orange	☐ yellow	☐ purple
☐ blue	☐ green	☐ rose	☐ indigo	☐ violet

…… …… …… ……..

.... ……..

II. Answer the following **(1x3= 3)**

1. What is the use of forest?

……

2. Type of soil used for making pottery.

……

3. Write any one example of physical changes

……

III. Answer the following **(2x6= 12)**

1. Form a sentence using the word – baking soda

……

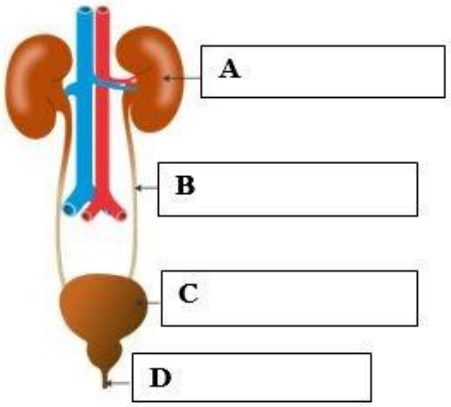
2. Following are some of the characteristics of animals. Given below are based on characteristics, indicate whether it is adaptation for Tropical rainforests or Polar Regions

	Tropical rainforests	Polar Regions
Diets heavy on fruits-	○	○
White fur-	○	○
Need to migrate	○	○
Loud voice	○	○
Sticky pads on feet	○	○

3. Below are the few characteristics of the respiratory system. Select appropriate term for each.

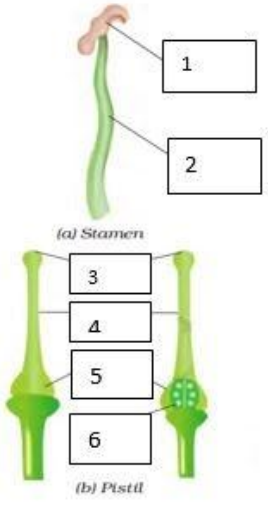
	Stomata	Ribs	Lungs	Trachea	Diaphragm
The air tubes of insects	○	○	○	○	○
Skeletal structures surrounding chest cavity	○	○	○	○	○
Muscular floor of chest cavity	○	○	○	○	○
Tiny pores on the surface of leaf	○	○	○	○	○
The respiratory organs of Human beings	○	○	○	○	○

4. Select the parts of human excretory system



	Urethra	Kidney	Ureter	Urinary bladder
A	○	○	○	○
B	○	○	○	○
C	○	○	○	○
D	○	○	○	○

5. Label the reproductive parts of flower(Ovary, Ovule, Stigma, Filament, Style, Anther)



	Filament	stigma	Anther	ovary	Ovule	Style
1	O	O	O	O	O	O
2	O	O	O	O	O	O
3	O	O	O	O	O	O
4	O	O	O	O	O	O
5	O	O	O	O	O	O
6	O	O	O	O	O	O

6. What do the below picture mean?

……

Appendix IV

GLAD VIII- Science

Duration: 1 hour **Total marks: 78**

Demographic Details

Name of the Student

……

Standard/Grade

……

Medium of Instruction

……

Name of the School

……

Section- A

I. Unscramble the following words (1x7= 7)

1. ilos- (mixture of organic matter, minerals, etc earths body) ……..

2. Verir- (natural flowing watercourse) ……..

3. Santiidobe- (which is to bind to an antigen) …….

4. Laspict- (find it in the schools and houses we live in)……..

5. Keenrose-(it's a lamp oil, and coal oil)…….

6. Ginroten- (the chemical symbol of N and atomic number of 7)……

7. Popcer- (a chemical element which is of orange in color)……

II. Fill in the blanks with the given option (1x7= 7)

(Force, air, nucleus, deforestation, combustion, biodiversity, nutrients)

1. A chemical process in which a substance reacts with oxygen to give off heat is called.....

2. A major threat to survival of plants and animals is ……

3. …….refers to the variety of living organisms in a specific area.

4. I control the functions of a cell. Who am I? ……..

5. The meal that includes all……..is a balanced diet.

6. In science, a push or a pull of an object is called a…….

7. Many industries are responsible for causing…… pollution.

III. Choose the correct answer **(1x3= 3)**

1. To sharpen the blade of a knife by rubbing it against a surface, which of the following will be most suitable?

○ stone

○ plastic block

○ wooden block

○ glass block

2. The unit of measurement used for expressing dimension (size) of cells is:

○ centimeter

○ millimeter

○ micrometer

○ metre

3. Select the part of the eye which gives color to the eyes from the option given below

○ iris

○ cornea

○ lens

○ retina

Section- B

I. Classify the following **(2x2= 4)**

1. Select the following into Metals and Non – metals

	Metals	Non - metals
Iron	○	○
Sulphur	○	○
Copper	○	○
Aluminium	○	○
Gold	○	○
Oxygen	○	○
Chlorine	○	○

2. Select the following into Combustible and Non-combustible

	Combustible	Non - Combustible
Charcoal	○	○
Chalk	○	○
Stone	○	○
Iron Rod	○	○
Copper coin	○	○
Straw	○	○
Cardboard	○	○
Glass	○	○
paper	○	○
Candle	○	○
Wood	○	○

II. Answer the following in one word **(1x4= 4)**

1. When the cutting edge of the knife is put against a fast rotating stone to sharpen it, sparks are seen to fly. What does it mean?

……..

2. Name the part of the body which vibrates when we speak

…….

3. Guess me? A play material which is constructed by mirrors and broken bangles

……....

4. Do stars emit light only during night?

…….

III. Answer in a word or two (2x5= 10)

1. Write the articles from the following list which are biodegradable (Paper, Woolen clothes, Wood, Aluminium can, Plastic bag, Peels of vegetables)

……..

…….

2. Differentiate the following in one word Deforestation and reforestation

……

3a. In the following situations identify the force and the object on which it acts. (a) Squeezing a piece of lemon between the fingers to extract its juice.

……

3b. In the following situations identify the force and the object on which it acts. (b) Taking out paste from a toothpaste tube.

……

4. Name two Indian musicians with the instruments they play

……..

……

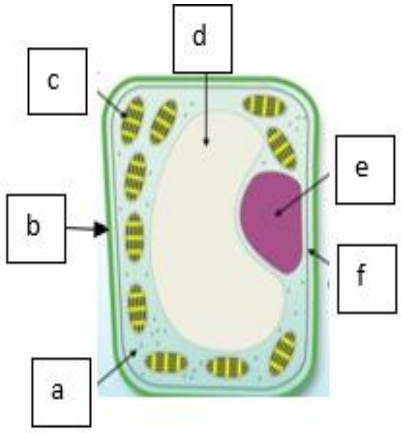
5. Read the paragraph and select the source or place of pollution for the following

Water is essential for life. Without water there would be no life. We usually take water as granted for its purity, but we must ensure the quality of water. Pollution of water originates from human activities. Through different paths, pollution reaches to ground water. Easily identified source or place of pollution is called as point source, e.g.– municipal and industrial discharge pipes, where pollutants enter the water source. Non–point sources of pollution are those where a source of pollution cannot be easily identified, e.g.– agricultural runoff, acid rain etc.

	Point Source	Non - Point Source
Municipal discharge	○	○
Agricultural run-off	○	○
Acid rain	○	○
Industrial discharge pipes	○	○

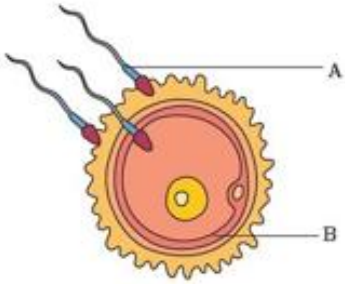
IV. Label the part of the diagram **(1x5= 5)**

1. Select appropriate parts of the diagram



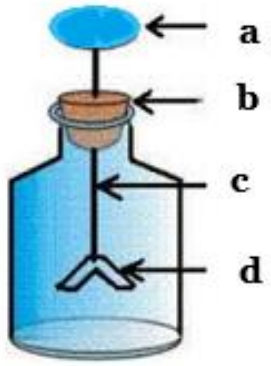
	Cytoplasm	Nucleus	Cell membrane	Cell wall	Vacuole	Chloroplast
a	○	○	○	○	○	○
b	○	○	○	○	○	○
c	○	○	○	○	○	○
d	○	○	○	○	○	○
e	○	○	○	○	○	○
f	○	○	○	○	○	○

2. Select appropriate parts of the diagram



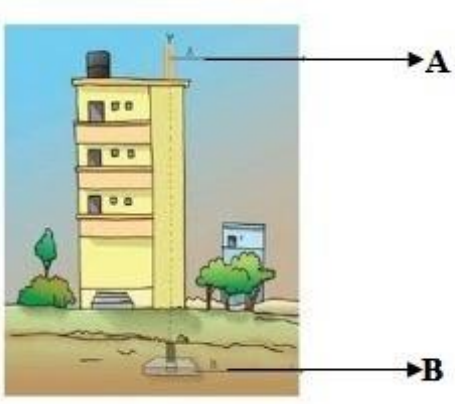
	Sperm	Ovum
A	○	○
B	○	○

3. Select appropriate parts of the diagram



	Aluminium foil	Cork	Copper wire	Metal disc
a	○	○	○	○
b	○	○	○	○
c	○	○	○	○
d	○	○	○	○

4. Lightning conductor and the copper plate



	Copper Plate	Lightning Conductor
A	○	○
B	○	○

5. Select the force which is responsible for downward motion for the below picture

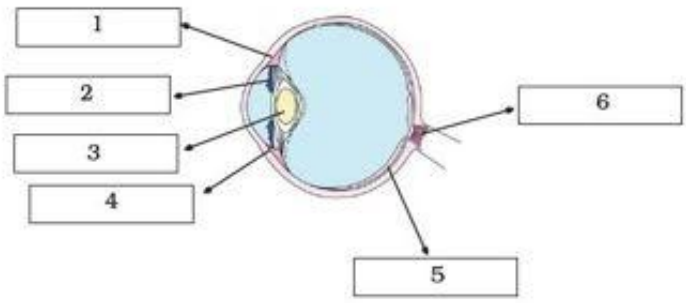
○ Muscular force

○ Electrostatic force

○ Gravitational force

V. Answer the following questions **(2x2= 4)**

1. Select the parts of the eye in the order mentioned in the diagram



	Lens	Optic nerve	Cillary Muscle	Cornea	Retina	Iris
1	○	○	○	○	○	○
2	○	○	○	○	○	○
3	○	○	○	○	○	○
4	○	○	○	○	○	○
5	○	○	○	○	○	○
6	○	○	○	○	○	○

2. Observe the following circuits carefully. In which circuit will the bulb glow? Select the appropriate option

a) 

.....

b) 

.....

○ a

○ b

Section- C

I.Answer Shortly for the following questions **(1x7= 7)**

1. Given below is a conversation between two farmers Heera and Beera.

Heera: Brother Beera, your maize crops looks beautiful! They have grown pretty fast.

Beera: Yes, I have sprayed urea this time. What about you?

Heera: Well, I am still relying on good old cow dung. I am saving money for buying a tractor.

a) Write the practice which is not environment friendly

……

2. Select the appropriate option for the below given paragraph.

A lady went to the market to buy a blanket. The shopkeeper showed her blankets made of acrylic fibres as well as made of wool. She preferred to buy an acrylic blanket. Guess and write the answer from the given option

a) warm, lightweight, and hypoallergenic
b) heavy, difficult to take care, useful in cold season

○ a

○ b

3. Select the application of the substances for iron:

○ For making electric wires

○ For making rails

4. Name one exhaustible natural resource

……

5. Name the color of the outer zone of complete combustion (flame of a candle)

……

6. Mention any one action that you can undertake to save trees

……..

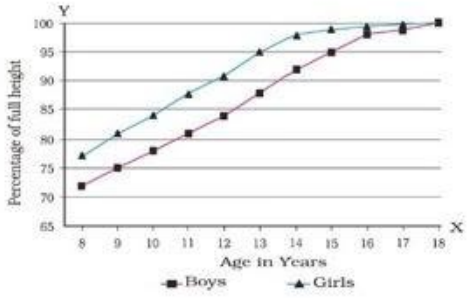
7. Name musical instruments which produce sound by vibrating strings?

……

II.Think and Answer **(1x7= 7)**

1. a. Which colour line represents the height of boys?

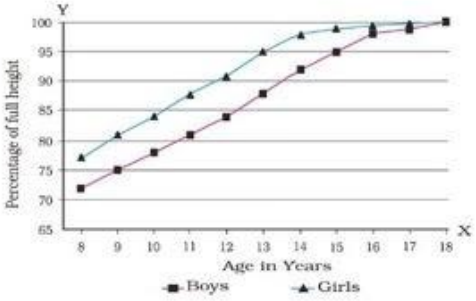
Observe the graph given carefully and answer the following



……

1.b. Which colour line represents the height of girls?

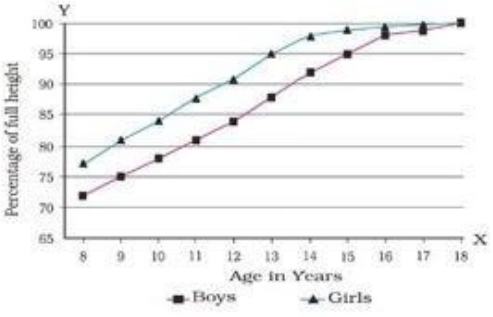
Observe the graph given carefully and answer the following



……

2.a. What is the percentage of boy's height at the age of 13?

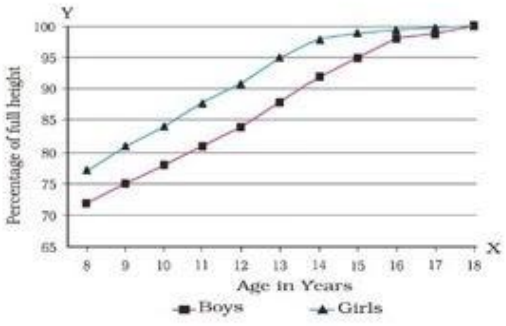
Observe the graph given carefully and answer the following



……

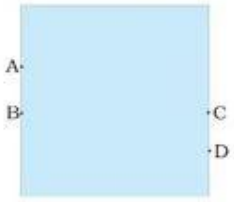
2.b. What is the percentage of girl's height at the age of 17?

Observe the graph given carefully and answer the following



……

3. Choose the correct option: A water tank has four taps fixed at points A, B, C, D as shown in figure. The water will flow out at the same pressure from taps at



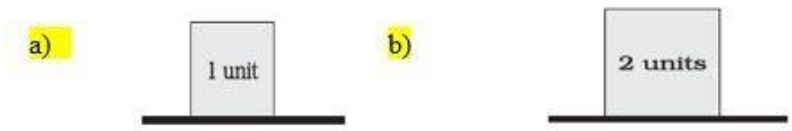
○ B and C

○ A and B

○ C and D

○ A and C

4. Two blocks of iron of different masses are kept on a cemented floor as shown in figure. Which one of them would require a larger force to move it from the rest position? Select the correct answer



○ a

○ b

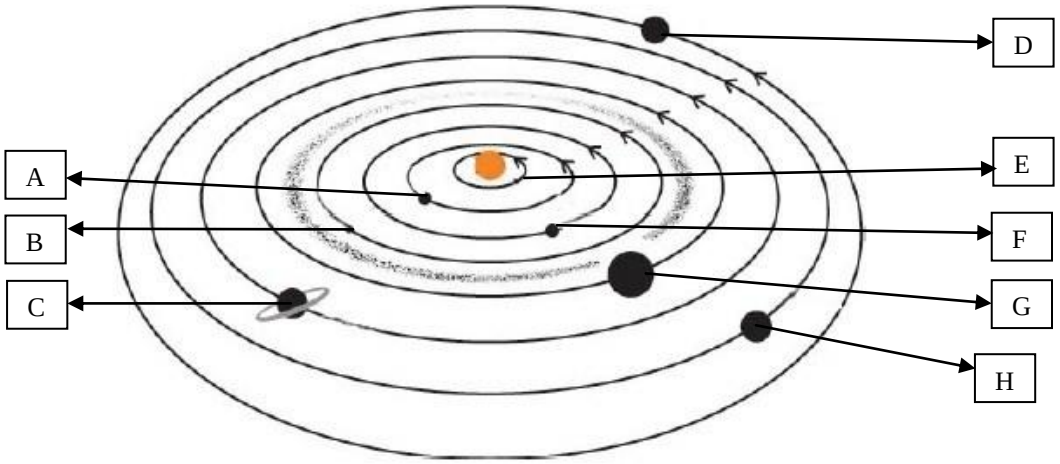
5. What will be your first action when an electric circuit passed into a person?

……

6. What precautions would you take if lightning occurs while you are outside the house?

……

7. Select the names of all planets from the option given below



	Mercury	Venus	Earth	Mars	Jupiter	Saturn	Uranus	Neptune
A	○	○	○	○	○	○	○	○
B	○	○	○	○	○	○	○	○
C	○	○	○	○	○	○	○	○
D	○	○	○	○	○	○	○	○
E	○	○	○	○	○	○	○	○
F	○	○	○	○	○	○	○	○
G	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○

III. List out the following answer (2x2= 4)

1. List two precautions that should be taken when there is a fire in your school

……..

……..

2. List two sources of noise pollution in your locality

…….

…….

IV. Answer the following briefly (2x8= 16)

1. Select appropriate nutrients present in the following food items

	Carbohydrates	Proteins	Vitamins	Fats
Pulses and Nuts	○	○	○	○
Oranges and amla	○	○	○	○
Sugar and Roti	○	○	○	○
Oils	○	○	○	○

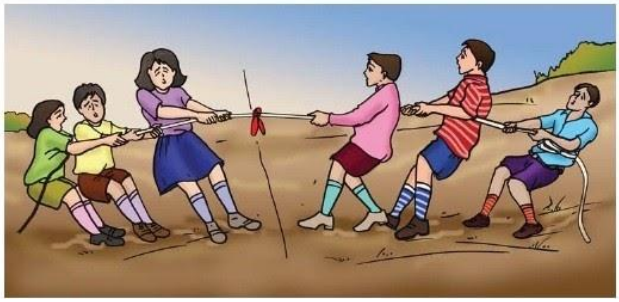
2. Give example of situations in which applied force causes a change in the shape of an object

……..

3. When a thermocol balls are held close to each other it moves away from each other which force is responsible for this

……...

4. While playing tug of war, Preeti felt that the rope was slipping through her hands. Suggest a way out for her to prevent this



.....

5. While driving what are the tips we must follow to save petrol/diesel/natural gas?

.....

6. Select two precautions that you will take to protect yourself if earthquake strikes when you are inside the house from the option given below

- ○ A. Don't use matches, candles, or any flame
- ○ B. Run out of house if you are inside home
- ○ C. Don't use elevators
- ○ D. Stay calm
- ○ E. Use landline phones
- ○ F. Crawl under heavy furniture
- ○ G. Stand near to the wall

7. Select two precautions that you will take to protect yourself if earthquake strikes when you are outside the house from the option given below

○ A. Move to an open space.

○ B. Use landline phone

○ C. Don’t take shelter under trees or buildings:

○ D. Slow down the vehicle if you are driving

○ E. Run inside the house

8. Name any two sources which cause air pollution

…….

…….

Appendix V

Online Link for the Developed Tool

Grade VI:

https://docs.google.com/forms/d/e/1FAIpQLSdKesEk7ZkXw5W_jiqIExrwQC4BH7ImF19bUfUIs0zS40qZw/viewform

Grade VII:

https://docs.google.com/forms/d/e/1FAIpQLSdSkDMxu-jfLWEHsiZ1l6pZyMymZJmaDdSaZ4j9pazN32K-LA/formResponse

Grade VIII:

https://docs.google.com/forms/d/e/1FAIpQLSe5y5_6hrFTe99gaxH26vlEpkGJaYN4gOytGtCqQjcWNtswog/viewform

Appendix VI

Grade VI- GLAT Science
Scoring sheet

Name: **Grade:** **Age:**

Section- A	Marks per question	Total marks
I. Choose the correct answer		**(1x6=6)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	
Q. 6	0 – 1	
Total		
II. Fill in the blanks from the given option below		**(1x10=10)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	
Q. 6	0 – 1	
Q. 7	0 – 1	
Q. 8	0 – 1	
Q. 9	0 – 1	
Q. 10	0 – 1	
Total		
Section- B	**Marks per question**	**Total marks**
I. Observe the following picture and answer the question		**(1x4=4)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 - 0.5 – 1	
Total		
II. **Answer in a word or two**		**(1x7=7)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	

Q. 6	0 – 1	
Q. 7	0 – 1	
Total		
III. Think and Answer		**(1x10=10)**
Q. 1 (a)	0 – 0.5	
Q. 1 (b)	0 – 0.5	
Q. 2 (a)	0 – 0.5	
Q. 2 (b)	0 – 0.5	
Q. 3	0 – 0.5 – 1	
Q. 4	0 – 0.5 – 1	
Q. 5 (a)	0 – 0.5	
Q. 5 (b)	0 – 0.5	
Q. 6	0 – 0.5 – 1	
Q. 7	0 – 0.5 – 1	
Q. 8	0 – 1	
Q. 9	0 – 1	
Q. 10 (a)	0 – 1	
Total		
Section- C	**Marks per question**	**Total marks**
I. Answer in a word or two		**(2x10= 20)**
Q. 1 (a)	0 – 1	
Q. 1 (b)	0 – 1	
Q. 2	0 – 1 – 2	
Q. 3	0 – 1 – 2	
Q. 4 (a)	0 – 1	
Q. 4 (b)	0 – 1	
Q. 5	0 – 2	
Q. 6	0 – 2	
Q. 7	0 – 2	
Q. 8	0 – 2	
Q. 9 (a)	0 – 1	
Q. 9 (b)	0 – 1	
Q. 10	0 – 1 – 2	
Total		
II. Answer briefly		**(2x5=10)**
Q. 1 (a)	0 – 0.5 – 1	
Q. 1 (b)	0 – 0.5 – 1	
Q. 2 (a)	0 – 0.5 – 1	
Q. 2 (b)	0 – 0.5 – 1	

Q. 3	0 – 1 – 2	
Q. 4	0 – 0.5 – 1 – 1.5 – 2	
Q. 5	0 – 0.5 – 1 – 1.5 – 2	
Total		
Overall Total		
Overall Percentage		

(Total Marks=67)

Grade VII- GLAT Science

Scoring sheet

Name: **Grade:** **Age:**

Section- A	**Marks per question**	**Total marks**
I. Choose the correct answer		**(1x9=9)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	
Q. 6	0 – 1	
Q. 7	0 – 1	
Q. 8	0 – 1	
Q. 9	0 – 1	
Total		
II. Fill in the blanks from the given option below		**(1x4=4)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Total		
III. **Name appropriately for the following pictures from the option given below**		**(1x7=7)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	
Q. 6	0 – 1	
Q. 7	0 – 1	
Total		
Section- B	**Marks per question**	**Total marks**
I. Answer the following in a word		**(1x2=2)**
Q. 1	0 – 1	
Q. 2 (a)	0 - 0.5	
Q. 2 (b)	0 - 0.5	

Total		
II. **Mark the appropriate option for the following**		**(1x3=3)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Total		
III. Think and Answer		**(2x3=6)**
Q. 1	0 – 1 – 2	
Q. 2	0 – 0.5 – 1 – 1.5 – 2	
Q. 3	0 – 0.5 – 1 – 1.5 – 2	
Total		
IV. Classify the following		**(2x2=4)**
Q. 1	0 – 0.5 – 1 – 1.5 – 2	
Q. 2	0 – 0.5 – 1 – 1.5 – 2	
Total		
Section- C	**Marks per question**	**Total marks**
I. Think and Do		**(1x7=7)**
Q. 1	0 – 0.5 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	
Q. 6	0 – 1	
Q. 7	0 – 0.5 – 1	
Total		
II. Answer the following		**(1x3=3)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Total		
III. Answer the following		**(2x6=12)**
Q. 1	0 – 1 – 2	
Q. 2	0 – 0.5 – 1 – 1.5 – 2	
Q. 3	0 – 0.5 – 1 – 1.5 – 2	
Q. 4	0 – 1 – 2	
Q. 5	0 – 0.5 – 1 – 1.5 – 2	
Q. 6	0 – 1 – 2	
Total		

Overall Total		
Overall Percentage		

(Total Marks=57)

Grade VIII- GLAT Science

Scoring sheet

Name: **Grade:** **Age:**

Section- A	**Marks per question**	**Total marks**
I. Unscramble the following words		**(1x7=7)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	
Q. 6	0 – 1	
Q. 7	0 – 1	
Total		
II. Fill in the blanks from the given option below		**(1x7=7)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5		
Q. 6		
Q. 7		
Total		
III. **Choose the correct answer**		**(1x3=3)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Total		
Section- B	**Marks per question**	**Total marks**
I. Classify the following		**(2x2=4)**
Q. 1	0 – 0.5 – 1 – 1.5 – 2	
Q. 2	0 – 0.5 – 1 – 1.5 – 2	
Total		
II. **Answer the following in one word**		**(1x4=4)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	

Q. 4	0 – 1	
Total		
III. Answer in a word or two		**(2x5=10)**
Q. 1	0 – 1 – 2	
Q. 2	0 – 1 – 2	
Q. 3 (a)	0 – 1	
Q. 3 (b)	0 – 1	
Q. 4	0 – 1 – 2	
Q. 5	0 – 1 – 2	
Total		
IV. **Label the part of the diagram**		**(1x5=5)**
Q. 1	0 – 0.5 – 1	
Q. 2	0 – 0.5 – 1	
Q. 3	0 – 0.5 – 1	
Q. 4	0 – 0.5 – 1	
Q. 5	0 – 1	
Total		
V. **Answer the following questions**		**(2x2=4)**
Q. 1	0 – 0.5 – 1 – 1.5 – 2	
Q. 2	0 – 2	
Total		
Section- C	**Marks per question**	**Total marks**
I. Answer Shortly for the following questions		**(1x7= 7)**
Q. 1	0 – 1	
Q. 2	0 – 1	
Q. 3	0 – 1	
Q. 4	0 – 1	
Q. 5	0 – 1	
Q. 6	0 – 1	
Q. 7	0 – 0.5 – 1	
Total		
II. Think and Answer		**(1x7= 7)**
Q. 1 (a)	0 – 0.5	
Q. 1 (b)	0 – 0.5	
Q. 2 (a)	0 – 0.5	
Q. 2 (b)	0 – 0.5	
Q. 3	0 – 1	
Q. 4	0 – 1	

Q. 5	0 – 0.5 – 1	
Q. 6	0 – 0.5 – 1	
Q. 7	0 – 0.5 – 1	
Total		
III. List out the following answer		**(2x2= 4)**
Q. 1	0 – 1 – 2	
Q. 2	0 – 1 – 2	
Total		
IV. Answer the following briefly		**(2x8= 16)**
Q. 1	0 – 1 – 2	
Q. 2	0 – 1 – 2	
Q. 3	0 – 2	
Q. 4	0 – 1 – 2	
Q. 5	0 – 1 – 2	
Q. 6	0 – 1 – 2	
Q. 7	0 – 1 – 2	
Q. 8	0 – 1 – 2	
Total		
Overall Total		
Overall Percentage		

(Total Marks=78)

Appendix VII

From,

Dr. Prithi.V.
Reader and Principal Investigator
Department of Special Education
AIISH, Mysuru

To,

The Principal
RIE
Mysuru

Subject: Permission to conduct pilot study in the month for February 2020 for Grade VI, VII, VIII and IX children-reg

With reference to the above, myself Dr.Prithi V and research officer Ms.Dhivya D is carrying out a project titled "Development of Grade Level Assessment Test in Science for Upper Primary School Children (VI-VIII)" at the department of special education at AIISH. The project is aimed at developing a Grade level assessment test in science for grade VI, VII and VIII. The tool for the same is ready and validated. However before carrying out the actual data collection, we would like to conduct a pilot study on the above mentioned group.

Hence, it is requested to kindly permit Ms.Dhivya D to administer the tool as a part of the pilot study.

Yours sincerely,

Dr. Prithi V
Project Principal Investigator &
Reader- Special Education
AIISH, Mysuru

Date: 22.08.2020

From,

Dr. Prithi.V.
Reader and Principal Investigator
Department of Special Education
AIISH, Mysuru

To,

The Principal
Excel Public School
Mysuru

Subject: Permission to conduct and administer a Developed Science tool on school children of Grade VI-VIII-reg

With reference to the above, myself Dr.Prithi V and research officer Ms.Dhivya D is carrying out a project titled "Development of Grade Level Assessment Test in Science for Upper Primary School Children (VI-VIII)" at the department of Special Education at AIISH. The project is aimed at developing a Grade level assessment test in Science for Grade VI, VII and VIII. The tool for the same is ready and validated. For the purpose of administering it on the students during this COVID-19 time, we have digitized the same for the ease of usage.

I would like to request you to kindly permit us to conduct the research/ administer the tool on Children of Grade VI-VIII of your school. I assure you it will not be a waste of time and the outcome will be shared with you. I also assure you all the ethics/protocol of your school will be maintained. Kindly help us in this matter. Looking forward for a positive response from you.

Yours sincerely,

Dr. Prithi V
Project Principal Investigator &
Reader- Special Education
AIISH, Mysuru

SH/DSE/ARFProject/Dr.Prithi/2020-21 11.06.2020

To

HoD- Electronics
AIISH
Mysuru-570006

Sub: Requesting for hiring the service of Mr. Karthik Venkat Sridharan, Speech Technologist from the Department of Electronics for the purpose of digitizing School Assessment Tool- reg

Dear Sir,

I Dr. Prithi Venkatesh is the Principal Investigator of a project titled "Development of Grade Level Assessment Test in Science for Upper Primary School Children (VI-VIII)" for which we have developed objective and subjective type question paper to be administered on school children of Grade VI, VII, VIII. However, due to the uncertainty in school reopening my project officer Ms. Dhivya. D would find it difficult to administer it personally on the students.

In this regard, the digital version of the developed tool would be beneficial for collecting the data. In this regard, kindly provide us with the service of Mr. Karthik Venkat Sridharan for digitizing the same.

Thanking You

With Regards

Dr. PrithiVenkatesh
Principal Investigator