PREPARING GROUND FOR PISA

A Teachers’ Handbook
Chief Patron:
Sh. Santosh Kumar Mall, IAS, Commissioner

Patrons:
Sh. Saurabh Jain, Additional Commissioner (Acad)
Sh. U. N. Khaware, Additional Commissioner (Acad)

Chief Editor:
Sh. U. N. Khaware, Additional Commissioner (Acad)

Editors:
Dr. E. Prabhakar, Joint Commissioner (Trg.), KVS (Hqrs)
Sh. S. Vijaya Kumar, Joint Commissioner (Acad.), KVS (Hqrs)

Associate Editors:
Sh. Shaik Tajuddin, Assistant Commissioner (Acad.), KVS (Hqrs)
Smt. Sona Seth, Assistant Commissioner (Trg.), KVS (Hqrs)
Sh. E.V. Ramana, Assistant Education Officer, KVS (Hqrs)
Sh. Sanjay Chauhan, TA (English), ZIET Chandigarh
Sh. S.P. Singh, TA (Biology), ZIET Chandigarh
Smt. Renuka Chawla, TA (Commerce), ZIET Chandigarh
Smt. Sunita Gusain, TA (Hindi), ZIET Chandigarh
Smt. Chayya Kumar, PGT (Eng), KV Greater Noida, New Delhi
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Need for Attainment of Learning Outcomes</td>
<td>9</td>
</tr>
<tr>
<td>Back to Basics</td>
<td>20</td>
</tr>
<tr>
<td>SLATE</td>
<td>26</td>
</tr>
<tr>
<td>Training Manual for PISA</td>
<td>32</td>
</tr>
<tr>
<td>• Changes required in Teaching Learning Process</td>
<td>40</td>
</tr>
<tr>
<td>• PISA Questions</td>
<td>46</td>
</tr>
<tr>
<td>• How to Prepare Teachers</td>
<td>51</td>
</tr>
<tr>
<td>• Collaboration</td>
<td>56</td>
</tr>
<tr>
<td>• Preparing Learners for PISA</td>
<td>65</td>
</tr>
<tr>
<td>Preparing Administration</td>
<td>67</td>
</tr>
<tr>
<td>Road Map</td>
<td>73</td>
</tr>
<tr>
<td>References</td>
<td>76</td>
</tr>
</tbody>
</table>
"DON'T LIMIT A CHILD TO YOUR OWN LEARNING, FOR HE WAS BORN IN A DIFFERENT TIME."

Education is going through a remarkable transformation and though we have made efforts to address the challenges of present age, it is evident that a lot still needs to be done.

Time tested techniques like recitation, dictation, dramatization, story-telling, mental math, memorization or remembering as a study technique have all been shelved in the race for completing the syllabus and targets.

Our students are not encouraged to use their creativity and imagination nor do our teachers have the time to think and create a learning environment that caters to the individual learner.

We are at the juncture now, when it is time to go back to the Basics and inculcate in our children learning of the core concepts, competencies and skills that ought to be the most integral part of their lives and help them become independent learners, creators, leaders and thinking individuals of tomorrow.

It was in 2009 that India took the assessment for the first time. The participating states were Tamil Nadu and Himachal Pradesh. But India could not perform up to the mark. India's participation in PISA 2021 is an attempt to move away from rote learning and move towards competency-based education and creativity.
PISA focuses on the assessment of student performance in reading, mathematics and science because they are fundamental to a student’s ongoing education.

‘Preparing Ground for PISA’ provides information about PISA, need for attainment of learning outcomes, the changes required in teaching learning process, characteristics of PISA type questions, various fields to be mastered for PISA preparation and information about monitoring mechanism.

This document helps all the stakeholders of KVS to march ahead with confidence and to train our students for PISA 2021 assessment.

U . N. KHWARE
ADDITIONAL COMMISSIONER (Acad.)
What is PISA?

- PISA is the OECD’s (Organization for Economic Co-operation and Development) Programme for International Student Assessment.
- Every three years it tests 15-year-old students from all over the world in reading, mathematics and science.
- The tests are designed to gauge how well the students master the key subjects in order to be prepared for real-life situations in the adult world.

It was decided that schools run by Kendriya Vidyalaya Sangathan (KVS), Navodaya Vidyalaya Samiti (NVS) and schools in the UT of Chandigarh will participate.

Why PISA – how will it help India?

- PISA is a competency based assessment which unlike content-based assessment, measures the extent to which students have acquired key competencies that are essential for full participation in modern societies.
- It would lead to recognition and acceptability of Indian students and prepare them for the global economy in the 21st century.
- Learning from participation in PISA will help to introduce competency based examination reforms in the school system and help move away from rote learning.
- The CBSE and NCERT will be part of the process and activities leading to the actual test.

The PISA assessment aims to assess knowledge, skills and competencies, embedded in the context of important content domains such as literacy, mathematics and science.
Why to choose 15-year-olds?

- Because in most countries, at the age of 15, students can decide whether or not they want to continue their education.
- They therefore need to be equipped for adult life.
- PISA publishes the results of the test a year after the students are tested to help governments shape their education policy.

PISA 2021

- India shall be participating in PISA for the second time, the first being in 2009
- 36 OECD member countries and over 50 non-members are expected to participate.
- The focus will be on Mathematical Literacy
- To be conducted in April 2021
  - 5250 students (150 schools X 35 students) will be assessed on the following subjects:-
    - Math and Science (47% students)
    - Math and Reading (47% students)
    - Reading and Science (6% students)

Principles of Testing

- PISA covers three domains: reading literacy, mathematical literacy and scientific literacy.
- PISA aims to define each domain not merely in terms of mastery of the school curriculum, but in terms of important knowledge and skills needed in adult life.
• The assessment of cross-curriculum competencies is an integral part of PISA.

• Emphasis is placed on the mastery of processes, the understanding of concepts and the ability to function in various situations within each domain.

• **Paper and-pen assessment-**
  - **Cognitive Assessment:**
    - It covers three domains:
      - Reading Literacy, Mathematical Literacy & Scientific Literacy.
      - The assessment of cross-curriculum competencies is an integral part of PISA.
      - Emphasis is placed on the mastery of processes, the understanding of concepts and the ability to function in various situations within each domain.
      - Participating students complete a two-hour paper and-pen assessment.
  - **Context questionnaire**
    - Data is collected through a 35-minute Student Questionnaire which provides an opportunity to investigate factors that may influence performance and give context to the achievement scores.
  - **Background Questionnaire**
    - Responses to a set of ‘core’ questions about the students and their family background (including age, year level and socio economic status) are collected during each assessment.
  - **School Survey**
    - Information at the school-level is collected through a 30-minute online School Questionnaire, answered by the Principal.
    - The questionnaire seeks descriptive information about the school and information about instructional practices.
    - The survey results provide rich context for the achievement data.

Participating PISA countries and economies are invited to submit questions that are then added to items developed by the OECD’s experts and contractors.
DEFINITIONS OF THE DOMAINS

- **Scientific Literacy**
  - The ability to engage with science-related issues, and with the ideas of science, as a reflective citizen.
  - A scientifically literate person is willing to engage in a reasoned manner, offer and evaluate explanations for a range of natural and technological phenomena.
  - Evaluate and design scientific enquiry - describe and appraise scientific investigations and propose ways of addressing questions scientifically.
  - Interpret data and evidence scientifically, analyse and evaluate data, claims and arguments in a variety of representations and draw appropriate scientific conclusions.

- **Reading literacy**
  - An individual’s capacity to understand, use, reflect on and engage with written texts, in order to achieve one’s goals, to develop one’s knowledge and potential, and to be an active member in the society.

- **Mathematical Literacy**
  - An individual’s capacity to formulate, employ and interpret mathematics in a variety of contexts.
  - It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena.
  - It assists individuals to recognize the role that Mathematics plays in the world and to make the well-founded judgments and decisions needed by constructive, engaged and reflective citizens.

Inter-disciplinary teaching can increase students’ motivation for learning and their level of engagement.
NEED FOR ATTAINMENT OF LEARNING OUTCOMES

Learning outcomes are an essential part of any unit outline. A learning outcome is a clear statement of what a learner is expected to be able to do, know about and value at the completion of a unit of study, and how well they should be expected to achieve those outcomes. It states both the substance of learning and how its attainment is to be demonstrated.

To ensure for the attainment of learning outcomes there needs to be mastery on:

a. Content (knowledge)
b. Understanding
c. Hands on practice (skill)

Learning outcomes should:

- reflect broad conceptual knowledge and adaptive vocational and generic skills
- reflect essential knowledge, skills or attitudes
- focus on results of the learning experiences
- reflect the desired end of the learning experience, not the means or the process
- represent the minimum performances that must be achieved to successfully complete a course or programme

The learning outcomes for each class not only help the teachers to direct their teaching-learning in the desired manner but make other stakeholders, especially the parents or guardians, School Management Committee (SMC) members, community and the state functionaries to be responsible and alert towards their role for ensuring quality education- NCERT
DIMENSIONS OF LEARNING

i) Size:

Attention has an important role in the learning process because it brings whatever information is being discussed to consciousness, and leads to conscious processing.

Teachers need to take into consideration variations among their students; some can be attentive for a longer period of time than their other peers, and this is due to the differences in their attention spans. Also, some of them are more visual than others, so it would be helpful if teachers associated the new information with some pictures in order to facilitate the learning process, and make it easier for students to recall them when needed.

The extent of listening span has shown to be a prolific hypothesis in individual differences in the capacity to store auditory information.

In case of listening ability the extent of listening span for class I will be very less compared to a student of class IX

So, teachers have to carefully structure the class period and ensure that students effectively receive information and remember the information they learn.

ii) Speed(Time)

The classroom is a dynamic environment, bringing together students from different backgrounds with various abilities and personalities. Being an effective teacher therefore requires the
implementation of creative and innovative teaching strategies in order to meet students’ individual needs.

Some students understand quickly but some may require repeated practice. Some students absorb the given instructions at once but some may require more time. So by catering to the needs of the individual, the instructions may be given.

iii) Originality

Originality by definition means producing ideas and products that have not existed before, but we assess it in relative terms.

If a second grader has never been exposed to an idea before and comes up with it on her own, she is displaying originality. It often grows out of fluency and flexibility.

Learning involves challenging, refining and improving understanding by being made to think deeply. Sometimes, to understand new concepts and broaden perspectives, our approaches to thinking need to be creative, imaginative and lateral as well as linear.

iv) Quality:

Good teaching leads to effective learning. The proper use of any instructional method improves the quality of learning that happens in the classroom.

For the instructional methods to have the desired impact, teachers must participate willingly and competently in both their delivery and their assessment.
v) **Degree of support:**

In classrooms where teachers support autonomy, students improve their academic performance, are more creative and better adjusted, engage more in school, and feel less stressed.

It is important to note that students will be intrinsically motivated only for activities that they find interesting, novel, or challenging, but many school activities do not match these ideal conditions. Thus, it is important to know how to motivate students to comply with school activities without external pressures.

The more the autonomy the more will be the learning.

- **The knowledge of all dimensions of Learning Outcomes helps the teachers to design the lesson in proper form.**
- **The main focus in teaching should be on “how the child learns” than “how the teacher teaches”**.

VI) **Creativity and higher level analytical, problem solving and decision making ability.**

**TEACHING STYLES**

**Spiral Learning:**

Spiral learning introduces a concept, moves to a new concept, and circles back to the first concept. This spiraling back to ideas allows students to keep moving forward even if a concept is not mastered when it is introduced the first time. Concepts are revealed piece by piece, continually going deeper as the curriculum progresses.
**Integrated Learning:**

It contributes to a deeper understanding of topics and issues, and the interrelationships inherent in complex, real-world systems. Integrated learning enables more authentic assessment. Learning outcomes derived from field trips within the school neighborhood or beyond can easily include those associated with journal writing, drawing & photography, observing & recording.

**Experiential learning**

Experiential learning means learning from experience or learning by doing. The content must be intertwined with activities and hands on experiences. It aims at developing knowledge and skills through experience. It encourages developing new skills and new ways of thinking amongst students.

In experiential learning, students manage their own learning, rather than being told what to do and when to do it.
Surprise elements

Surprise is a must in teaching. It is even more important in testing. It must remain undisclosed to the students from whom the teacher is going to ask questions. It arouses curiosity amongst students. If the student knows that he/she is going to be asked questions by the teacher he/she will have an element of surprise and the student who knows that he/she is not going to be asked, will never have any element of surprise.

In the teaching & learning process, it is very important to have surprise elements. It integrates the creative, open and non-predictable characteristics of constructivist teaching and learning.

REPETITION WITH VARIETY

PISA aims at bringing about all the desired changes in the aspirants. Its main purpose is to prepare the aspirants for real life situations with due application of the knowledge acquired during the schooling period. Therefore, a great variety and variations are induced in the question pattern.

There needs to be a change in teaching style with variety in:

Size:
The size of a question is of great importance. In case of longer textual input the students tend to get confused and need to practice more with such textual inputs for better performance in PISA.

Rubrics:
The teachers have to adopt suitable tactics to make the students acquainted with rubrics of the questions, so that the element of surprise is minimized in PISA. A regular inclusion of questions based on PISA pattern during the SA as well as FA at all levels can be of much help.
**Linkages:**
The actual test of knowledge acquired during formative years of education can be done only through interdisciplinary application of it. The assessment in PISA is done to test this capability and the questions are framed by interlinking the subjects covering Reading, Mathematical and Scientific areas. Therefore, the subject teachers have to be cautious and include questions having interdisciplinary approach in the regular practice.

**With clues & without clues:**
Teaching must be based on support & autonomy. Depending on the concepts, sometimes clues can be given and sometimes it must be done without any clue. Students must be given an opportunity to try on their own.

**Oral, written, hands on:**
Depending on the context, teacher gives oral information, students understand and write. To get perfection, a hands on practice is required. The ultimate aim of education is to prepare the students for real life situations and not merely to pass certain formal examinations alone. Preparation of the students through all the sensory ways is needed.

---

**The bottom line**
Ensuring that all schools provide high-quality teaching and learning regardless of their geographical location can be challenging. In rural areas, geographical distance and small size pose difficulties for providing professional development opportunities for staff and a broad array of education offerings for students. At the same time, low student-teacher ratios open plenty of opportunities for rural schools to innovate. Innovative practices, such as staffing schools with teachers from the community, building professional learning networks across rural schools, or using new technologies for distance learning, combined with efforts to build local capacity and resources, provide promising avenues for closing rural-urban gaps in education.

Courtesy: [www.oecd-ilibrary.org](http://www.oecd-ilibrary.org) (Does attending a rural school make a difference in how and what you learn?)
CHANGE IN ASSESSMENT

Students learn best when students and teachers share a clear understanding of the desired learning outcome.

Teachers use a variety of tools to build this understanding before learning. They may bring in exemplars, such as samples of student work from previous years, and discuss which examples show skill mastery and what may be the missing elements.

With this shared understanding, students are better able to set learning goals, plan their learning strategies, and monitor their own work. In assessment there needs to be a balance in all the domains viz., Knowledge/Understanding/Application/skill.

Similarly the assessment must be both formal and summative, based on difficulty level, content & creativity.

We must provide students the opportunities to think out of the box and develop creativity to demonstrate higher order thinking in the assessment.

Creativity is defined as the tendency to generate or recognize ideas, alternatives, or possibilities that may be useful in solving problems, communicating with others, and entertaining ourselves and others.
Preparing for PISA

- We need to prepare our students for PISA 2021
- Students must know about PISA. Awareness in this connection must be spread among the students.
- Learning outcomes must be designed so that they cater to PISA type testing
- Teachers must be trained towards the PISA approach.
- In the time table changes must be made to include some periods for PISA type orientation
➢ Week wise and month wise worksheets can be designed to orient students towards PISA
➢ Practice can be given to students on PISA based test items.
➢ Students can also be given opportunities to prepare PISA type test items.
➢ Regular feedback, follow up & plan of action should be ensured at all levels and proper assessment may be attempted at regular intervals.

**Assessment-taking Strategies**

**Some strategies for students to consider:**

- Always read the information for each task carefully.
- Reread each task question and any accompanying text before attempting to answer.
- Give each question a try, even when you’re not sure. Remember partial value is given for partially correct answers.
- Interpretive, reflective, and evaluative questions are questions that begin with Why ... ? Why do you think.. ?

- For better conceptual clarity it must be ensured that the available resources viz., MathLab, Science Labs, Language Lab, Resource room and Computer Labs are utilized at optimum level.

- To monitor the work PISA cells at HQ & ROs may be established
• A group of PISA mentors can be formed at KVS (HQ) level and also a group of PISA volunteers can be formed among teachers and students at RO, Cluster & School level

• A liaising system can be developed among KVS, NVS, CBSE & Govt of UT Chandigarh for sharing resources and methodologies for PISA

• Websites and Portals on PISA by MHRD/CBSE/OECD should be used extensively.

OECD:
https://www.oecd.org/pisa/

THE PISA RESULTS

Scorers look at the PISA tests and use a detailed scoring guide to give no credit, partial credit or full credit for each answer. The results obtained in this way are analyzed to provide many interesting insights. In addition to the performance of students in different countries, results are also analyzed with regard to other factors such as gender, socio-economic background and differences between schools. In this way, PISA has produced an unprecedented comparative knowledge base of school systems and their outcomes, and allows these outcomes to be monitored over time.
Kendriya Vidyalaya Sangathan has started a Project Back to Basics in 2017 with an aim to improve the educational standards and educational quality in the elementary level in all Kendriya Vidyalayas.

The basic feature of this Project is to ensure learning outcomes prescribed by NCERT through bringing fundamental changes in the teaching learning process.

NCERT has devised learning indicators and learning outcomes in all the subjects from class I to class VIII. It has been found that there is a need to change the course of learning in schools in order to meet the global standards.

Kendriya Vidyalaya Sangathan, on taking a note of certain discrepancies in the process of learning in schools such as inability of students to read with speed and fluency; errors made in spellings and grammar; lack of skills of quick and accurate mathematical operations; poor understanding of concepts; lesser problem solving ability and reasoning capacity, has started the Project Back To Basics to focus on the core concepts in each subject.

**OBJECTIVES**

- To ensure mastery over competencies of all the students from class I to VIII and sustained learning
- To further define and quantify “Learning Indicators & Learning Outcomes” prepared by NCERT
- To empower learners to meet the global standards
- To prepare the students to take part in international assessment like Programme for International Assessment (PISA).
SALIENT FEATURES

- Emphasis on Practice by students rather than simply teaching by teachers
- An attempt to bring back attention on core competencies
- Promotion of silent reading
- Ensuring speed and accuracy in comprehension
- Correcting spelling and grammatical errors
- Mastery in basic concepts in learning mathematics
- Encourage self-study and writing practice
- Acquiring core competencies in linguistic skills e.g. editing, summarizing, abstraction, debating and arguing etc. Computation and conceptual clarity, reference skills, reinforcement of previous learning and integration of values.
- Promotion of experimentation, skills of analysis, communication, comparison, estimation etc.
FOCUS AREAS:

- Strengthening the mechanisms of Planning, Delivery and Feedback of Classroom Teaching
- Emphasis on practice rather than on teaching
- Ensuring the Learning Outcomes prescribed by NCERT and making all the stakeholders aware of them
- Crossing the boundaries of Text Books
- Encouraging originality in students
- Discouraging copying in home assignments
- Due weightage to linguistic abilities like reading, writing, listening, speaking, thinking etc.
- Right use of Mnemonics
- Integration among different subjects and activities
- Empowering students to apply the mathematical, scientific skill and knowledge in real life situations
- Empowering teachers through continuous training
- Monitoring the Learning Outcomes at every level.
- Encouraging proactive learning
- Developing concentration ability among students

NCF 2005 - envisages an education which is contemporary, is possible and accessible to every child from every walk of life through a curriculum in which the learner is the key player in the learning process and identifies cognitively, personally, socially, emotionally and culturally, by which the learner learns and develops life skills for a productive life and not just to pass exams by rote. It recommends learning without burden.
CHANGES IN TEACHING AND LEARNING PROCESS:

• **Self-learning:**
  Teacher will inspire/encourage students to learn by themselves

• **Integration:**
  Teacher will give time for reinforcement, integration with previous chapters.

• **Spiral Learning:**
  Teachers facilitate spiral learning, where first the basic facts of a subject are learned, without worrying about details. Then as learning progresses, more and more details are introduced, while at the same time they are related to the basics which are re-emphasized many times to help them enter into long term memory.

• **Practice:**
  Teacher will engage the students in learning and practice through home assignments

• **Use of Multiple Tools:**
  While teaching, the teachers make multiple use of Audio-Visual Aids, ICT, Learning Materials, Activities, Discussions, Question & Answer technique etc., to provide variety of experiences for learning.

• **Inclusiveness:**
  Involvement of all students rather than focusing on a few bright ones.

• **Integration with Visual & Performing Arts:**
  Co-scholastic skills such as visual and performing arts, work experience etc. are extensively used for strengthening the scholastic skills.

• **Monitoring:**
  The students’ learning is constantly monitored by teaching through various activities to ensure learning outcomes.
• **Awareness:** Teachers make every student and parent aware of the learning outcomes
• **Opportunities:** Students will be given enormous opportunities in learning so that they can overcome their weaknesses/mistakes

**MONITORING**

The project *Back To Basics* has been monitored at various levels.

• Teachers will monitor the learning outcomes of their students in the classroom. A Teacher’s Lesson Plan proforma has been designed not only to plan a lesson but also monitoring the students whether they have achieved learning outcomes or not.
• Head Master and Vice-Principal will visit the classes and observe the teaching and learning process in the classes. They will also monitor the performance of teachers and students continuously.
• Principal and Officers from Regional Offices will also monitor the performance of teachers and students. The students’ learning outcome will be tested through random sample method.

**REPORTING**

**By The Teacher**

The teacher is to report chapter /Unit /lesson in terms of ELOs for each class that (s) he is assigned. The teacher also reports month wise an average of the whole class on the learning achievement for the subject taught.

For eg- A teacher has to teach anywhere between 3-5 chapters. Each lesson may have varying complexity of ELOs, some may have very difficult ELOs and
some fairly simple. The levels of achievement will vary from lesson to lesson. Therefore a monthly average is required.

A clear statement on the strategies used to register this achievement level is to be declared. Future target in terms of quantity (%), quality and strategies will have to be adhered to.

**By the VP /HM**

VPs/HMs will verify the teacher’s lesson plan in terms of ELOs, average learning achievement and review of strategies and set monthly targets for the teacher. A report will be submitted to the Principal.

- The Principal will prepare and maintain a report with names of the teachers for scrutiny by the RO
- ROs to prepare school wise Achievement profile, class wise and subject wise
- The learning Progression for each child is to be prepared for reporting to the Parents in Parent – Teacher Meeting, at the end of the term, with evidences, showing the progress of the child through monitoring.
SLATE

Students’ Learning Achievement and Teachers’ Effectiveness (SLATE) will be conducted at three levels to assess the learning outcomes of students and teachers’ performance at three levels viz. School Level, Regional Level and National Level.

OBJECTIVES

- To check the level of learning attainment of students
- To adopt diagnostic approach
- To adopt remedial measures
- To strengthen the learning abilities

a. School level for classes I& VIII
b. Regional Level for II, IV & VII and
c. National Level for classes III, V & VIII
d. SLATE COVERS CLASSES I TO VIII IN THE FOLLOWING SUBJECTS:
   - Classes I to III – English and Mathematics
   - Classes IV & V – English, Hindi, Mathematics and Environmental Studies
e. For Classes
   - I-II the subject areas are languages and numeracy
   - III-V the subject areas are languages, numeracy and conceptual clarity (Environmental Studies)
   - VI – VIII the subject areas are languages, numeracy and conceptual clarity (Science & Social Science)
CONSTRUCTION OF ITEMS

SLATE items have been constructed by an independent agency which actually tests the learning outcomes of students in different subjects in different classes.

25% of items were constructed for the level of below average
50% of items were constructed for the level of average and
25% were constructed for the level of above average.

National Level SLATE was conducted on 11 September, 2018 in all KendriyaVidyalayas across the country through pen and paper test.

A total of more than 3 lakh students participated in SLATE and 10,17,598 samples were collected.
The analysis of SLATE was also done by an independent agency.

“When we teach, we have observed that loopholes exist in the students’ understanding of the curriculum, but competency needs to correspond to the standard the child is in. It is necessary to make sure that learning doesn’t take place in isolation, but is progressive. The problem areas will be addressed by the teachers as part of a back to basics programme”.
Sh. U. N. Khaware, ADC (Acad.)
SLATE ANALYSIS

CLASS WISE AVERAGE SCORE

AVERAGE PERFORMANCE BY CLASS

< 35%  36% to 50%  51% to 70%  > 70%

SUBJECT WISE AVERAGE SCORE

SUBJECT WISE AVG SCORE

<3 5%  36% to 50%  51% to 70%  > 70%
MATHEMATICS

Best Performing Region -- Maths
Descending -- all scores >35%

ENGLISH

Top Performing Regions - ENGLISH
Descending...all scores >35%
Top performing regions in Environmental Science
Descending... all scores > 35%

Top performing regions in science
descending...all scores >35%
ANALYSIS OF SLATE- September 2018 KVS (HQ)

- According to Back to Basics, the question papers were made relating to the child’s day to day life situations.
- In all the subjects it was observed that very few students could score above 70% in all regions.
- Overall, ERNAKULAM region came out to be the best performing region while Bhopal stood at the lowest.
- Average performance of classes was seen decreasing from class III to class VIII.
- During analysis, Science came out to be the weakest area among upper primary section.
- This SLATE exam shows the lack of comprehension in children, due to which they failed to answer the questions correctly.
- Most of the children fall under L1 and L2 combined and very few could come up to L3 category.
- Students falling under L1(-) and L1 categories are under great risk and it is an alarming situation for students as well as teachers.
- When students are promoted to the next grade, they must have the exit level of the previous grade. SLATE helped in knowing the number of students falling below the exit level. It succeeded in fulfilling its real purpose i.e. Students’ Learning And Teachers’ Effectiveness.

What are the goals of the PISA for Schools project?

Empower school leaders and teachers by providing them with evidence-based analysis of their students’ performance. Measure students’ knowledge, skills and competencies that will equip them for success in education and the world of work. Provide valuable information on the learning climate within a school, students’ socio economic background and motivation for learning. Help schools measure a wider range of 21st century skills beyond math, reading and science. Provide opportunities for global peer-learning among teachers and school leaders.
We need to refocus our attention on developing the basic concepts and abilities of our children - for eg., in languages, our students should be taught the basic skills of reading, spelling, pronunciation, vocabulary, speaking, writing, referencing, handwriting etc. On the plea of having very little time for completing syllabus, teachers abuse the text by giving it a mere reading, the text is just a take-off or a spring board for exploring it creatively in a variety of contexts and activities. On the contrary it is wrongly used.

In mathematics, they should know concepts, mental mathematics, problem solving, operations, formulae etc.

In science they should have conceptual clarity, practical ability of recording, narrating and describing, understanding of scientific terms, developing a scientific temper and the ability to appreciate elements of nature in a scientific way among others.

In social science too, conceptual clarity, referencing skills, reading a map, skill of deduction, sense of social responsibility and even communication should be taught.

Co-scholastic activities like art and craft, games, music, dance, drama and debate, which are an integral part of a child’s school life should be used in a much more productive way than just whiling away the time. Teachers can exploit the possibility of integrating the concepts from textual material with the co-scholastic activities, so that learning becomes fun and not a burden which is orchestrated only by teacher dominance.

Now, it is the time to go Back to the Basics and learning the core concepts, competencies and skills that ought to be the integral part of our children’s lives and help them become independent learners, creators, leaders and thinking individuals of tomorrow. The activity sheets included in the material are prepared
incorporating the basic concepts, competencies, skills or learning objectives identifiable in a lesson, a sample of wide ranging activities that can be used in the classroom to achieve a few of the identified learning objectives have been included along with suggestions for other activities. Tools and techniques for assessment of learning have also been prepared for use of teachers and to ensure that the project is implemented in letter and spirit. A monitoring tool for use of Head Masters, Principals and Inspecting officers has also been developed.

Back to Basics material is not meant to be used in place of the text book; it is in addition to the textual material already being used by teachers and to enhance its value by incorporating the Learning Indicators circulated by NCERT in 2014. Teachers should make use of the material and activity sheets for planning their lessons and activities in such a way that the learning indicators, learning objectives, pedagogical processes and assessment tools are in consonance with the expectations of their learners and all other stakeholders.
TRAINING SCHEDULE

KVS along with NVS and The Union Territory Chandigarh will take part in PISA 2021.

It is, therefore, imperative on our part to acquaint teachers and Principals with modalities and criteria, which will help students to sustain creativity and handle the applications as these are the hallmarks of PISA. The approach of B2B creates a suitable platform which aims to master abilities rather than content, value the process rather than product and encourage creativity rather than memorization.

Five workshops of two days each were conducted in Mumbai, Bhopal, Lucknow, Kolkata and Dehradun in April 2019 with the objective of preparing the ground for PISA 2021. 652 participants (viz. ACs, Principals, PGTs, TGTs & HMs from all regions) were sensitized towards PISA & the KVS flagship programme of Back to Basics.

1. Group 1 at Mumbai–01&02April 2019
2. Group 2 at Bhopal – 05& 06April 2019
3. Group 3 at Lucknow–08&09April 2019
4. Group 4 at Kolkata – 22& 23April 2019
5. Group 5 at Dehradun- 29& 30April 2019

<table>
<thead>
<tr>
<th>Group</th>
<th>Regions</th>
<th>No. Clusters</th>
<th>No. of participants per cluster</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Venue: Mumbai</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bengaluru</td>
<td>7</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Chennai</td>
<td>7</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Ernakulam</td>
<td>5</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Mumbai</td>
<td>8</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Hyderabad</td>
<td>8</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>ZIET Mumbai</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>ZIET Mysore</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>148</strong></td>
</tr>
<tr>
<td></td>
<td>Venue: Bhopal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Venue: Lucknow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Venue: Kolkata</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Venue: Dehradun</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AGENDA

1. Presentation of SLATE - Analysis pertaining to the Region concerned
2. Knowing the gaps between SLATE and Teaching – Learning outcomes
3. Analysis of Regional efforts in B2B
4. Spiral learning
5. Integrated Learning
6. B2B- tools and techniques
7. Planning, Execution, Monitoring & Follow up
8. Open Session
9. Road Map for PISA 2021
10. Preparation of PISA like test items

Schedule for Back 2 Basics - Master Trainer Programme - April 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.00 AM – 09.30 AM</td>
<td>Registration</td>
</tr>
<tr>
<td>09.30 AM – 11.00 AM</td>
<td>SLATE Analysis pertaining to the Region - concerned AC</td>
</tr>
<tr>
<td>11.00 AM - 11.15 AM</td>
<td>Tea</td>
</tr>
<tr>
<td>11.15 AM – 12.15 PM</td>
<td>Gaps between SLATE and Teaching-Learning outcomes - Concerned AC</td>
</tr>
<tr>
<td>12.15 PM – 01.30 PM</td>
<td>Over view of PISA – JC(Acad)</td>
</tr>
<tr>
<td>01.30 PM – 02.30 PM</td>
<td>Lunch</td>
</tr>
<tr>
<td>02.30 PM – 04.00 PM</td>
<td>Group work on</td>
</tr>
<tr>
<td></td>
<td>(i) Analysis of Regional efforts in Back 2 Basics,</td>
</tr>
<tr>
<td></td>
<td>(ii) Planning, Execution, Monitoring and follow-up</td>
</tr>
<tr>
<td></td>
<td>(iii) Back 2 Basics - Roadmap for 2019-2020</td>
</tr>
<tr>
<td>04.00 PM – 04.15 PM</td>
<td>Tea</td>
</tr>
<tr>
<td>04.15 PM - 6.30 PM</td>
<td>Presentation by Groups</td>
</tr>
</tbody>
</table>
# Day 2

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.00AM – 10.30AM</td>
<td>Spiral Learning - ADC(Acad)</td>
</tr>
<tr>
<td>10.30AM – 10.45AM</td>
<td>Tea</td>
</tr>
<tr>
<td>10.45AM – 12.00Noon</td>
<td>Integration of Learning – ADC(Acad)</td>
</tr>
<tr>
<td>12.00 Noon -01.30PM</td>
<td>Open Session</td>
</tr>
<tr>
<td>01.30PM – 02.30PM</td>
<td>Lunch</td>
</tr>
<tr>
<td>02.30PM – 04.00PM</td>
<td><strong>Back 2 Basics - Tools and Techniques</strong></td>
</tr>
<tr>
<td></td>
<td>(iv) Lesson Planning –ADC(Acad)</td>
</tr>
<tr>
<td></td>
<td>(v) Target Learning outcomes - (AEO)</td>
</tr>
<tr>
<td></td>
<td>(vi) Vidyalaya plan/ Supervision - JC(Acad/Trg.)</td>
</tr>
<tr>
<td></td>
<td>(vii) Monitoring tools - (AC/DC)</td>
</tr>
<tr>
<td>04.00PM – 04.15PM</td>
<td>Tea</td>
</tr>
<tr>
<td>04.15PM- 06.00P.M.</td>
<td>• Summing up</td>
</tr>
<tr>
<td></td>
<td>• Takeaways (AC/Principal/AEO/PRT/TGT/HM/ZIET Faculty)</td>
</tr>
<tr>
<td></td>
<td>• Valedictory function</td>
</tr>
</tbody>
</table>

*B2B – BHOPAL*
The following officers from KVS (HQ) attended the programmes.

<table>
<thead>
<tr>
<th>SN</th>
<th>Date</th>
<th>Venue</th>
<th>Officers attended</th>
</tr>
</thead>
</table>
| 1  | 1-2 April 2019  | Mumbai    | 1. Sh. U.N.Khaware, ADC(Acad.)  
2. Sh. S.Vijaya Kumar, JC (Acad.)  
3. Dr. P. Deva Kumar, DC(Acad.)  
4. Smt. Rashmi Dhiman (AEO)  
5. Sh. E. V.Ramana (AEO) |
| 2  | 5-6 April 2019  | Bhopal    | 1. Sh. U.N.Khaware, ADC(Acad.)  
2. Sh. S.Vijaya Kumar, JC (Acad.)  
3. Sh. P.K. Koul, DC(Acad.)  
4. Sh. E. V.Ramana (AEO)  
5. Ms. Chhavi Gupta PRT |
| 3  | 8-9 April 2019  | Lucknow   | 1. Sh. U.N.Khaware, ADC(Acad.)  
2. Sh. D.K. Dwivedi, AC(Vig.)  
3. Sh. R.K. Sharma (AEO)  
4. Sh. E. V.Ramana (AEO) |
| 4  | 22-23 April 2019| Kolkata   | 1. Sh. U.N.Khaware, ADC(Acad.)  
2. Sh. S.Vijaya Kumar, JC (Acad.)  
3. Sh. Mukesh Sharma (AEO)  
4. Sh. E. V.Ramana (AEO) |
| 5  | 29-30 April 2019| Dehradun  | 1. Sh. U.N.Khaware, ADC(Acad.)  
2. Sh. Tajuddin Shaik, AC (Acad.)  
3. Sh. S.K. Chauhan (AEO)  
4. Sh. E. V.Ramana (AEO) |
GLIMSES OF ‘B2B TO PISA’ TRAINING WORKSHOPS

B2B BHOPAL

B2B KOLKATA

B2B DEHRADUN

B2B LUCKNOW

B2B MUMBAI
CHANGES REQUIRED IN TEACHING LEARNING PROCESS

TEACHING
In Education, teaching is the concerted sharing of knowledge and experience which is usually organized within a discipline and more generally the provision of stimulus to the psychological and intellectual growth of a person by another person or artifact. Teaching is the work that a teacher does in helping students to learn.

LEARNING
Learning is the activity of getting knowledge, getting an understanding of something by studying it or by experience. (Cambridge dictionary). Knowledge and learning are essential factors for achieving successful outcomes. Continuous learning and acquiring new skills are pivotal for sustaining achievement.

PRESENT SCENARIO
Today’s education has become more task oriented and more focused on direction less and meaning less completion of syllabus. We don’t want our children to grow up knowing a lot of information and facts without any purpose or wisdom. Neither do we want our children to participate in a lot of uninteresting classroom activities which are of no use. The theory that education is for examination is slowly swallowing the objective that education is for man-making and character building.

By education, I mean an all-round drawing of the best in child and man in body, mind and spirit
NEED OF THE HOUR

Education is going through a remarkable transformation and though we have made efforts to address the challenges of present age it is evident that a lot still needs to be done. Though we have been going through the process of implementing the latest theories, technology and techniques of education on the child yet we have been doing him a disservice by not teaching the basic competencies and concepts that are the basic building blocks of all education.

The learning outcomes are not being achieved by the students and with the backlog they are further promoted to higher level. How can a child be able to understand the higher things if he is not able to understand the basic concepts and their implications in life? It is a crucial matter to be addressed.

It is high time to address the change required in teaching learning process. We should modify our old teaching methodology.

SPIRAL LEARNING

Spiral learning is a teaching method based on the premise that a student learns more about a subject each time the topic is reviewed or encountered.

The idea is that each time a student encounters the topic he expands his knowledge or improves his skill level. Spiraling leads to better long term mastery
of facts, skills and concepts. Spiraling is effective with all types of learners including struggling learners. Spiral learning is a relatively new concept in education. Rather than trying to master a subject all at once, spiral learning teaches a concept gradually and repeatedly, reinforcing concepts over time. The idea is that each time a student encounters the topic; he expands his knowledge or improves his skill level. It is a very natural process.

**How is spiral learning a natural process?**

Think about how you taught your baby. Did you bring him into the kitchen and said, “We are going to sit here until you learn all the utensils—spoon, cup, fork, table and so on.” I imagine you did not do this and rather, taught him through the process of active participation. ‘Here is your cup. What is in your cup? Ooh, yes you have juice in the cup. Would you like a spoon to put into your cup? And so on...” By revisiting the information, you are strengthening the child’s knowledge of it and preparing him for future tests or exams.

![Image of Learning Styles](http://ilslearningcorner.com)
INTEGRATED TEACHING LEARNING

The term integration in education means coordination in the teaching learning activities to ensure harmonious functioning of the education process.

An integrated approach allows students to engage in purposeful, relevant learning. Rather than focusing on learning in isolated curriculum areas. An integrated programme is based on skill development around a particular theme that is relevant to the children in the class.

TYPE OF INTEGRATION

- Between subjects
- Within Subjects
- Beyond Subjects
  - Multi-Disciplinary
  - Inter Disciplinary
  - Intra disciplinary
  - Trans disciplinary

EXPERIENTIAL LEARNING

Traditional teaching styles are becoming less and less effective in reaching today’s students. Student boredom is a deterrent to learning, and higher education has been criticized for not sufficiently challenging students.

Research confirms that students learn most effectively from active engagement with information and ideas. Students learn better when they take the initiative to apply concepts to practice, to solve real problems, to make decisions, and to reflect on the consequences.
Conventional pedagogy views experiential learning as taking place primarily outside the classroom. However, experiential learning works very well inside the classroom. It enables faculty members to pose problems, observe how students go about solving them, facilitate learning, observe learning as it occurs, and helps students make meaning of their experiences. In this way, faculty members can address errors and misunderstandings during the learning process, rather than after they have occurred in homework assignments.

Experiential learning inside the classroom works very well in large classes and for students who have work and family responsibilities in addition to their classes. Simply put, experiential learning is the intentional combination of experience and learning so that each enhances the other. It is an excellent pedagogy for developing skills as well as knowledge, encouraging deep understanding of learning complex concepts, applying theory to practice, and preparing students to be critically reflective professionals.

The concept of experiential learning was first explored by John Dewey and Jean Piaget, among others. It was made popular by education theorist David A. Kolb, who, along with Ron Fry, developed the experiential learning theory, which is based on the idea that learning is a process whereby knowledge is created through transformation of experience. It is based on four main elements which operate in a continuous cycle during the learning experience: 1. Concrete experience 2. Reflective Observation 3. Abstract conceptualization 4. Active experimentation.

Courtesy:https://study.com
PREPARING STUDENTS TO DEAL IN REAL LIFE SITUATION

With the help of spiral model, integrated and experiential learning we can prepare our students to face real life situations by applying their wisdom. The lessons taught by teachers should move forward in the following direction –

Content (Knowledge) → Understanding → Skill (Practice) → Competency

Application in real life Situation

And the learning outcomes can be achieved through continuous practice.

Results/Outcomes

The changes and practices discussed above will inculcate the following values in children:

- Critical thinking
- Problem solving
- Creative thinking
- Decision making
PISA QUESTIONS

A student needs to be prepared to tackle questions in a different manner in order to improve the score in PISA.

There are three main domains to be assessed in the student, namely:
- Reading Competence.
- Mathematical Competence.
- Scientific Competence.

The Question Paper to be administered for this assessment would have unique features and it is necessary to familiarize the students taking PISA.

Students preparing in the traditional manner as they do for the present content based evaluation system would not be able to do well in PISA. The type of test questions would not be content oriented. Therefore the preparation should also be in accordance to it. The focus of the test items is to be shifted from content oriented to application oriented.

DIFFERENCE BETWEEN PISA QUESTIONS AND ORDINARY QUESTIONS:

SALIENT FEATURES

1. QUESTIONS ARE OFTEN LENGTHY

As the test is meant to assess various aspects of understanding, therefore the length of the questions is more than the questions usually included in other tests.

The questions include many such details that tend to distract the aspirant from extracting the main point out of the text. This feature tests the ability of the student to filter the information required.

Large in the size of information/input it also assesses the ability of reading and comprehension at the same time.
2. **INTEGRATED QUESTIONS**

The questions in PISA would be designed keeping in view the integration of all the three domains viz. Reading, Mathematics and Science.

The questions of reading assessment may also have aspects of mathematics as well as that of science, so as to test the aspirant holistically.

Likewise the questions in Mathematics may include the testing items of scientific aptitude as well as that of reading competence.

3. **INCLUSION OF DATA INTERPRETATION**

Another feature of the questions incorporated in the test is inclusion of data interpretation ability. In the usual course our students are provided data and on the basis of inputs, they are required to draft a map, chart or a table.

Whereas in PISA format stress/emphasis is laid on assessing the ability to read such map, chart or table and draw inferences on their basis.

Beyond that the aspirant would also be required to analyze the input data and interpret it in order to attempt the questions successfully.

4. **OPEN ENDED QUESTIONS**

The main objective of organizing this test/Assessment is to prepare the students to apply their acquired knowledge in real life situations. A fairly qualified student is found unable to calculate the area of a room and estimated expenditure incurred on getting it distempered in real life.

The aim of education is seen to have defeated when a student is not able/fails to read a chart or train time table as per his need.

The questions where a fixed/determined outcome is visible can be attempted easily in comparison to open ended questions. The data input
might be about one item and the question based on its inferences. It increases the difficulty level but helps a lot in making inferences in real life situations.

5. **SURPRISE ELEMENT**

As described by educational psychologists, we read a text and understand its meaning/interpret its information under a determined mental setup. This mental setup is determined by either the title of the text or the information input within the first few lines of the textual input. This mental set up discourages us to grasp or notice other information provided in the input.

In order to develop a habit/practice of grasping each and every minutest detail and to have clear, un-obstructive information, this aspect is included as a special feature of the questions.

The text of the question would be so devised that till the end one would not be able to realize which part of the question text would be required to formulate the correct response. Thereby, the practice develops a habit in the aspirant to grasp every detail provided directly as well as indirectly in the text of the question. The aspirant would be prepared to undertake any surprise about to come till the last line, in the questions to follow.

6. **USE OF DISTRACTING LANGUAGE**

The unusual language and sentence form may sometimes distract the aspirants and hamper their understanding as well as enhance the difficulty level.

Likewise, a higher level of understanding is aimed to be achieved through providing details of such things or events in textual input for the questions that increases the level of distraction but as a result develops their ability to filter the actual information required out of the lot.
7. **OUT OF BOX THINKING**

The ability of thinking helps one in real life situations and makes one stand out in the common/ordinary group. This test includes the development of ability to think and conclude out of the box in such situations, where an ordinary thinking fails to find a solution.

The questions in all the three sections have this feature that an aspirant is bound to find solutions by thinking on a deviated line rather than the ordinary way of thinking.

The solution of the questions could be very simple but the twisted/tricky language may obscure the solution unless a different approach is taken to arrive at the appropriate solution.

**SUGGESTIONS TO THE STUDENTS:**

- Always read the information for each task carefully.
- Reread each task question and any accompanying text before attempting an answer.
- Give each question a try, even when you’re not sure.
- Remember, partial value is given for partially correct answers.
- Interpretive, reflective, and evaluative questions are those that begin with Why?, Why do you think ...?, How do you know ...?
  One- or two-word answers are insufficient. Reasons, usually with reference to the task, are required. Often the word “because” is used in the response.
Develop a methodical process of elimination of the alternatives in multiple-choice questions. When the list is narrowed to the best possible answers, choose one.

There is no penalty for wrong choices.

INSTRUCTIONS TO BE GIVEN TO THE STUDENTS:

- Students will be expected to select, read, and view with understanding a range of literature, information, media, and visual texts.

- Seek meaning in reading, using a variety of strategies such as cueing systems, utilizing prior knowledge, analyzing, inferring, predicting, synthesizing and evaluating.

- Students will be expected to interpret, select, and combine information, using a variety of strategies, resources, and technologies.

- Select appropriate information to meet the requirements of a learning task.

- Students will be expected to respond personally to a range of texts.

- Respond to the texts they are reading and viewing by questioning connecting, evaluating, and extending.

- Students will be expected to respond critically to a range of texts, applying their understanding of language, form, and genre.

- Make inferences, draw conclusions, and make supported responses to content, form, and structure.
HOW TO PREPARE TEACHERS FOR PISA

Teacher is the most important resource in schools. Being taught by the best teachers can make a real difference in the learning outcomes and life.

The quality of an education system depends on the quality of its teachers. If a teacher improves himself, his students will also improve. To improve as a teacher one should focus firstly on the planning part.

Systematic planning will lead to attainment of our objective. An effectively planned lesson can help the teacher to execute it in the desired way. So it is very important for teachers to know how to prepare their students for PISA?

KNOWING PISA

PISA is a collaborative effort on the part of the member countries of the OECD (Organization for Economic Cooperation and development) to measure how well 15 year olds are prepared to meet the challenges of today’s knowledgeable societies.

PLANNING FOR PISA

It is important for teachers to have skills for preparing students for PISA testing, because it is not only about one test; it is about a variety of skills that students have to develop in order to be successful in the world of tomorrow.

Teachers have to be equipped with alternative methods that will help them educate students with the emphasis on developing critical thinking skills.

Students have to learn how to operate in the complex world with problem – based approach. Teachers should learn how to increase students' mathematical, reading and scientific literacy.
GRADUATING FROM LEARNING OUTCOME BASED STAGE TO PISA

Teachers must know that the end of learning outcome is start of PISA. They must

- Integrate subject content & PISA
- Convert textual content with PISA style questions

KNOWING THE PATTERN OF QUESTIONS OF PISA

The OECD released a selection of sample test items from the assessment in an interactive, online format. The sample test items include questions at each proficiency level for each testing domain (reading, mathematics and science).

This document contains the items used to populate the sample test items’ website, which allows users to answer this PISA-based Test for Schools questions, discover their level of difficulty, and the concepts being tested.

SOURCE OF SAMPLE QUESTION PAPERS

Use of website / portal on PISA (MHRD/CBSE/OECD)
https://www.oecd.org/pisa/
https://mhrd.gov.in/

PREPARING LESSON PLAN

The most important aspect of PISA is to clarify the concept of undergoing the assessment and its implications on the real life situation of the assessed. So, the planning of a lesson plan should be accordingly.

PISA assessment requires fast reading and comprehension, to answer questions in a given timeframe and the ability to scan these texts. To answer the right questions on time is a challenge for learners.
Our lesson plan should be

- From linear to spiral learning
- From content to context
- From context to real life situation
- From easy to difficult (in the following areas)
  1. Size / Scale – Increasing order
  2. Speed – Increasing order
  3. Level of difficulty - Increasing order
  4. Support - gradually decreasing order (Withdrawal of support)
  5. Surprise element - Increasing order
  6. Practice on Integration - Increasing order

Our lesson should develop from:

Knowing → Understanding → Practice (skill) → doing → applying / Experiential learning (with gradual increase in the difficulty level)

ASSESSMENT

A lesson plan is incomplete without proper planning of assessment of students’ learning.

In education, the term assessment refers to the wide variety of methods or tools that educators use to evaluate measure and document the academic readiness, learning progress, skill acquisition and educational needs of students.

In relation to PISA the Summative Assessment (Half yearly and Session Ending Exam) should be balanced in weightage on knowledge / understanding / Application skill / difficulty level / content based and creativity based.
It should be prepared keeping in mind the following ratio:-

25% Questions–Straight & Direct from textbook (Remembering)
25% Questions –Understanding based
    (From text book but with changed reference)
25% Questions– Learning outcome based (Application)
25% Questions– PISA type

Gradually this percentage will increase in the area of questions – Learning outcome based (Application)&PISA type questions .

Gradually this percentage will decrease in the area of questions – Straight & Direct from textbook (Remembering), questions – Understanding based (From text book but with changed reference)

In other words higher level questions of Blooms Taxonomy will increase and lower level will be reduced to minimum.

Not only in summative assessment, but teacher should also focus on diagnostic and formative assessment.

Formative assessment methods have been important for raising overall levels of student achievement. For this a Time Table should be made - day wise, week wise and month wise.

Practice should be given in attempting PISA test Items and also on making PISA type questions.

Formative assessment builds students’ “learning to learn” skills by:

- Placing emphasis on the process of teaching and learning, and actively involving students in that process.
- Building students’ skills for peer - and self-assessment.
- Helping students understand their own learning, and developing appropriate strategies for “learning to learn”.

Assessment should be on a regular basis so that a teacher is able to know how much the students have learned and what is the present level and where they are expected to go and should plan further to teach the next level. Exposure can be given by giving

- Comprehension Exercises
- Open – Ended Questions
- Multiple – Choice Questions
- Group Discussions
- Debates
- Creation of individual learning pathway for the learners
- Problem – Solving Activities
- Project – Solving Activities
- Lateral Thinking;
- Questioning
- Questionnaires

**HOW TO GUIDE STUDENTS**

Teachers must guide Students about the questionnaire, how to answer questions and about the marking scheme. In short teachers must have the knowledge of

- The New approach to the Teaching learning process
- Alternative methods that will help them to educate students with the emphasis on developing critical thinking skills.
- How to prepare higher level questions of Blooms Taxonomy
- Features of(PISA) Questionnaire
COLLABORATION

The picture mentioned here is to be seen in reference to the parameters, dimensions & approaches that the mentioned group is expected to have.

For example, the students are depicted in a hexagon representing their limited dimensions as far as life experiences are concerned. Whereas the teachers, parents / guardians & society are depicted in the shape of a circle to represent their expected wide experience in life, being more in age. With one experience equal to one side, so numerous experiences converting a polygon (as represented for students) to a circle.
COLLABORATION:

Any skill/knowledge/behaviour cannot be learned/modified/refined in isolation. When life/concepts have no separate existence, then how can learning a particular subject/concept/skill be a separate entity?

So collaboration & integration of different factors, knowledge, concepts is the basic rule for understanding and enhancing learning.

Child/student whom we want to learn and develop a skill, exists in a living system of –

- Blood relations
  - Subject teacher
  - Teachers of other subject
  - Arts/Games/Yoga
- Teacher
  - Teachers of other subject
  - Arts/Games/Yoga
  - Same class /Different class
- Peers
  - Same class /Different class
- Friend circle
  - (Within / outside school)
- Setups
  - Social
    - School

Then all of these must come into play and be responsible for the learning experience.

Collaboration – Support System

1. Blood Relation
   - Parents
   - Relative
     - Educationist
     - Farmer
     - Skilled Workers
     - Others
2) Teacher:

- **Subject teacher** – Main responsibility, Guiding force
- **Teachers of other subjects** – Depends on the contributing factors on the concept, to provide expertise & support as per demand of the subject teacher.
- **Misc. teachers**
  - Physical Education/Yoga
  - Fine Art & Craft
  - Music
  - WET
- **Content expert** – External Support (as & when required)

3) Peer:

- Students to be a support to each other
- Students on better side to extend help (Joint effort/individually)
- Student from other sections
- Inter mixing the sections for a particular concept
- Senior students coming as support

4) **Friend circle:**
   i) Intra / Inter class groups- spontaneous, powerful and hence more effective
   ii) Friend circle within school can have more influence on academic parameters.
   iii) Friend circle outside school can have more influence on personality parameters besides academic
5) Social setup  (Depending on Concept)

- Collaboration with govt. schools locally/otherwise
- Collaboration with private schools locally/otherwise
- Collaboration with institutes (Higher education)
- Collaboration with hospitals/Research institutes

**ROLE OF PARENTS/ GUARDIAN**

There is need to first understand the supporting capacity of the parent in question.

- Illiterate (Supportive /Unsupportive)
- Literate (Supportive / Unsupportive)
- Educated (Supportive / Unsupportive)
- No parent

If the parent/guardian is of type ‘a’ i.e. (illiterate & supportive), then parent can be asked to extend support to facilitate learning enhancement. But if the parent is type ‘a-’ (illiterate & unsupportive), then probably a lot of work is to be done by teacher to transform the behaviour towards supportiveness. But if parent/guardian is of type ‘b’ then Market exposure for Math:- take the child out for practical experience on weekends
• For environment issues – Garden, for nature issues
• For Transportation – Railway / Bus station
• For socio-cultural norms – Religious places
• For social problems – NGO etc.

On the same lines an educated parent can be a great asset because of personal experience, so he can be collaborated effectively.

**ROLE OF TEACHER**

We are to work on building up of concepts whether it is KVS exams or SLATE / PISA / NTSC / others, the role of subject teacher is of prime importance.

**a) Subject teacher**

- Type of Student
  - Entry level knowledge of student
  - Targeted outcome/Enabling objective
  - Concept to be taught
  - Different angles that need to be focused
  - Inter connections of the concept at diff. angles / subjects /other concepts
  - Practicality of the concept
  - Other related issues.
So, the subject teacher must be skilled enough to decide:

- When to bring in
- What to bring in
- Whom to bring in
- The environmental set up
- For how long the support is required.

Besides this the personal attributes also come into play.

Eg. 
- Attitude of subject teacher
- Report building skill with team mates.
- Seeking help from other teachers.
- Time management with other teachers.
- Attitude & availability of other teachers

**ROLE OF TEACHERS OF OTHER SUBJECTS**

It is vital, if during a session by subject teacher, some external support comes into play, it creates interest, curiosity, breaking monotony (on some occasions) & helps putting additional inputs.

It could be planned as

- Full session of 35 min
- Short, crispy demo (5-10 min) to clarify the concept.

**Precautions**

- When to bring in as support, should be a part of lesson plan.
• External teachers with resources be ready (Intimation in advance)
• Crispy & carefully planned demo.
• Change in environmental setup should be carefully planned.

E.g.: Class VI - Science- a concept of Breathing, Circulation & Muscles can be planned as follows

a) Inter concept integration by subject teacher in class – 15 min
   Collaborated approach with sports teacher for effect of exercise on breathing and heart – 15 min

   In the same class

   In the ground (Environment change)

c) ROLE OF MISCELLANEOUS TEACHERS

   Arts & Craft
   Performing arts & Music
   Games
   Work Experience

Case Study – During a workshop at ZIET Chandigarh, an experimental study was taken up as following:

E.g. Science – Concept- Sound energy

   WET can help make a simple telephone call to send & receive sound

   Performing Art / Music – Can be collaborated for sound demonstration by different musical instruments & producing both pleasant sound & noise.
The noise part can be further taken over by subject teacher as:

- Noise in class
- Noise outside class
- Noise in air
- Noise during parties

linking them to health & social issues – Inter subject linking.

**Result / Observation**

i. Teachers TGT (Math/Sci./SST) got a true experience of integration/collaboration in real life situation.

ii. Gaps in the knowledge of use of resources were identified & reduced.

iii. Learning outcomes were better & well reinforced.

**Role of miscellaneous teachers—Case study**

**TGTs (Math, Science, Arts & Crafts)**

**Another Workshop**

- Concept of Math was taken up by the subject teacher.
- Science teacher took the same concept to elaborate its existence in the living system resulting in survival.
- Social science teacher reinforced the concept with its social implications.
- Arts & Craft teacher helped reinforce by
  - Making shapes based on it
  - Depicting a picture of it.

**ROLE OF PEER**

Students learn more & in a friendly way in peer groups. Plan to use this & collaborate this factor from all angles.
ROLE OF SOCIETY

There are some facilities that may be available in a better way in other institutes/schools/non-institutional set up.

E.g. – For concepts related to agriculture, questions can be framed in Math/Science/SST and can be taught by the subject teacher in class, but if the students get practical experience of:

- Talking to farmers and learning from their experiences.
- Experiencing the hardships by being in the farm land.
- Asking the farmers about social limitations and other hardships they he/his family have to experience.
- Comparing the hardships at personal level with those of the farmers in different seasons.

Students collect oral data/tabulate it/arrange it/sequence it, to aid learning.

➤ **Base line**

Every subject & every concept has its roots in society. So society needs to be collaborated.

---

![Mathematical Processes Diagram](image-url)
Unlike content-based assessment, the triennial international survey (PISA) is a competency-based assessment which measures the extent to which students have acquired key competencies that are essential for full participation in modern societies.

**FOCUS ON KEY AREAS:**

1. **Status and the expected level:**

   Studies show that there is a close relation between students’ learning styles and the teachers’ teaching strategies. *(Usdan et al., 2001, Trigwell, 1999)*

   However, students and teachers may have different goals and their perspectives on how to learn and what to teach can create a gap between the teaching strategies and the students’ learning styles *(Hedin, 2006)*.

   In order to bridge the gap between expectations and improve communication in the classroom teachers must adopt the learner-centered approach.

2. **INDEPENDENT & PERSONALIZED LEARNING**

   In personalized learning it is possible to know student’s strengths, needs, interests and skills. Personalized learning is about how pupils learn rather than what they learn. *(Barnard, 2005)*
By adopting personalized learning, each student gets a chance to master important concepts. This helps the students to reach their maximum potential.

3. **THINKING SKILLS**
   Students must be given ample chances to progress by complex thinking processes. Thinking skills include classifying, organizing, evaluating and analyzing.

   Critical thinking involves interpretation and logical reasoning. Creative thinking helps to develop new ideas on the given data. Problem solving helps in determining the best course of action. Reading enhances critical thinking.

4. **POSITIVE THINKING CLIMATE IN THE CLASS ROOM:**
   To promote critical thinking among the students, a classroom with lot of interactions is essential.

   Activities which build up student’s confidence and which provide opportunity to develop thinking skills must be designed.

5. **INTERACTIVE LEARNING ENVIRONMENT:**
   Students must be given an opportunity to interact in the classroom. They must be given an active role in discussions and problem solving.

6. **EFFECTIVE QUESTIONING:**
   Through questioning students become active learners rather than passive listeners.
PREPARING ADMINISTRATION

PISA seeks to measure how well young adults, at age 15 and approaching the end of compulsory schooling, are prepared to meet the challenges of today's knowledge societies. This is what PISA refers to as "literacy".

From its outset, PISA has assessed student performance beyond the confines of reading, mathematics and science. As cross curricular competencies, skills like ICT, communication and problem-solving, will be important to students’ future. The surveys asked students about their characteristics as learners, including their learning habits, their motivation levels, and their attitudes to learning in general and to reading, science and mathematics in particular, and their habits and competence in using ICT. In addition, the direct assessment in 2003 of student performance in solving problems, outside the context of a single curriculum area, was a first step in describing such competencies through external testing rather than self-reporting.

PISA’s database provides an unprecedented array of information, based on questionnaires, from which to analyze potential influences on student performance across countries. Although it does not track individual students and cannot therefore establish causal links, this analysis can compare the degree of association with educational outcomes of various factors in different countries. At the individual level, such factors include socio-economic background, immigration status and cultural possessions in the home. At the school level, they include student perceptions of instructional practices, disciplinary environment and, importantly, the collective socio-economic background of students at each school. At the school system level,
the extent of school autonomy and the structural organization of students in secondary education can be compared to the overall performance and distribution of the performance of students aged 15.

The integration of the assessment of a younger age cohort would, in particular:

> Give an indicator of outcomes of the earlier years of education, and allow analysis of whether they are sustained through secondary school

> Help link PISA outcomes more closely to what happens within schools and classrooms: a connection that is easier to measure in a more uniform organization of primary schools, where each student generally has one main teacher

> Be able to look at how factors other than cognitive performance develop over time – for example, whether students’ levels of motivation change and how their learning styles evolve

> Allow a common framework to be developed for monitoring the development of certain basic skills, which could be translated into estimates of the average yearly progress made by students in subjects such as reading

Source: PISA – THE OECD PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT
MONITORING PROGRAMME
To meet the requirements of PISA preparation, a strong monitoring system is required.

MONITORING CELL:
VIDYALAYA LEVEL:
Principal along with 4 PGTs & 4 TGTs constitute a monitoring team to discuss the modalities of implementation of PISA requisites.

REGIONAL OFFICE LEVEL:
The Deputy Commissioner, Assistant commissioners along with two Principals of the region constitute the monitoring committee at RO.

NATIONAL LEVEL (HQ)
Under the chairmanship of Commissioner along with Additional Commissioner (Admin) & Additional Commissioner (Acad.) and other officers constitute the monitoring committee at HQ.

Functions at all levels:
1. **Planning:**
   The committee prepares a plan of action which includes setting of goals, objectives and the deadlines.

2. **Execution:**
   Adopts suitable methods for implementation of strategies. Monitors and gives guidance if necessary.
3. **Follow up:**
   Necessary follow up will be taken up on the basis of feedback.

**CALENDAR OF ACTIVITIES:**
The suggested areas are:

1. **Reading comprehension:**
   Reading literacy as measured in PISA requires students to demonstrate their skills in dealing with a wide range of texts, drawn from different situations and approached from a number of perspectives. These particularly aim at measuring the reading abilities which 15 year olds will require in order to function as future citizens, workers and life-long learners.

2. **Puzzles and Riddles**
   The purpose of including puzzles and riddles in the activities is to make the students think differently and apply their brain effectively. Moreover, puzzles and riddles are usually free from cultural influences, and hence can be solved globally. Hence, the students feel themselves better equipped with a variety of knowledge.

3. **Oratory Skills**
   The aim behind including Oratory skills in the activities is to make the students learn to think quickly, standout from the rest, and develop their self-confidence. These
skills will help the students to perform better in various fields.

4. **Survey and Reporting**

This will help the students to explain behavior or attitudes and get first-hand information. By reporting their survey findings, the students will earn to relate their learning life situations

5. **Word Power and Spell bee**

For the language to be effective, an important prerequisite is abundant vocabulary or word power. Words are the very essence of written communication. Words translate thoughts and carry the message through to the reader.

6. **Data Interpretation**

The data interpretation exercises include helping the students understand and analyze the information presented through the data. They will also learn to sieve the data through multiple sources and draw conclusions by interpreting them.

**TRY THIS SUDOKU- Improves logical thinking**

(Solution: reference page)
# SUGGESTED SCHEDULE OF ACTIVITIES

<table>
<thead>
<tr>
<th>SN</th>
<th>MONTH</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>JULY 2019</td>
<td>Word Power &amp; Spell-bee</td>
</tr>
<tr>
<td>2</td>
<td>August 2019</td>
<td>Puzzles &amp; Riddles</td>
</tr>
<tr>
<td>3</td>
<td>September 2019</td>
<td>Gift of the Gab</td>
</tr>
<tr>
<td>4</td>
<td>November 2019</td>
<td>Let’s Find and Analyse</td>
</tr>
<tr>
<td>5</td>
<td>December 2019</td>
<td>Interpret the Data</td>
</tr>
<tr>
<td>6</td>
<td>January 2020</td>
<td>Reading Skills</td>
</tr>
</tbody>
</table>

## FURTHER READING

- Principles of Good Practice in Learning Assessment  
- PISA NPM manual:  
  [http://www.oecd.org/pisa/pisaproduc...s-for-bidders.htm](http://www.oecd.org/pisa/pisaproduc...s-for-bidders.htm)
- PISA Assessment frameworks  
  Relevant frameworks for PISA PBA:  
  PISA 2012 (Reading)  
  PISA 2015 (Mathematics and Science)
- PISA test questions:  
As it was discussed in previous chapters, to ensure learning outcomes, there needs to be a change in classroom transaction and hence systematic reforms are to be brought forward at all levels.

To prepare students for PISA 2021 practice is required in:

1. **Data Interpretation:**
   A cursory look on any PISA item reveals the importance of interpretation in various forms. Therefore, practice is required to enable the students to interpret the data in various forms such as:
   - Graphical Data
   - Maps
   - Charts & Other Matrices

2. **Reading and Comprehension:**
   PISA items are quite lengthy in nature. Hence, students should have the ability to read fast and comprehend the subject content quickly.

3. **Activities based on silent reading:**
   There are many forms of reading such as abstracting, scanning, skimming, reading between lines, distinguishing between relevance and irrelevance. Hence, students should be exposed to all the possible aspects of silent reading.

4. **Note Making:**
   Making notes while reading a large passage requires identifying the topic sentence, keywords, subtitles reference points etc.
5. Puzzle and Riddles:
Puzzles require thinking out of the box and improving lateral thinking. Crossword puzzles enhance word power. Activities like Sudoku enhance the mathematical acumen of the child.

6. Surveying:
Activities on surveying will enhance experiential learning of a child and help in attempting PISA.

7. Report Writing:
Mastery on report writing will help the children in tackling questions requiring various forms of expressions.

8. Reference Skills:
Ability to refer a dictionary, atlas, bibliographies and encyclopedias, indices etc will make their task accomplishment faster and more accurate.

9. Hands on activities:
Hands on activities may include experiments, practicals, projects, outdoor activities, visual and performing arts, use of geometry box, BALA etc. These may enhance child’s ability to express and use his or her intelligence both in emotional & cognitive domains.

10. Question Making:
Rubrics of PISA items are quite different from questions generally encountered by our students. Hence, they should be asked to design question papers on specific learning outcomes and context.
In order to align the existing assessment of the students with PISA, the following design of question paper is suggested:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions picked up from the exercises of the text books</td>
<td>25%</td>
<td>20%</td>
<td>10%</td>
<td>Easy</td>
</tr>
<tr>
<td>Questions from the exercises in modified format</td>
<td>25%</td>
<td>20%</td>
<td>20%</td>
<td>Average</td>
</tr>
<tr>
<td>Learning outcomes/ability based questions (Text book neutral)</td>
<td>25%</td>
<td>30%</td>
<td>30%</td>
<td>Difficult</td>
</tr>
<tr>
<td>PISA type questions</td>
<td>25%</td>
<td>30%</td>
<td>40%</td>
<td>Challenging</td>
</tr>
</tbody>
</table>

Level 1b & 2 = 10%
Level 3 & 4 = 10%
Level 5 & 6 = 20%
REFERENCES:

1. NCERT manual on Learning Outcomes
2. Official OECD website
   https://www.oecd.org/pisa/pisa-for-schools/
3. PISA – The OECD Programme for International Student Assessment
   www.oecd-ilibrary.org
4. Other websites referred:
   nap.edu
   teachersfirst.com
   usi.edu
   oecd.org/education/ceri/35661078.pdf
   researchgate.net
   delhipostnews.com
   gi-global.com
   trainingindustry.com
   helendoron.com/spiral_learning_part_1/
   simplypsychology.org/learning-kolb.html
5. Recommendations-for-PISA-Maths-2021-FINAL-EXTENDED-VERSION-
   WITH-EXAMPLES
6. Cover page PISA image is taken from official OECD web site

SOLUTION TO SUDOKU

<table>
<thead>
<tr>
<th>7</th>
<th>9</th>
<th>8</th>
<th>3</th>
<th>5</th>
<th>1</th>
<th>2</th>
<th>6</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>9</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>9</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

Five steps those are basically associated with the task of Problem-solving are:

I = Identifying the problem
D= Defining and representing the problem
E = Exploring possible strategies
A= Acting on the strategies
L= Looking back and evaluating the effects of one’s activities

- John Bransford and Barry Stein