DEVELOPMENT OF AN ACTIVITY BOOK FOR INSTILLING THE CONCEPT OF TIME, MONEY AND MEASUREMENT

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By

SALINI C S

Register No- AM20HCD011

Department of Home Science

St. Teresa's College (Autonomous)

Department of Home Science and Centre for Research

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DEPARTMENT OF HOME SCIENCE

ST. TERESA'S COLLEGE (AUTONOMOUS), ERNAKULAM

CERTIFICATE

This is to certify that the thesis "***Development of an Activity Book for Instilling the Concept of Time, Money, and Measurement*** " is an authentic record of the research work carried out by Ms. SALINI C S under the guidance of Dr. Dhanya N, Assistant Professor, Department of Home Science, St. Teresa's College (Autonomous), Ernakulam.

Signature of Head of the Department

Dr. Dhanya N

Assistant Professor

Department of Home Science

St. Teresa's College Ernakulam

M.Sc., M. Phil., Ph. D.,

MA, M. Phil., MBA

Assistant Professor

Department of Home Science

St. Teresa's College Ernakulam

DECLARATION

I hereby declare that the thesis entitled "***Development of an Activity Book for Instilling the Concept of Time, Money, and Measurement*** " is a bonafide record of research work done by me during the course of study, under the supervision and guidance of Dr. Dhanya N, Assistant Professor, Department of Home Science, St. Teresa's College (Autonomous) Ernakulam.

Place: Ernakulam SALINI C S

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INTRODUCTION

“Education is not the learning of facts but the training of the mind to think”

- Albert Einstein

Mathematics is the science and study of quality, structure, space, and change. Mathematicians seek out patterns, formulate new conjectures, and establish truth by rigorous deduction from appropriately chosen axioms and definitions. Aristotle defined mathematics as “the science of quantity”, and this definition prevailed until the 18^{th} century. In his classification of the sciences, he further distinguished between arithmetic, which studies discrete quantities, and geometry that studies continuous quantities. Mathematics is one of the essential component in our life. Without proper calculations and management our day become messy.

Because arithmetic and logical thinking are the foundations of science and technology, mathematics has been viewed as an essential discipline. As a result, educational authorities place a premium on pupils' computational and problem-solving abilities. Teacher-led teaching, which still dominates mathematics classrooms, is most likely to blame for the existence of a considerable number of low-achieving pupils.

In terms of mathematical competency, the mathematics curriculum in primary schools focuses on conceptual comprehension, procedural fluency, and strategic competence (Kilpatrick et al. 2001). To begin, conceptual knowledge refers to a student's understanding of mathematical ideas and their links. Second, procedural fluency is the ability to do computations accurately and quickly. Students must understand calculating rules (e.g., place values) and practice the technique without making mistakes in order to improve procedural fluency. Third, strategic competence relates to the capacity to solve mathematical problems, specifically word problems, in primary school.

Children learn and begin to employ a variety of math ideas during their early childhood years. As the youngster interacts with his or her surroundings and others, this acquisition occurs spontaneously. Children receive a lot of experience with numbers and quantities during their pre-school years. They compare amounts, understand the notions of few and many, and devise a variety of strategies to balance a tall block structure. Counting how many olives he/she ate, matching the number of dishes to the number of napkins, spreading cookies evenly among pals, and counting fingers are just a few instances. Early mathematics skills assist ability to solve problems, make analyses, and hypotheses, which are the base of children's scientific thinking skills, and serve as the groundwork for increasingly sophisticated mathematical material to be learnt throughout school. Furthermore, children's early arithmetic skills are linked to future academic performance, the likelihood of graduating from high school with higher grades, greater employment rates, and professional achievement (Kroesbergen et al., 2009).

The sense of time arises in many forms during childhood, ranging from simple to complex. Children may learn the difference between day and night more quickly because they can conceptualize it, but they cannot learn the distinction between evening and night or morning and noon. They will need to grow a little more for this (en, 2004). In terms of acquiring time, encouraging academic motivation, and recognizing time units such as hour, day, month, year, and season, presenting the time idea to children through diverse activities is highly successful. Children benefit from a variety of stimulating experiences as they progress through the cognitive development process. The creation of new stimulations in the youngster is aided by a stimulating environment. The use of concrete materials in activities involving the formation of the time concept has a crucial role, particularly in aiding cognitive growth (Safran and imşek 2009).

The ability to identify money and the ability to tender money and make change are the two most important abilities that children need to know when it comes to money, and the earlier they learn them, the better.

Money comes in a variety of forms and sizes, including metal and paper. Varied money units have different values that may be used to pay for various items. It is the denomination

of the money that matters, not its size. These basic truths are taken for granted by adults, but they are the very things that cause problems for youngsters.

Students need to comprehend the worth of money and how to make the same amount of money using different coins and notes, therefore teaching money skills is critical. This prepares kids for the real world by allowing them to understand how much things cost and how to make changes.

Teaching money concepts to younger pupils can help them apply their knowledge to real-world word problems and activities, bringing the math curriculum to life. Money word problems are a fantastic method to introduce multi-step word problems into your math curriculum.

Measuring is an important part of a child's mathematics and scientific development. Its foundation is in the practise of comparative judgement; youngsters measure their experiences and observations to compare magnitudes or detect patterns of change over time. Measurement knowledge and practises are important components of pre-K through Grade 8 curriculum because they play a large and profound role in children's comprehension of science and mathematics (So, 2013).

A quantitative grasp of space is often required for presenting questions, formulating answers, and expressing results, hence measurement is an important component of spatial thinking (National Research Council, 2006; Presmeg & Barrett, 2003). To achieve precision and accuracy in technological design for spatial challenges, students must select acceptable tools and procedures and work with proper measuring methods.

The preschool years are the foundation for a child's grasp of measuring. Preschoolers understand that continuous qualities like mass, length, and weight exist, but they are unable to quantify or measure them precisely. Even 3-year-olds understand that if they have some clay and then are given more clay, they will have more clay than they had previously. Preschoolers cannot dependably determine which of two quantities of clay is greater; instead, they rely on visual cues such as length. Most youngsters can learn to resist perceptual signals and improve in reasoning about and measuring amounts by the age of 4-5 years. Quantities are something that young toddlers are naturally exposed to and debate (Ginsburg & Seo, this

volume). They begin by learning how to utilise words to describe the quantity or degree of a given property.

Relevance of the study

Researchers are now discovering that excellent math training in early years is critical to later success in establishing number sense and eventual arithmetic proficiency. However, that education must be thoroughly and thoughtfully connected with age-appropriate developmental milestones and informed by instructors' extensive topic knowledge and pedagogical expertise. This is due to the fact that digging into abstract topics that young children are not developmentally equipped to understand might cause confusion.

Early reading is frequently mentioned in discussions about early learning, but early math abilities are sometimes overlooked. As a part of kindergarten preparedness, preschool and early learning curricula stresses on writing, learning letters, and word identification, while paying little or no attention to number sense and fundamental arithmetic concepts, which are also critical abilities for children to grasp as they reach primary school. Learning the concept of time, money and measurement is very important for the successful life of an individual. Acquiring knowledge about these concepts from childhood period enables the individual to gain firm awareness on the topic. Education provided at the schools forms basic foundation for the children to deal with real life situations much efficiently.

While going through the research studies the investigator discovered that there were only a limited amount of studies based on the time, money and measurement math concepts. Taking this into consideration, the researcher attempted to assess the knowledge level of the students on the concepts of time, money and management and formulated workbook and activity kit for providing the children with proper intervention on the topics for their betterment and development.

Aim

To develop multisensory workbook and tool kit for teaching respondents the concepts of Time, Money and Measurement.

Objectives

- To conduct a market survey to identify the available educational materials on the concepts of Time, Money and Measurement.
- To conduct a pretest to evaluate the current knowledge of the respondents with regards to the concepts of time, money and measurement.
- To develop a workbook and tool kit for the intervention purpose.
- To organize a posttest to assess the effectiveness of the intervention provided to the participants on the concepts of time, money and measurement.

REVIEW OF LITERATURE

CHAPTER -2

REVIEW OF LITERATURE

Review of literature for the topic “development of an activity book instilling the concept of time money and measurement” is discussed under the following sub –headings:

2.1 Importance of maths in daily life

2.2 Benefits of kinesthetic learning in concept teaching

2.3 How children learn maths in their school age

2.4 Importance of learning the concepts of Time Money and Measurement

2.5 How the children learn these concepts kinesthetically

2.1 Importance of maths in daily life

Math’s is an integral part of day-to-day life. We all work with numbers daily, for example, telling time, calculating change when shopping and measuring ingredients when cooking. There are several professions that are highly dependent on math’s such as science, engineering and accounting to name a few. Depending on the profession where you are intending to work, the level of math’s required will vary. Therefore, the amount of math’s that you do will also vary based on your study program.

The study of math’s is important as it allows you to train your brain to think logically, accurately and carefully helping you to make logical and informed decisions in your life. It also helps you to build confidence to undertake common routine tasks more confidently such as measuring ingredients when cooking and calculating change when shopping.

The study of maths is not about the final answer but the processes and the journey to the final answer. It is about the development of the maths skills needed to perform the required

operations that produce the correct answer. These are valuable skills that can be used in future employment

Maths is an important part of the learning journey. The study of math's trains your brain to think logically, accurately, and carefully. When seeking help, show your tutor your attempt to solve the problem(s) (with your working) so that they can discuss it with you. This will give you the most tailored support. Develop your problem-solving skills to help with applying the concepts in different situations, including assessments. Present your math's logically with full working and communication in your assignments (Frederiks, Anita and Sahay, Akshay (2021).

This paper draws on data from a participant action research project with adult basic mathematics students in inner-city areas of south London. The students all attended general basic mathematics courses and most of the students also attended literacy courses. The data challenges the view that curricula for basic mathematics should be determined by tutors' or policymakers' notations of real life mathematics. The idea that we can predict, for students, what real life means or that we can always help with the mathematics that students need in their everyday lives is argued against. The claim that adults returning to basic mathematics should be offered curricula and learning material from everyday life or real life drawn from UK national policy is examined. Some snapshots of data drawn from the students and the research that challenges its dominant perspective are presented. Tools from critical discourse analysis were used to analyze the data (Tomlin, Alison, 2002)

- Students consider that mathematics is a difficult subject and it develops negative geelings.
- Students are able to recognize mathematics in several real situations.
- Students appreciate this type of mathematical examples in order to illustrate and popularize mathematics.
- Students are aware of the relationships between mathematics and cinema or television snd architecture and they mention a lot of examples and related concepts.
- Students think that the relationships between mathematics and literature are almost non-existent and furthermore they consider that there is a clear separation between sciences and

letters (International Association of Technology, Education and Development (IATED), 2013).

2.2 Benefits of kinesthetic learning in concept teaching

Kinesthetic learning is a style of obtaining information. Kinesthetic learning's primary premise is that a student learns best when shown simulations, presentations and videos or when moving around in a hands-on environment. Similar to tactile learning, which emphasizes the likes of drawing, touching and building in educational circumstances, kinesthetic learning stresses full-body movement to process new information, for example, pacing back-and-forth while memorizing or drawing flowcharts and underlining notes while tapping legs. Moreover, these learners understand best with concrete or real-life examples.

Kinesthetic learning refers to the need for movement and realistic, situational examples when acquiring information. Part of the VARK Modalities (visual, aural, read/write, kinesthetic) that describe the different ways students acquire information, kinesthetic learning is often best suited to situations like role plays, field trips, hands-on projects and competitions, with learners typically possessing good motor memory and the ability to respond quickly.

Kinesthetic learning is one of the three different learning styles popularized by Neil D. Fleming in his VAK model of learning. In essence, kinesthetic learners process information best when they are physically engaged during the learning process.

Often, those with a kinesthetic learning style have a hard time learning through traditional lecture-based schooling, because the body does not make the connection that they are doing something when they're listening without movement. Their brains are engaged, but their bodies are not, which makes it more difficult for them to process the information. Much of the time, they need to get up and move to put something into memory.

Strengths of Kinesthetic Learners

Kinesthetic learners have many strengths that will help them achieve success in the classroom:

- Great hand-eye coordination

- Quick reactions
- Excellent motor memory (can duplicate something after doing it once)
- Excellent experimenters
- Good at sports
- Perform well in art and drama
- High levels of energy

Kinesthetic Learning Strategies

If you're a kinesthetic learner, try these techniques to improve your comprehension, retention, and concentration while studying:

1) Stand Up Instead of Sitting Down. You already know that sitting for extended periods of time is bad for your health. But did you know that, as a kinesthetic learner, standing up will improve your comprehension and retention? When you stand up, your body is more engaged and connected to the learning process. Investing in a book stand or standing desk may help you concentrate for longer periods of time and remember more of what you read.
2) Combine Your Study Session With Exercise. Instead of plopping on the sofa with your notes, get up and do burgees or jumping jacks in between chapters. Ask a friend or family members to quiz you on your study guide while you shoot hoops or jump rope. Combining activity keeps you energized and cements the ideas you're studying in your brain. Plus, as a kinesthetic learner, you need a physical outlet for your excess energy, even when you have to study.
3) Utilize Small Movements. It's not always possible to stand up and do high knees during a study session, but you can still use kinesthetic study strategies to keep yourself engaged. Bounce a tennis ball against the floor and catch it every time you answer a question. Twist a rubber band around your wrist or a pencil while you read. Even if the motions are small, they'll help you stay focused and attentive.
4) Use a Pen. Use a Pencil. Use a Highlighter. Underline important vocabulary or concepts while you read. Highlight and color code passages that connect to one another. Use a pencil

to draw flow charts in your books that help break down the passage into small pieces. Add sticky notes that show main ideas and your own inferences. Using effective reading strategies combined with movement makes studying easier for kinesthetic learners.

5) Try Tension and Relaxation. When you're in a study situation that truly limits your ability to move, use this tension and relaxation technique to stay focused. In intervals of five to ten seconds, tighten a particular muscle. Then relax when the seconds have passed. This technique helps to release unwanted tension, which is something kinesthetic learners often experience during idle times.

6) Get Creative. If a topic has become difficult for you, approach it from another angle. Use materials you can manipulate, like blocks or figurines, to visualize a battle scene or explore mathematical concepts. Draw pictures about the topic you're learning or design a video or storyboard explaining the ideas to someone new. You have excellent motor memory; you're likely to better remember something you built than something you read.

Kinesthetic learners need to move their bodies in order to learn. These students are often called "fidgety," and some teachers might interpret their behavior as distracted or bored. However, a kinesthetic learner's movement does not imply a lack of attention—in fact, it means that they're trying to process information in the most effective possible way. Try these strategies for reaching kinesthetic learners in your classroom:

- Allow kinesthetic learners to stand, bounce their legs, or doodle during lectures. You will get more out of them in class if they can move around a little bit.
- Offer various methods of instruction—lectures, paired readings, group work, experiments, projects, plays, etc.
- Ask your kinesthetic learners to complete relevant tasks during the lecture, like filling out a worksheet or taking notes.
- Allow kinesthetic learners to perform movement tasks before and after lectures, like handing out quizzes, writing on the chalkboard, or even rearranging desks.
- If you feel the kinesthetic learners slipping away from you in class, pause the lecture and have the whole class do something energetic: marching, stretching, or switching desks.

- Keep your lectures short and sweet! Plan several different activities throughout each class period in order to be mindful of all your students' learning styles

Adaptive behavior appropriate to the demand of living and working in our society depends to a considerable extent upon the ability of the individual to order and arrange things in their relation to each other. The language that has been invented to facilitate this arranging and to express the relationship is arithmetic. In a society that increasingly makes use of machine to do the computation, the need for arithmetic seems to be increasing rather than decreasing. This seeming paradox has come about partly

2.3 How children learn math's in their school age

Of all the accoutrements of civilization none is more central than time. The regulation of nearly all of an individual activity is so intimately controlled by the clock that the role of time in our daily activities is often overlooked. As with other quantitative activities, time has both mechanical and utility aspects. One must learn to measure time, but one must learn to coordinate his activities with the measurement. There is no casual or incidental method of teaching time that seems very effective. Time consciousness deserves frequent and systematic instructions attention. Outcome expected from this attention are:

Preschool level

1. Upon request the child can state verbally whether the present time is morning, afternoon or night.
2. Given the name of a scheduled activity, the child can state whether it takes place in the morning, afternoon or night.
3. Upon request, the student can verbally the days of the week
4. Given a clock, the child can verbally describe its function.

Primary levels

1. Upon request, the child can verbally state what state what day of the week it is and tell which days come before and after.

2. Given a calendar, the students will be able to use it to count, to tell how many days and how many weeks are in month.
3. Given a calendar, the child will be able to locate the present day and date.
4. Upon request the child will be able to name the month of the year.
5. Upon request, the Student can be verbally state what the letters AM and PM represent.
6. Given a clock or clock face, the child will be able to state the time by the hour and half hour.

At the preschool level coins should be introduced and examined so the youngsters can learn the name of the coins and be able to differentiate among the coins by size , color ,design and sound. A display of coins may be used ,but it is better if the children can examine the coins closely in order to see clearly the differences. Using money to buy things fix the notion that money is used as a medium of exchange – that is money has meaning.

At the primary level, a part of the arithmetic period should be used to teach the value of common coin. The hand abacus approach to teach numbers is useful . Frequent opportunities to use money should be provided . The use of a play store is an especially good devices . Items for sale can be empty cans and boxes which have meaning to the youngsters so they can pretend they are purchasing something they want or need . Although many play stores are exclusively grocery stores , there is no reason why clothes hard ware and even pictures of furniture or other items could not be used .

Measurement

Measuring is the most common for making quantitative judgement in all areas of living. As in any other comparison, judgements are made with varying degrees of precision. To judge someone as " a good guy" implies some standard of behavior against which the behavior of the guy judge is compared. Teaching these skills then involves attention to developing standards of both a precise and cured type, and also teaching the mechanics of measuring and the use of the measuring skills. Since this is an area that permeates social judgements as well as arithmetic, the skills need to be first and then use in a variety of social context . However, the key concept is

learning that standards art developed from which all comparisons are made. The establishing of standards therefore becomes integral to all measuring. Outcome expected at the various levels are;

- Upon request ,the child will be able to respond correctly to elements that are long or short, big and little, near and far ,heavy and light ,few and many and all and none.
- Given a yardstick, the student can identify an inch ,a foot and a yard.
- Given a measuring container , the child will able to fill with the appropriate amount of liquid for a half cup ,1 cup ,1 pint, 1quart or 1 gallon.
- Given a weight scale, the child will demonstrate the use of the scale.
- Given a weather thermometer, the child will be able to read the temperature correctly .
- Upon request, the student can be a large number of objects the correct number to equal a dozen.
- Given a large number of geometric forms , the child will be able to sort by shape the circle ,rectangle and triangle.

Fundamentally arithmetic consist of a man- invented system of statements having to do with " how many" . The only contact numbers have with the world of reality is in the one to one correspondence of one thing to one symbol. Subsequent numbers depend upon this fundamental relationship, and subsequent processes are tight rules foe combining groups, sequences and relations that do not violate the one to one correspondence upon which quantitative statements ultimately rest. Arithmetic is concretely based systematically ordered. The youngsters must learn a set of ordered symbols and a series of rules for combining the symbols and this in itself looms as a formidable task. However the arithmetic curriculum sequential and this simplifies the decision about what should be taught. How the facts and processes should be taught is another unsettled question.

Our knowledge of the world about us comes through our senses, but the sensory impulses are reconstructed as we interpret the information in the light of our experiences. Pre arithmetic activities have to be carried on by children as they develop some understanding of space , ordering, subdivision and constructing lines, and changing perspective.

The basic education necessary for a kid and when they gets to the UP section, advanced knowledge will be provided as lessons or modules."(Fourth grade" – news · newspapers · books · scholar · JSTOR (August 2019)

Quote in speech bubble, "As a paramedic student, we use math's to work out medication doses for children because every age of child needs a different dose depending on the medication. I have to learn two or three formulas that I will use over and over again. Repetition and consistency is my strength so if I can apply that to the math's, I'm not too scared of it." Quote from Scotty Warren, Mature Age Student.

The study of math's is important as it allows you to train your brain to think logically, accurately and carefully helping you to make logical and informed decisions in your life. It also helps you to build confidence to undertake common routine tasks more confidently such as measuring ingredients when cooking and calculating change when shopping.

The study of math's is not about the final answer but the processes and the journey to the final answer. It is about the development of the math's skills needed to perform the required operations that produce the correct answer. These are valuable skills that can be used in future employment. Maths is an important part of the learning journey. The study of math's trains your brain to think logically, accurately, and carefully. Maths anxiety is something everyone may experience at different stages in their university studies. The six strategies to help you manage it are: Creating a safe, calm and comfortable environment in which to study, developing positive self-efficacy for math's, practising math's (including all working), seeking help when required, timed practice and understanding the process. When seeking help, show your tutor your attempt to solve the problem(s) (with your working) so that they can discuss it with you. This will give you the most tailored support. Develop your problem-solving skills to help with applying the concepts in different situations, including assessments. Present your math's logically with full working and communication in your assignments.(Frederiks, Anita and Sahay, Akshay ,2021)

Identifying the factors that foster math learning during early childhood is crucial given strong associations between these early skills and later school success. Despite theoretical arguments that the home environment and parents' practices could support children's math abilities, little research addresses this possibility, especially compared to the breadth of research addressing literacy practices in the home. In this article, we review the literature on how the home numeracy

environment may relate to children's math skills and argue that more methodological rigor is needed in these measures. Specifically, we highlight potential alternative dimensions of parents' math practices beyond the conventional distinction between formal and informal activities, and we discuss directions for investigation. We argue that improving measures of the home numeracy environment may help resolve the mixed pattern of findings in the literature and further support the development of math skills in early childhood (Leanne E. Elliott, Heather J. Bachman, University of Pittsburgh. 2018)

1.4 Importance of learning the concepts of Time, Money and Measurement

Knowing how to tell time is a very important skill. It can help you determine whether you're running late or whether you have plenty of time to spare. It can help you catch a train, bus, or plane on time, and allows you to know if you're going to make it to an important get-together early or late. Being able to tell time by looking at a traditional clock is essential to understanding other things like time zones and international times as well. Learning how to tell time can also help kids with their motor and cognitive skills as well as mathematical skills. Many educators feel that the earlier the age of the child, the better. In most cases, children should learn to tell time on an analog clock around the age of five or six. Younger children will have difficulty since they have not yet learned basic math skills just yet. – A simple guide that shows how to read clocks with hand, also known as analog clocks.

Time Monsters – This interactive website teaches kids how to learn about time and clocks.

Clock Quiz – Use this quiz to help kids learn how to read a clock and tell time.

Teaching Kids to Read a Clock – Some helpful information and tips on teaching kids to read a clock.

Video – This entertaining video teaches children how to read clocks to the nearest 5-minute mark and understand time intervals.

Analog Clock – An interactive clock that shows the time as well as where the hands are coordinating.

Clock Challenge – Click on these clocks to see if you're able to tell what time it is.

Lesson Plan – Some challenges and lesson plans for teaching kids how to tell time.

What Time is It? – Another fun interactive game where you can match up your analog time telling skills with the digital clocks under it.

Telling Time with Kat – This fun game with Kat the cat helps kids learn to tell time on an analog clock.

Learn to Tell Time Game – An online, interactive game that helps kids learn to tell time.

Teaching Clock – A helpful clock that will show children how to tell time on an analog clock.

Play to Learn – Enter the desired time, and it will show on the clock's hands.

Identifying Time – A great interactive tool that helps kids understand the time on a clock.

Mastering Time Concepts – This article addresses children with ADHD and how parents can help them understand time and time management.

Printable Clock – Use this printable clock as a tool to help children learn to tell time.

Learning to Tell Time – Information about software designed to teach kids how to tell time.

Analog & Digital Clocks – Online software that shows kids how to tell time on both analog and digital clocks (readers.com)

Time is a modern human concept that must be learned. You could almost say it's a magic show; something complex that children aren't born understanding. Children learn best thinking about real things that are tangible or kinesthetic in their early development. They create relationships in understanding, and knowledge by linking what they learn with their own hands-on experiences; and because time is not hands-on, we have to teach them. It's critical that we blend their natural skills and talents with societal rules. This is why we help children learn about time by incorporating routines into their usual play, as play is something they truly understand. The key thing to keep in mind while teaching children about time is that the way they understand it now leads directly into how time rules their lives in the future. For this reason, it is important that as we teach the concepts and construct of time in the formative years, we practice with time decisions that lead to a future of success versus stability and stress.

They're going to make commitments somewhere down the line that's going to require them to align their desires with the cost of achieving them. There's only 168 hours in a week; we need

to teach our children the concept of making decisions on how they want to slice and dice that 168 hours to best serve them. Without this knowledge, we raise children to become adults that tend to be dabblers and vulnerable to other people's decisions. They will live in the effect of having to accept what they get instead of teaching them that they're responsible for creating what they want. The sooner that the child grasps this concept, the better they're going to learn how to maximize their life and their time.

At this point, you may be asking at what age you should really start teaching your children about the rule of 168 hours. I don't think that it's based on an age; I believe it's based on mental development. As soon as they can mentally grasp the concept of their participation in responsibility and learning they're part of something bigger without losing the sense of their ego, then they are ready. It needs to begin with simple activities that are fun.

As a teen, initially the goals are getting on a sports team or band program and solid grades. Some children are motivated from a young age to get into a certain college or earn money for their first car. They are more successful when they understand what the time commitment required is to succeed in any specific goal, but it must be subtracted from 168 hours each week. In doing this they can answer a very critical question: What are they willing to give in return? Maybe to make the track team or lead in their sport they need more time to work out. Are they willing to get up an hour early each day to go to the gym? Since the 168 hours includes sleep time, maybe they will choose to move that time around and go to sleep an hour earlier to make sure they are not too tired to wake up that hour earlier. Maybe they need to cut their social media trolling or gaming time to use those hours for something more productive. Maybe they could choose to limit their streaming of a series on Netflix or Hulu or YouTube.

Start by giving your children advanced warning about changes in routines. That can help minimize the frustrations or problems from confusion, and it leads towards more cooperation and flexibility. Think about it this way: If you're working on something critical and the announcement comes that dinner will be on the table in 15 minutes, that advanced warning allows you to complete what you're doing and make the transition gracefully. We need to allow that change to develop in children as well versus hard-liner rules, like dinner is on the table come now! We need to make the rules easy to win.They can learn at an early age that it's not just about the message, but we articulate the message. Maybe saying something like, "Your yummy dinner will be ready to eat in

15 minutes!". If you use a white board for chores, use words that makes them feel good about what you want them to accomplish:
Clean rooms = germ free bodies, healthy foods = energy and clarity to win your big game, feeding pets = loving pets

In the beginning, children don't really understand the meaning of five minutes, but they can begin to understand that they need to get ready for bed when they end a cartoon they are watching. You can start bringing in concepts of time (like after this cartoon is over, which is when the big hand touches the 6) then your children become more likely to be receptive. Let them know of any changes to your normal schedule before they're going to happen.

Start teaching them how to use a calendar. Often by junior high children are ready to start using a written calendar. The first part of incorporating a calendar with your children is to start with a family calendar, maybe on a white board on your wall. This will support communication. Use juicy language and colored markers, writing down things like when dinner is, family events, movie night, or a sporting event. Having their own calendar allows the children a sense of individuality and responsibility and will aid them with priorities once they get to middle school. When their events start coming in, such as dental appointments, class pictures, sports games, or a band recital, they can start keeping their own personal calendar. When they can understand 168 hours and where school, sleep, and play all fit in, they start learning self-responsibility. They need to be responsible for their own time, which will enable them to organize time in a motivating way.

The most important thing to walk away with is the gift of control for your children. We all want to raise successful, independent adults. When they learn what to do in their 168 hours, it's empowering. They become responsible for putting together their schedule each week. They learn how long it takes for them to complete tasks, and how much time they have for fun stuff. This becomes more and more important as they enter adulthood. They will know when to schedule pit stops in life to rest, relax, and serve their purpose. They will understand when they need to dig in, and when it's playtime.(Cooper E Chad)

Although they may not understand what each coin represents, or even how money actually works, most kids like money because they know it can be used to get them what they want. Teaching kids about money, especially how to count it can sometimes be tricky. Understanding

money is a complex skill that relies on several abilities, including number sense and skip counting. Though challenging, you can teach young children about money using several simple steps.

Teach skip counting: Counting money accurately relies on the ability to count by ones, fives, and tens as well as a combination of all of the above. To avoid unnecessary confusion, make sure your students have a solid understanding of skip counting before beginning to teach money.

Explain: Young children may only have a limited understanding of what money is and how we use it. Tell them money is the used to trade for something we want, like toys, food, or haircuts. For further connections, brainstorm how money is used in their lives.

Identify: Bring out the coins and teach children the names for each. Start with the penny, nickel and dime. You may find many children already know the names, but make sure everyone is on the same page before you begin.

Assign value: After students can accurately name each coin, teach the value of each. Although it's tempting, now is not the time to teach which coin combinations equal another. Stay basic right now.

Count: Finally, what they've all been waiting for! It's time to count money. Only teach counting by one coin at a time. There will be time for putting it all together later. Count pennies first, up to about ten. Next, count nickels (here's where skip counting comes in) up to 100, then dimes to 100. Only move on to the next coin when students have a solid grasp on the previous.

Practice: Use real money, worksheets, plastic money and other methods to practice. This may take a while but it will be worth the time you put in now.

Switching: The last step is the trickiest for most children so take it slowly. Begin by guiding students to understand coin equivalents. Five pennies is the same as…. A nickel! Talk about whether they'd rather carry around fifty pennies or five dimes. For the first time they'll have more than one coin to work with and this will be super exciting. Ride the momentum wave by introducing switch counting with low values, such as counting out 10 cents using two nickels or 20 cents using two dimes. Move on to more complicated counting, such as making 33 cents, after the basics are understood (Linde Sharon ,2021)

The money measurement concept Is a measurability concept that helps in preparing and presenting financial statements of the company, but it may not adequately represent and forecast the ups and downs of a business and the uncertainties that may prevail in the future. Although it possesses some demerits all of them can be overcome. Today all the business entities throughout the world use this concept to record and present its accounting transactions.(Jain Ankit)

1.5 How the children learn these concepts kinesthetically

The ability for students to maintain attention to classroom instruction is a critical factor for learning because loss of instructional time due to off-task behavior has negative impacts on academic achievement. Early studies suggest that use of kinesthetic equipment in place of traditional seating in classrooms can improve student on-task behavior. To date, however, limitations of the kinesthetic classroom research literature include small sample sizes, often without controls, use of a single equipment type (e.g. standing desks or exercise balls) and lack of objective measures of student on-task behavior. We report a pilot study of the impact of using a variety of kinesthetic equipment in elementary classrooms on objectively-measured student on-task behavior (learning environment research, 2021)

The propose a special session focusing on kinesthetic learning activities, i.e., physically engaging classroom exercises. These might, for example, involve throwing a frisbee around the classroom to represent transfer of control in a procedure call, or simulating polygon scan conversion with rope for edges and students for pixels. The session will begin with a brief kinesthetic learning activity to motivate the value of these activities. We will follow with a variety of examples, and discuss how to deploy these in a classroom. In the middle of the session, the audience will divide into facilitated groups to design their own activities. (Kinesthetic learning in the class room, 2004)

Currently, the dental education system in Saudi Arabia is gender segregated. It is important to find out whether teaching methods must be altered to improve the learning experience for both genders throughout their years of study. This study aims to investigate the preferred learning styles for males and females studying dentistry at Taibah University, Madinah, Saudi Arabia and the effect of academic level on the learning style preference.

Both male and female students studying dentistry at Taibah University had a unimodal learning preference. Quadmodal learning was popular among interns. Both genders preferred the kinesthetic learning style, followed by the aural for males and visual for females. Teaching methods must be tailored to suit the learning style of each gender to promote motivation and thriving for a successful outcome.(Advances in Medical Education and Practice 13, 275, 2022)

METHODOLOGY

CHAPTER- 3

METHODOLOGY

Methodology is the philosophical framework within which the research is conducted or the foundation upon which the research is based (Brown, 2006).

The study entitled "***Development of an Activity Book for Instilling the Concept of Time, Money, and Measurement***" is presented under the following headings.

3.1 Selection of Area

3.2 Selection of Sample

3.3 Development of Tool

3.3.1 Conduct a market survey to identify the available educational materials based on the concepts of time, money and measurement.

3.3.2 A pretest to evaluate the current knowledge in concept of time, money and measurement.

3.3.3 Development and evaluation of the workbook and tool kit.

3.3.4 Reassessment after the intervention program.

3.4 Collection of data

3.4.1 Market and online survey to identify the available educational materials based on the concepts on time, money and measurement.

3.4.2 Assessment of students on the concept of time, money and measurement

3.4.3 Intervention for selected students

3.5 Data analysis

3.1 Selection of Area

The study primarily included students pursuing 4th grade. This is because the topic under consideration is a part of the syllabus of the students of this grade. The area selected for the conduct of the study included rural (Vypin) and urban parts (Edappally) of Ernakulam district. The survey and intervention was conducted from 4 schools in Ernakulam city including St. Joseph - Njarackkal, St. George - Edapally and Anglo Indian OLS LP School - Kunjithai. Students undertaking education under both State and CBSE syllabus were taken into consideration.

3.2 Selection of Sample

The sample for the study was determined using purposive sampling technique. "Purposive sampling, also known as judgmental, selective, or subjective sampling, is a form of non-probability sampling in which researchers rely on their own judgment when choosing members of the population to participate in their surveys. Researchers use purposive sampling when they want to access a particular subset of people, as all participants of a survey are selected because they fit a particular profile" (Alchemer, 2021). The required responses were collected through school visits, personal and group interviews and online test. The above methods aided in better insight and generated data with good accuracy.

Eighty students were selected for assessing their knowledge on the concepts of time, money and measurement. The need for intervention for a particular student was determined according to his/her scores obtained via assessment. A score below 20 out of 45 was considered as the borderline to direct those in the need for intervention. From the assessment it was found that around 30 students scored less than 20 points in the assessment, and these students were considered for further intervention.

3.5 Development of Tool

One of the main ingredients of research is the development of appropriate tool. Three tools were prepared for survey and intervention part of the study. They are discussed below under the following heading:

3.5.1 Market survey to identify the available educational materials based on the concepts of time, money and measurement.

3.5.2 Questionnaire for evaluating current knowledge of the students

3.5.3 Development and evaluation of the workbook and tool kit.

3.5.1 Market survey to identify the available educational materials

A market survey was conducted to identify the available educational materials based on the concepts of Time, Money and Measurement. This abetted in gaining awareness regarding the available tools in market and also helped in understanding the discrepancies concerning the existing tools. Products available on both online websites and offline stores were studied and the features including costs were noted down. The collected data was tabulated and analyzed for further interpretation.

3.5.2 Questionnaire for evaluating current knowledge of the students

A self-designed questionnaire was prepared to evaluate the knowledge of students on the concepts of time, money and management. The Questionnaire consisted of five questions for each domain and a time limit of thirty minutes was set for completion of the test. The first concept that was evaluated through the test was the concept of time and the questions included were - the identification of the correct time on a clock, drawing the designated time on a clock and statements which helped in distinguishing am and pm. The questions regarding the concept of money encompassed money matching, questions on paying for groceries and receiving the correct balance amount. Questions concerning the concept of measurement involved problems related to length measurement and conversions. The students were allocated specific time for completion of the test.

Scoring

Scoring was based on simple analysis of the marks attained for the individual criteria. The questionnaire consisted of five questions each under the topics of time, money and measurement. The respondents were asked to give answers to these questions. Three starts were awarded for each correct answer. The scoring pattern is depicted in the table given below.

Table -1

Scoring for pretest

Scoring	Grade	Marks
Excellent	⋆ ⋆ ⋆	3
Good	⋆ ⋆	2
Poor	⋆	1

3.5.3 Development and evaluation of the workbook and tool kit.

The pretest enabled in identifying the needs of the target group and on the basis of the conducted pretest a workbook was developed for the students to understand and learn the concepts of time, money and management.

The activities included for introducing the concept of time encompassed an introduction on digital and analogue clock, clock features like the hour and minute hands, difference between minute and hours, am and pm. Activities like writing about the daily routine along with time specifications, identification of the time displayed through clock figures, identifying the correct position of minute and hour hand for given time and calculation of the difference between two specified time where also included. The activities in the next section - money concept consisted of an introductory part about Indian notes and coins proceeded by activities on identification of Indian currencies, matching the right pairs and writing the amount in words as well as digits. The workbook also aided the respondents to identify the price of a product and they were also asked to write the denominations required to purchase an item.

In the measurement concept section, an introductory part about the concept of kilometers, meter and centimeters with regard to length, kilogram and grams with regard to weight, liter and milliliter with regard to the concept of capacity were provided. Then activities related to the measurement of length of given images and recording the measurement displayed through measuring jar were also introduced to the students for a better understanding of the topic.

A toolkit was prepared consisting of three activities each on concepts of time, money and measurement. The time related tools included making a clock, drawing the specified time and a time jigsaw. For money concept, money additions and a balance jigsaw was provided. Notes and coin related calculations and the images of product with value were also included. Weight balancing tools, coloring activities with regard to measurements and length were included in the measurement segment.

3.5.4 Reassessment after the intervention program.

Reassessment was conducted after the intervention using the developed workbook and tool kit and using the same questionnaire used for pre-test to assess the effectiveness of the intervention provided.

3.6 Collection of data

The investigator selected four schools in rural and rural areas of Ernakulam for conducting the survey and also for providing intervention to the students.

The collection of the data are discussed under the following heading:

3.6.1 Market and online survey for identify the available educational materials based on the concepts.

3.6.2 Assessment of students on the concept of time, money and measurement

3.6.1 Market and online survey for identify the available educational materials based on the concepts.

A market survey was conducted to identify the available educational materials based on the concepts of Time, Money and Measurement. Products available on both online websites and offline stores were studied and the features including cost were noted down. The collected data is presented the next chapter.

3.6.2 Assessment of students on the concept of time, money and measurement

The investigator approached the school authorities to seek permission to conduct the study. The investigator communicated with the principal of each of the schools and the purpose of the

study was clearly explained to the authorities. After obtaining the permission, a convenient date and time for the data collection was fixed.

A total of 80 students were considered for the assessment and a pre-test was administered to understand the awareness of students related to the concept of time, money and measurement. The Survey was conducted through school visits, personal and group interview and online test. A copy of the pretest is attached in the appendix.

Thirty students who scored less than 20 out of 45 were considered for intervention. The intervention was conducted via administration of developed work book and activity kit. A post-test was also conducted to evaluate the effectiveness intervention.

3.7 Data Analysis

The results of the intervention on awareness regarding time money and measurement using the developed work book and activity kit were consolidated and presented in the form of figures and tables. Percentages and mean scores were considered to identify the efficiency of intervention. The sample included students from various schools and the respondents were from both rural and urban area.

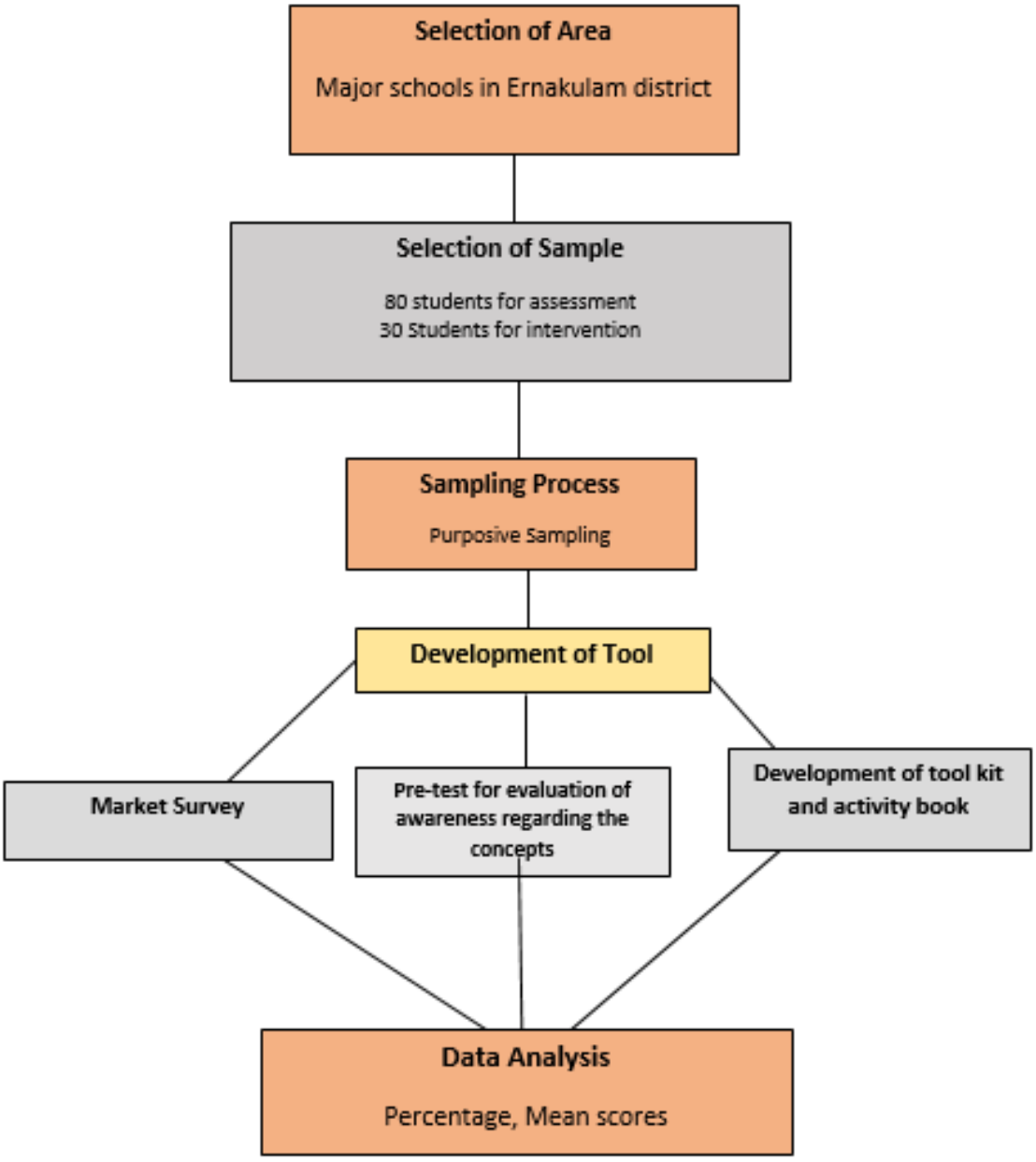


Figure 1 – Research Design

RESULTS AND DISCUSSION

CHAPTER - 4

RESULTS AND DISCUSSION

The results of the study entitled “Development of an Activity Book to Instilling the Concepts of Time, Money and Measurement” obtained after the analysis of data and its discussion is described in this chapter. For the ease of understanding and convenience, the results and discussion is discussed under the following sub headings:

4.1 Market Survey to Identify the Available Educational Materials Based on the Concepts of Time, Money and Measurement.

4.2 Development of Workbook and Activity Kit

4.3 Concept of Time

4.3.1 Awareness regarding time differences

4.3.2 Concept of being earlier and late with regard to time

4.3.3 Identification of time

4.3.4 Concept of AM and PM

4.3.5 Positioning of hour and minute hand

4.4 Concept of Money

4.4.1 Identification of notes and coins

4.4.2 Product value calculations

4.4.3 Understanding of denomination

4.4.4 Recognition of money in figure

4.4.5 Concept of balance amounts

4.5 Concept of Measurement

4.5.1 Concept of liter and milliliter

4.5.2 Concept of weight

4.5.3 Concrete concept of measurement

4.5.4 Concept of distance

4.5.5 Abstract concept of measurement

4.1 Market Survey to Identify the Available Educational Materials on the Concepts of Time, Money and Measurement.

The market survey conducted to check the availability of educational materials on concepts of time, money and measurement is depicted in the table given below.

Table 2: Market survey details

Sl no.	Name of Product	Type of Product	Price (Rs.)
1.	Let's learn about money	Paper back	199
2.	100 days of money, fraction and telling time	Paper back	675 (Offline) 496(Amazon.in)
3.	Learning Maths	Paper back	795 (Offline) 636 (Flipkart)
4.	Toy clock for early learning for kids in time	Plastic	499(Offline) 299(Amazon.in)
5.	Telling the time peppa practice	Paper back	199 (Offline) 182(Amazon.in)
6.	My first learning clock	Plastic	999
7.	Laura telling the time	Paper back	385(Amazon.in)

8.	Schand's mental mathematics	Paper back	385 (Offline) 233(Amazon.in)
9.	NCERT mathematics worksheet for class 4	Paper back	300 (Offline) 233(Amazon.in)
10.	Measuring up	Paper back	477(Amazon.in)
11.	Azotus worksheet for grade 4	Work sheet	999(Amazon.in)
12	The art and science of teaching children about money	Paper back	871(Amazon.in)
13.	Brette Sember Everything about money	Paper back	320(Amazon.in)
14	Dummy learning clock		299(Amazon.in) 499 (Offline)

A market survey was conducted to identify the educational tools already available in the market with regards to the concept of time, money and measurement. The survey was conducted in conventional offline markets as well as from major shopping websites like amazon.in and flipkart. The investigator collected information concerning the different types of tools available alongside with its price. The price of the same product on online and offline portals were also noted. It was interesting to observe from the survey that online products were cheaper and widely used by the customers than the offline ones. The survey indicated that there was only a limited amount of education tools for the selected concepts and hence the investigator felt that there is a scope for development of new tools with regards to the topic of time, money and measurement.

4.2 Development of Workbook and Activity Kit

A workbook and an activity kit were developed and administered to children who had difficulty to understand concept of time, money and measurement as a part of intervention. The work book consisted of activities that the child could undertake in order to comprehend the

concepts well. The activities were systematically arranged in separate sections in such a way that the child can proceed to learn from simpler to complex topics.

An introduction to digital and analogue clocks, clock elements including hour and minute hands, the distinction between minute and hours, and am and pm were included amongst the activities that presented the notion of time. Writing about one's daily routine with time specifications, identifying the time displayed through clock figures, identifying the correct position of the minute and hour hands for a particular time, and calculating the difference between two stated times were incorporated as activities. The following segment comprised of money concept activities which featured an introduction to Indian notes and coins, followed by activities on identifying Indian currencies, matching the right pairs, and writing the amount in words and numerals. Activities to determine the cost of a product were also included in the workbook.

The exercises for the measurement concept comprised of introduction to the concepts of kilometers, meters, and centimeters in terms of length, kilograms and grams in terms of weight, and liters and milliliters in terms of capacity. The students were then given a set of activities that included measuring the length of supplied images and noting the measurement using a measuring jar.

A toolkit comprising three activities based on the concept of time, money and measurement respectively were prepared. Making a clock, drawing the specified time, and a time jigsaw were among the time-related instruments. Money additions and a balancing puzzle were offered for the money idea. There were also calculations with regards to notes and coins, as well as representations of products with values. Weight balancing tools, measurement coloring activities, and length measurement activities were also included.

The intervention using developed tool was very effective as significant difference were observed in the pre and post test scores of children after intervention. The developed tool hence was found immensely beneficial for children for comprehending and learning the concepts of time, money and measurement if properly introduced to the market.

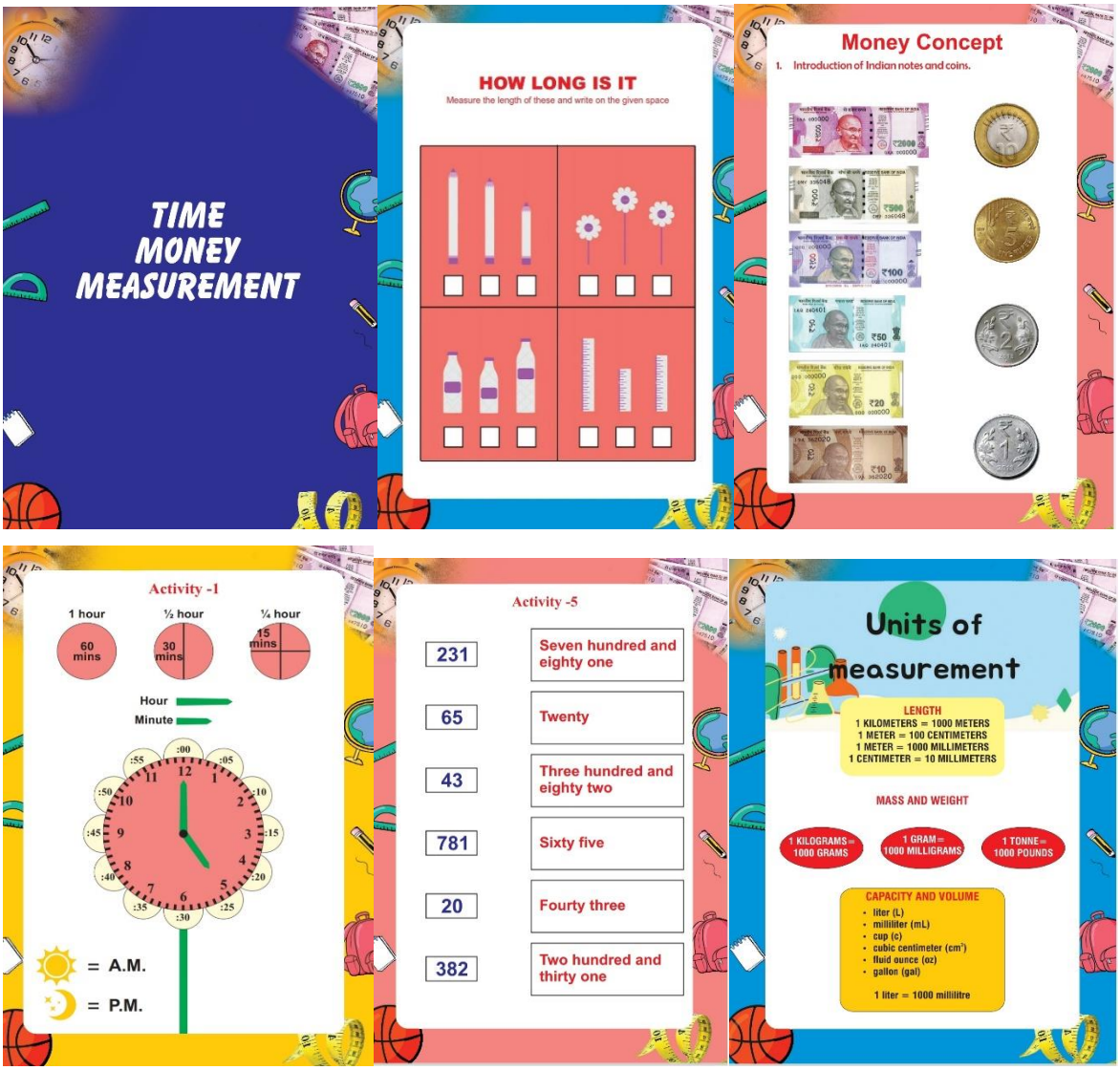


Plate 1 – Excerpts from Activity book

4.3 Concept of Time

The knowledge of the students with regards to the concept of the time before and after the intervention is depicted under the following headings.

An evaluation was conducted to understand the awareness knowledge of the participants regarding time concept. The assessment was conducted via questionnaires in which the

respondents were asked to answer specified questions. The grading was done in the form of stars so that the respondents do not get demotivated even if they could not perform well in a given set of questions.

4.3.1 Awareness regarding time differences

The details of awareness regarding time difference has been presented in Figure 2 and Table 3.

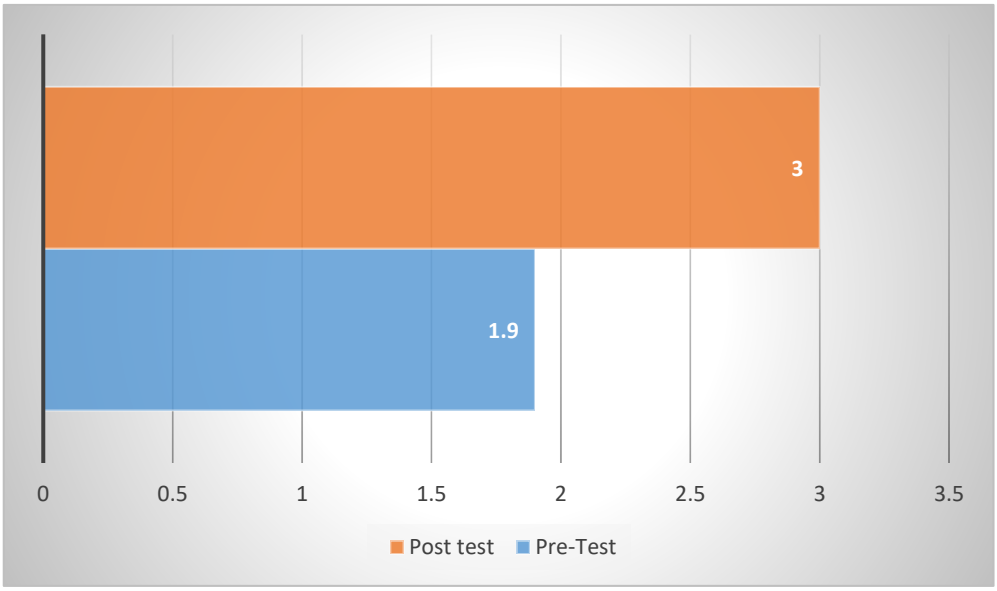


Figure 2 – Awareness regarding time difference

Table -3

Knowledge of time difference

Sl No	Pre test	Post test
1	1.9	3

A Pretest was conducted to understand the awareness of respondents regarding the concept prior to intervention. The mean score of the pretest was found to be 1.9 which indicates that the respondents were not much aware about time concept. The intervention was done with the help of developed worksheets and tool kit which consisted of questions including real life situations where time plays a major role. This enabled the respondents to relate to the questions and understand the concept better. This was proceeded by the posttest which included the same questions as the pretest. Significant difference was observed between pre-test and post-test as the respondents could achieve a mean score of 3 after intervention. This points out that the intervention provided to the respondents were effective.

4.1.3 Concept of being early and late with regard to time

The particulars of awareness regarding the concept of being earlier and later according to the concept of time has been presented in Figure 3 and table 4.

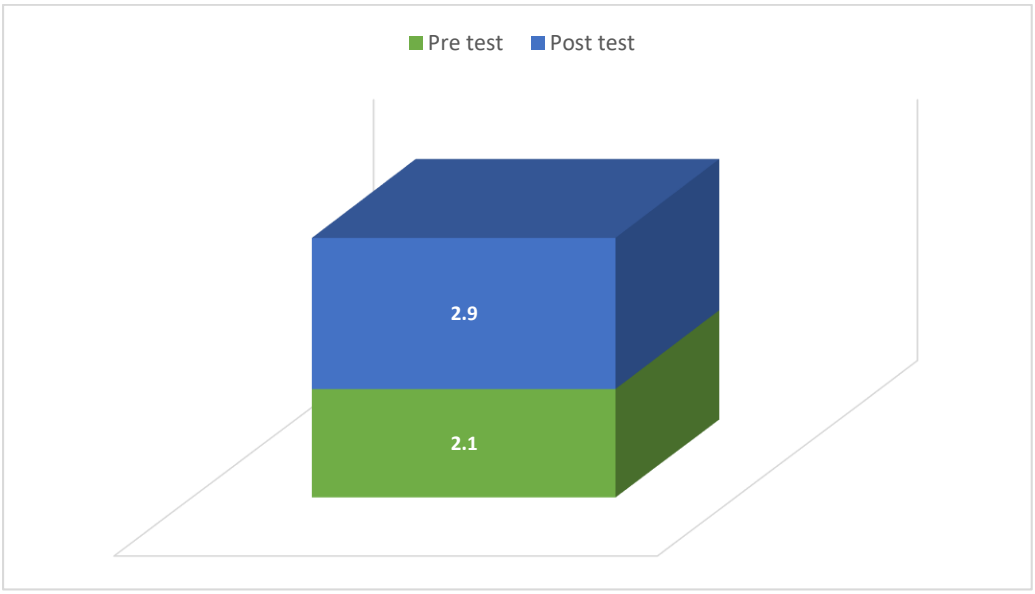


Figure 3: Concept of being early and late

Table 4

Concept of being early and late in relation to time

Sl No	Pre test	Post test
1	2.1	2.9

An evaluation was undertaken to determine the selected sample's awareness of the idea of being earlier or later with reference to time. The evaluation was carried out using a question that requested respondents to specify the earlier and later time periods in the provided time period. Prior to intervention, the pre-test was used to determine the respondent's current knowledge of the idea. The mean pre-test score was 2.1, indicating that the respondents were unfamiliar with the subject. The intervention was done through the developed worksheet that provided an awareness on the concept. This was proceeded by the post test conducted which included the same question as the pre-test. Significance difference was observed where the respondents achieved a mean score of 2.9 after the intervention.

4.1.3 Identification of time

The results regarding the identification of time has been presented in Figure 4 and table 5.

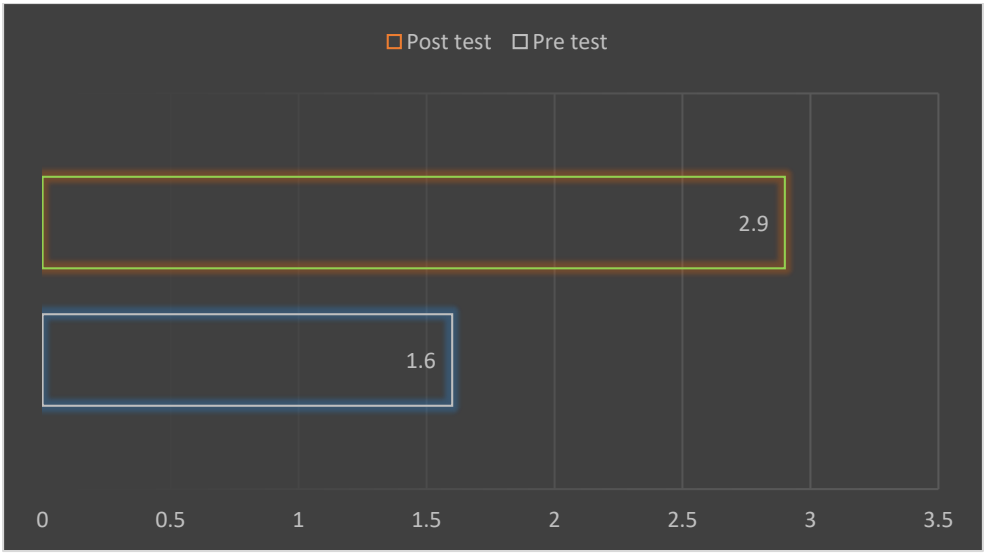


Figure 4 - Identifying time

Table 5

Identification of time

Sl No	Pre test	Post test
1	1.6	2.9

Identification of time is one of the most essential daily skills that an individual has to develop in early years of education. The level of awareness regarding this concept was analyzed by finding the mean scores from the respondents in the study. The mean score of the pre-test was 1.6 which is indicated that the children were facing difficulties in identifying the time in real life as well. The intervention was provided with the developed workbook and tool kit which significantly improved the posttest mean score (2.9). This indicates that the concept which was taught through activities and kinesthetic approach were efficiently imbibed into the children.

4.1.4 Concept of AM and PM

The knowledge of the students on the concepts of AM and PM are portrayed in the figure 5 and table 6.

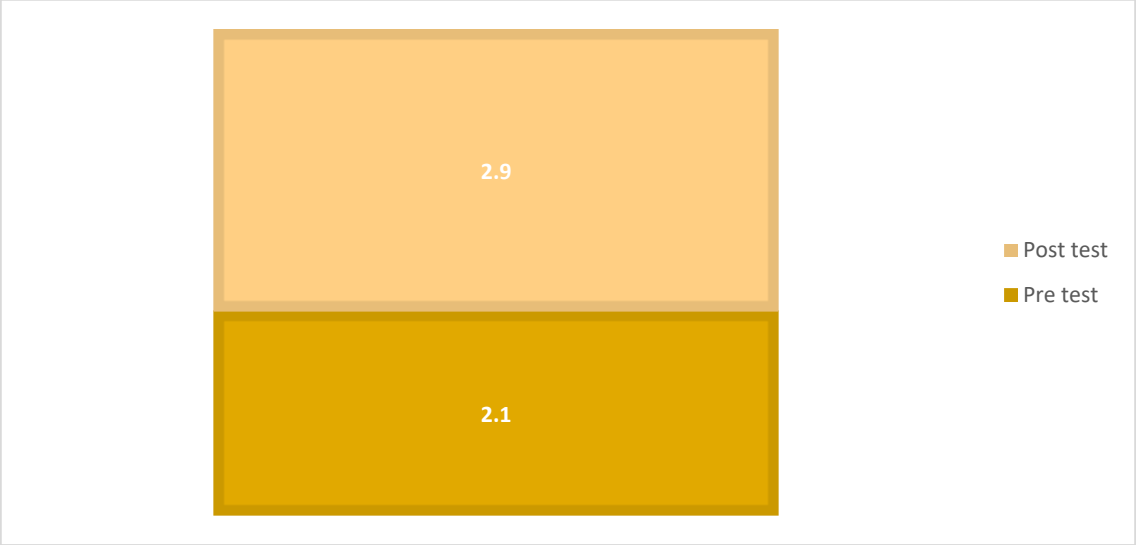


Fig 5: Understanding the difference between AM and PM

Table 6

Concept of AM and PM

Sl No	Pre test	Post test
1	1.6	2.9

Pretest taken on the concept of AM and PM among the students indicated that they had difficulty in comprehending the difference between AM and PM. They scored a mean of 1.6, which is considered as a low score in this session. From the table it's clear that the students gained more knowledge on the concept after intervention as scored a mean of 2.9. The intervention was provided by exposing the children to daily life situations and connecting them to respective time of these activities. The students responded that they enjoyed learning the concept in this way.

4.1.5 Positioning of hour and minute hand

The results regarding the positioning of hour and minute hand is shown in Figure 6 and Table 7.

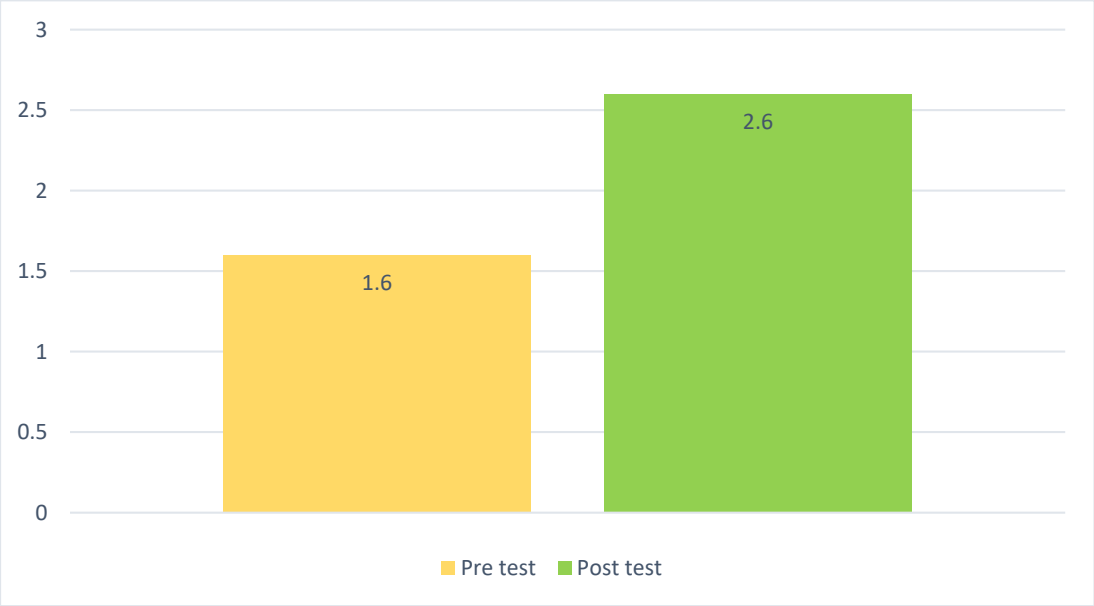


Fig 6- Positioning of hour and minute hand

Table 7

Knowledge of Positioning the hour and minute hand

Sl No	Pre test	Post test
1	1.6	2.6

The concept of hour and minute hand serves as the basis of noting time in a clock. This concept requires high visual and spatial awareness on part of the reader to accurately note the time. It is a skill which can be established only through repeated exposure. This concept was efficiently taught in through the intervention by usage of clock pictures and letting the respondents to practice

the positioning of hour and minute hand for a given set of time periods. The difference of mean scores between pretest (1.6) and posttest (2.6) scores indicate that the students learned the concept well, they just have to practice more for instilling the learned knowledge by heart.

4.4 Concept of Money

The familiarity of the students with regards to the concept of the money pre and post the intervention is represented under the following headings.

An evaluation was conducted to understand the awareness of the participants regarding money concept. The assessment was steered via questionnaires in which the respondents were probed to answer specified questions. The grading was done in the form of stars so that the participants do not get discouraged even if they could not perform well in a given set of questions.

4.4.1 Identification of notes and coins

The results on the awareness regarding the concept identification of notes and coins has been depicted in Fig-6 and table 7 respectively.

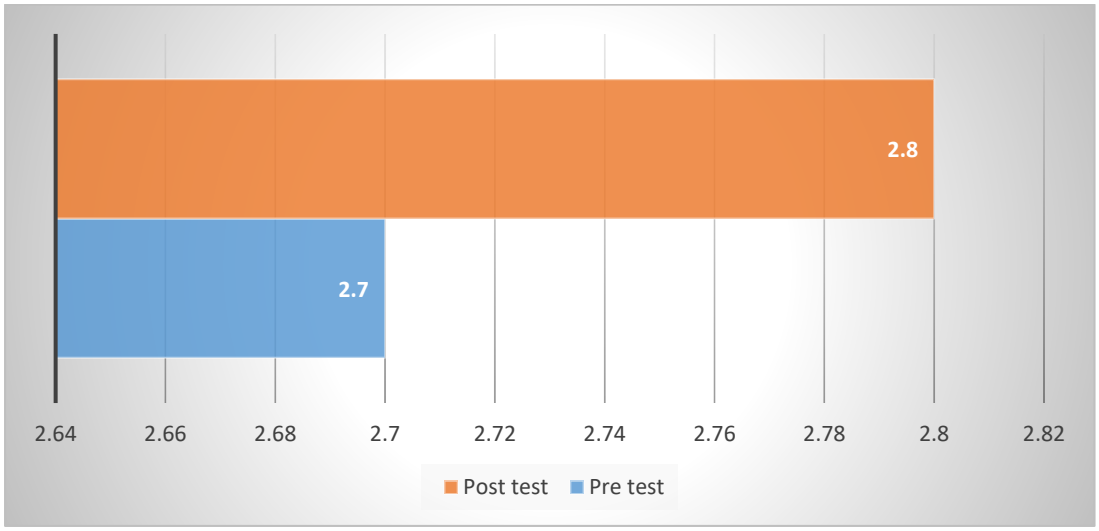


Fig 6- Identification of notes and coins

Table-7

Identification of notes and coins

Sl No	Pre test	Post test
1	2.7	2.8

It was good to note that most of the respondents had the knowledge to identify notes and coins, hence much intervention was not required. Yet the intervention included explanations of Indian currencies and their values to help the respondents who still faced difficulties with regard to this concept. The difference between the pre and post-test mean scores is not much significant in this case which is 2.7 and 2.8 respectively.

4.4.2 Product value calculations

The results regarding calculations of product value has been depicted in Fig 8 and Table 9.

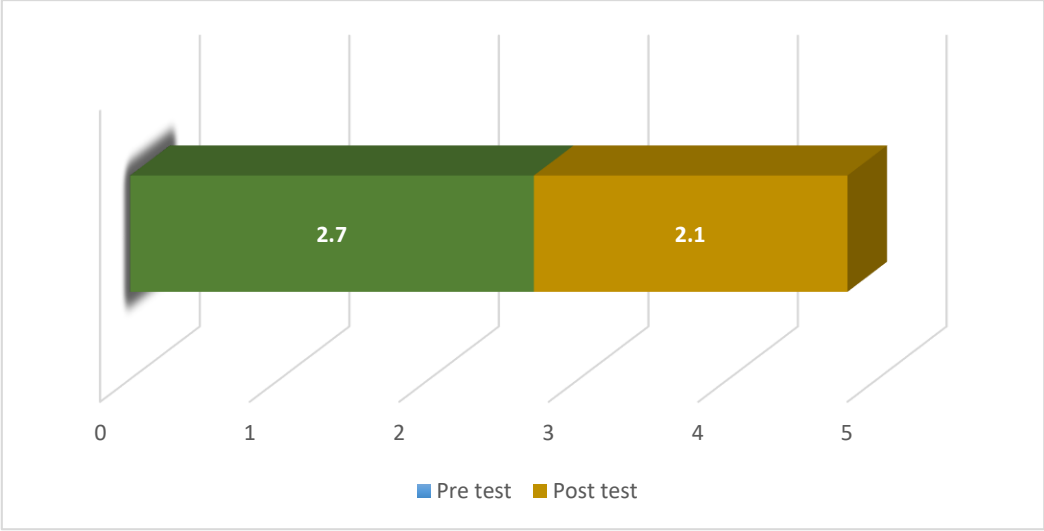


Fig 8– Product value calculations

Table 9

Product value calculations

Sl No	Pre test	Post test
1	2.1	2.7

Product value calculation is a skill which is immensely required while handling purchase and sales related data. Children have to be exposed to situations were money tractions are involved in order to strengthen the awareness of this concept. The intervention material involved tasks in which the value of various product like teddy bears, cake, and water bottle was displayed and mock transactions using figures of currencies provided in work book enabled the child understand to the concept better. From Table 9, it is clear that the children only had a mean score of 2.1, which significantly increased to 2.7 after intervention. With proper guidance and practice, the students will gain firm knowledge on the topic.

4.4.3 Understanding of denominations

The results regarding the understanding of denominations has been presented in Fig 9 and Table 10.

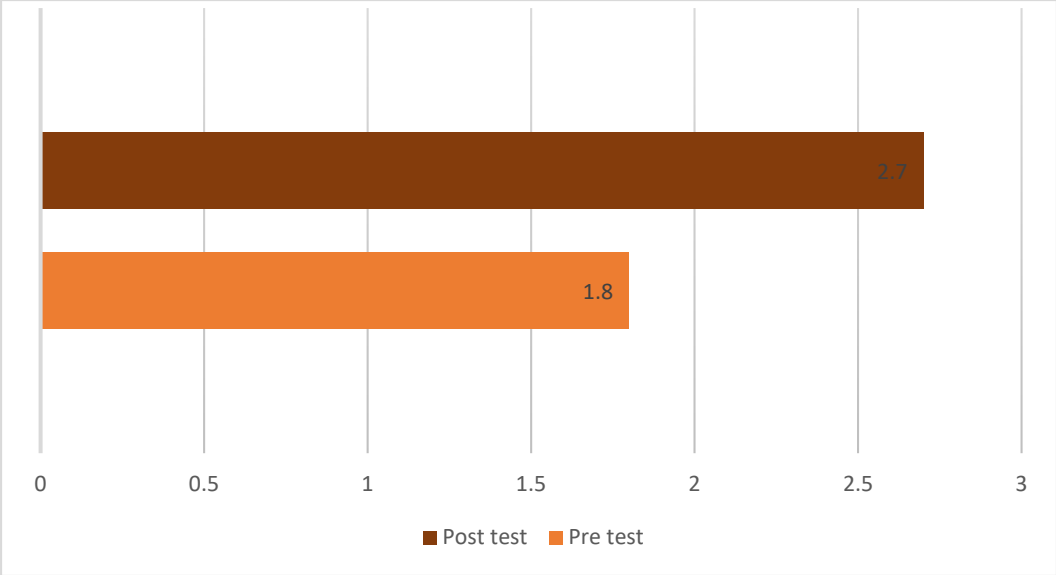


Figure 9 - Understanding regarding denominations

Table 10

Understanding regarding denominations

Sl No	Pre test	Post test
1	1.8	2.7

India is a country with numerous types of currencies with different values. The presence of two set of coins and notes of the same value is a cause of concern for many children. The pre-test scores makes it very evident that the children found the concept of denomination very hard to grasp. The worksheet used for intervention included pictures of Indian currencies and repeated exposure to such worksheets enabled the students to understand the concept better. The posttest mean score of 2.7 indicates that the intervention process was fruitful.

4.4.4 Recognition of money in figure

The results concerning recognition of money in figure has been depicted in Fig 10 and Table 11.

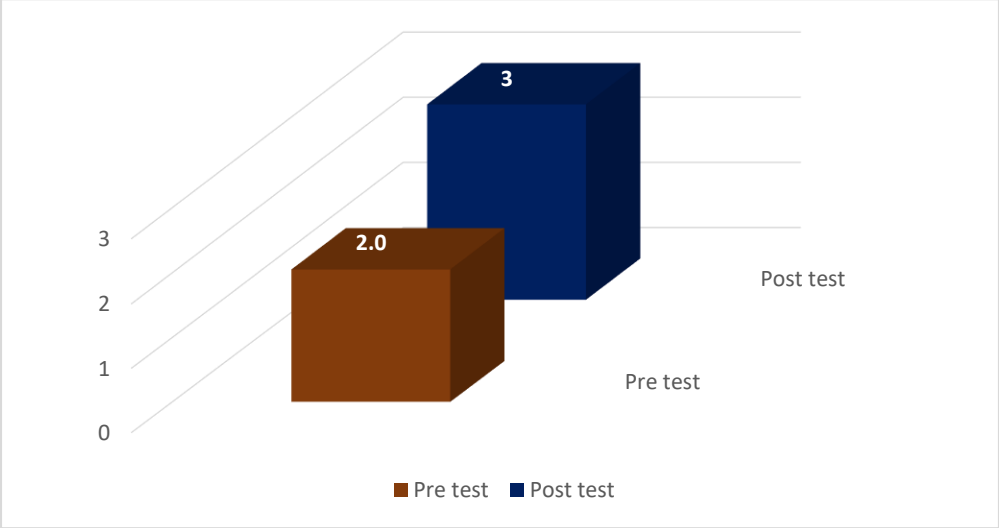


Figure 10 – Recognition of money in figures

Table 11

Knowledge of the respondents on the concept of money in figures

Sl No	Pre test	Post test
1	2	3

Drastic improvement has been observed with regard to the recognition of money in figures. It is an advanced concept with regard to money and the intervention using the workbook and activity kit with money matching tasks has aided in proper development of this concept amongst the respondents. From table 10, it is evident that the mean score had increased to 3, resulting in a noticeable change in the knowledge of the respondents regarding the recognition of money in figures.

4.4.5 Concept of balance amounts

The results regarding the concept of balance amount has been depicted in Figure 11 and table 12.

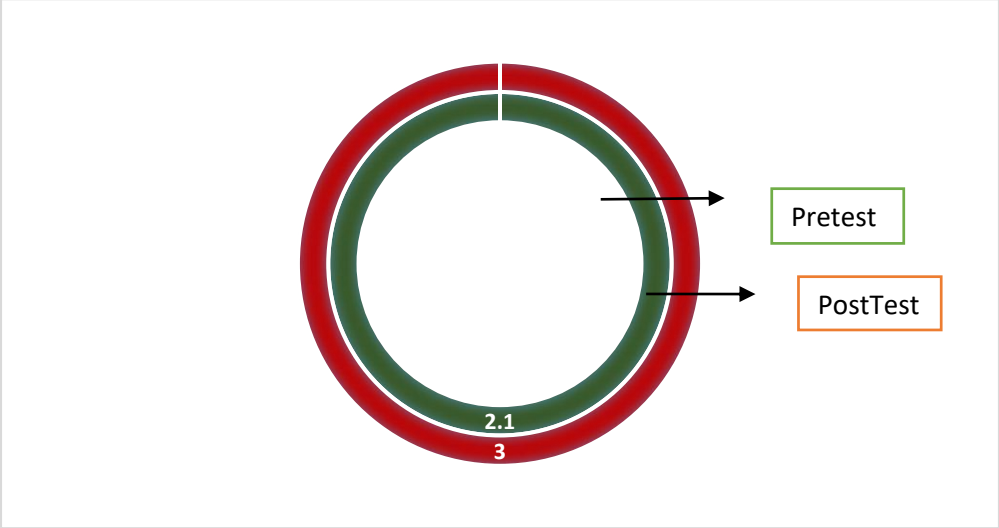


Fig 11 - Concept of balance

Table 12

Awareness on the concept of balance amount

SL No	Pre test	Post test
1	2.1	3

The final concept which was assessed with regards to money was the concept of balancing. A comprehensive awareness regarding the various denominations and its value and a strong sense of abstract calculation is required to master this concept. The combination of workbook and activity kit helped in teaching this concept by proceeding from concrete activities to abstract calculations. The difference between the pre-test (2.1) and post-test (3) mean scores points out the success of the intervention process.

4.5 Concept of Measurement

The understanding of the students with regards to the concept of the measurement before and after the intervention is revealed under different subheadings below.

Assessment was organized to reveal the knowledge of the students regarding measurement concept. The valuation was directed via survey in which the respondents were delved to answer specified questions. The grading was done in the form of stars so that the respondents do not get disheartened even if they could not perform well in a given set of questions.

4.5.1 Concept of liter and milliliter

The results regarding the concept of liter and milliliter has been depicted in through Fig 12 and table 13.

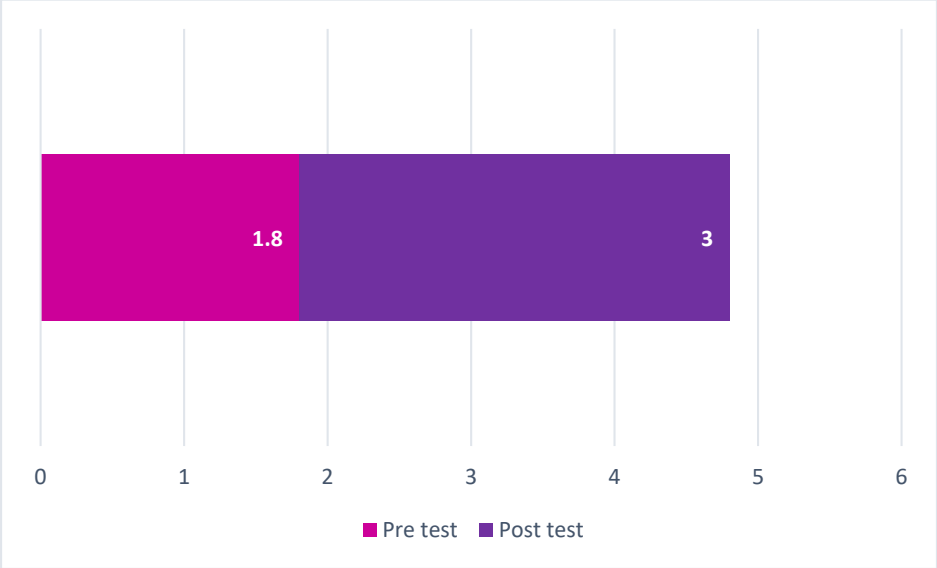


Fig 12- Concept of liter and militer

Table 13

Awareness of the concept of liter and milliliter

Sl No	Pre test	Post test
1	1.8	3

The knowledge on the concepts of liter and milliliter is very essential to understand the volume of various items used in day to day life and it is also important to recognize the relation of these two units. The scores prior to intervention (1.8) showed that the awareness regarding this concept was poor and the intervention which focused on the kinesthetic aspect of learning brought out a clear cut improvement in the awareness among the respondents.

4.5.2 Concept of weight

The results regarding awareness on the concept of weight has been presented in Fig 13 and table 14.

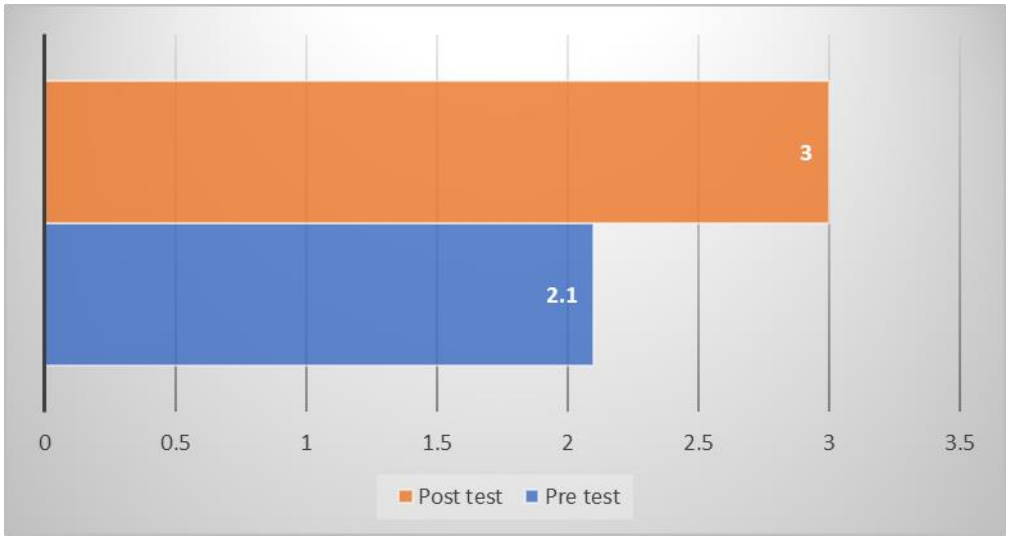


Figure 13 – Concept of weight

Table 14

Comprehension of the students on the concept of weight

Sl No	Pre test	Post test
1	2.1	3

The students had average awareness regarding the concept of weight. The various units and its conversion were the major concepts taught through intervention. Activities paired with awareness classes regarding the units has helped the students learn the concept better. The students were very much involved in all the activities and was able to understand the concept of units and its conversion in much better way. The multisensory approach adopted in intervention could be the reason for quick understanding of the concept amongst children.

4.5.3 Concept of distance

The results concerning the concept of distance has been presented in Fig 15 and table 14

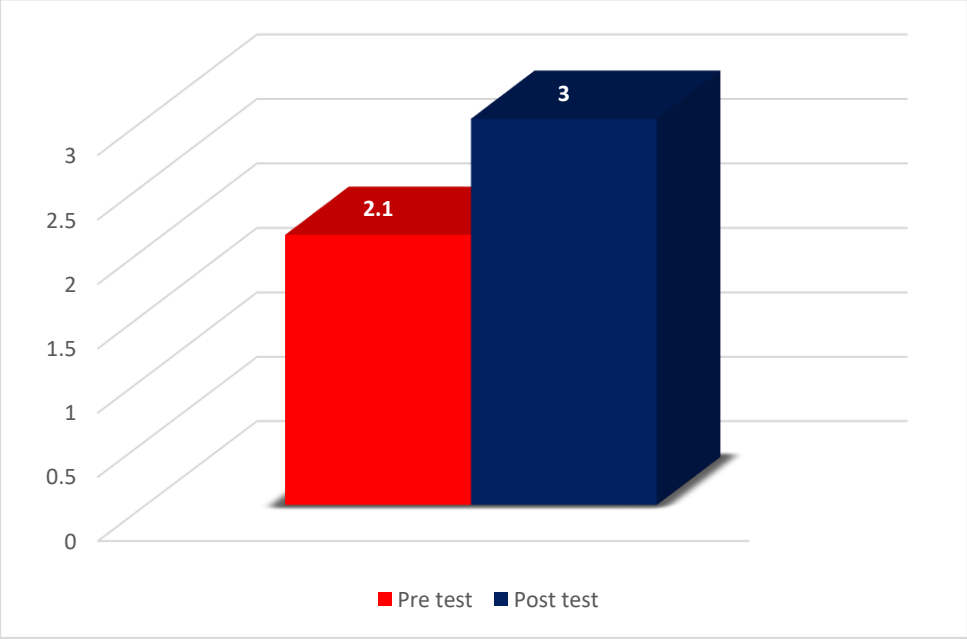


Fig 14 – Concept of distance

Table 15

Concept of distance

Sl No	Pre test	Post test
1	2.1	3

From figure 14, we can observe that the knowledge of the respondents on the topic were limited, but after the intervention, their mean score raised to 3 indicating a good progress within the children. The intervention using tool kit and activity chart processed from concrete activities to abstract puzzle. This gradation helped the respondents in knowing the concept better, which is being reflected in the post score of three.in understanding the concept from simple to complex problems, thereby enabling them to learn in more effective way.

4.5.4 Concrete concept of measurement

The results regarding concrete concept of measurement has been discussed in Fig 15 and Table 16.

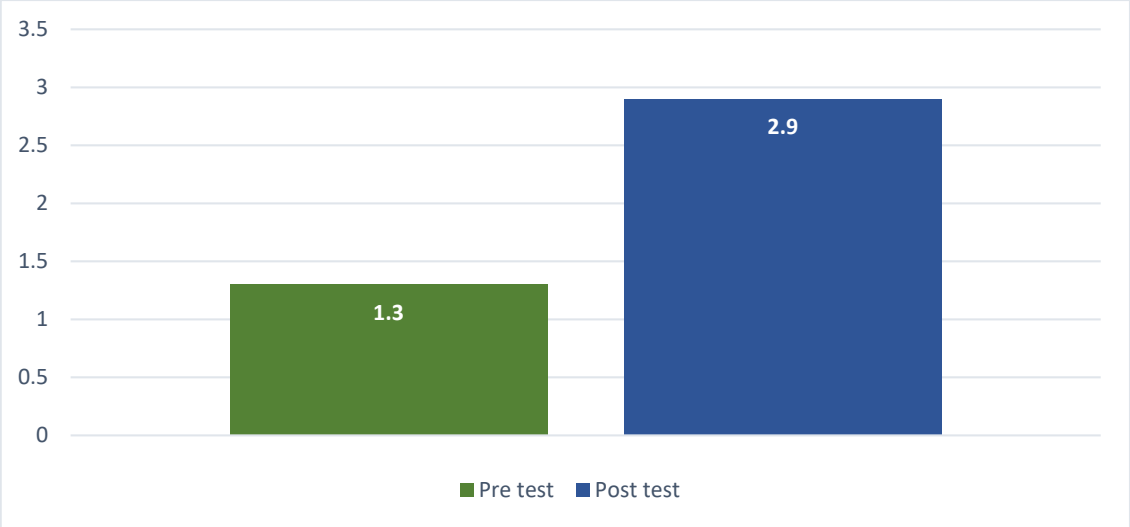


Figure15 Concrete concept of measurement

Table 16

Understanding of the concrete concept of measurement

Sl No	Pre test	Post test
1	1.3	2.9

Activities were provided to measure concrete objects using measuring scales. Such activities helped in interest generation amongst respondents. The activities supplemented with adequate instruction aided in the development of this concept more efficiently. The difference is very evident between pretest and posttest scores which is 1.3 and 2.9 respectively and this suggests that the concept of concrete measurements was grasped by the participants well.

4.5.5 Abstract concept of measurement

The results regarding the abstract concept of measurement is depicted in Figure 16 and table 17.

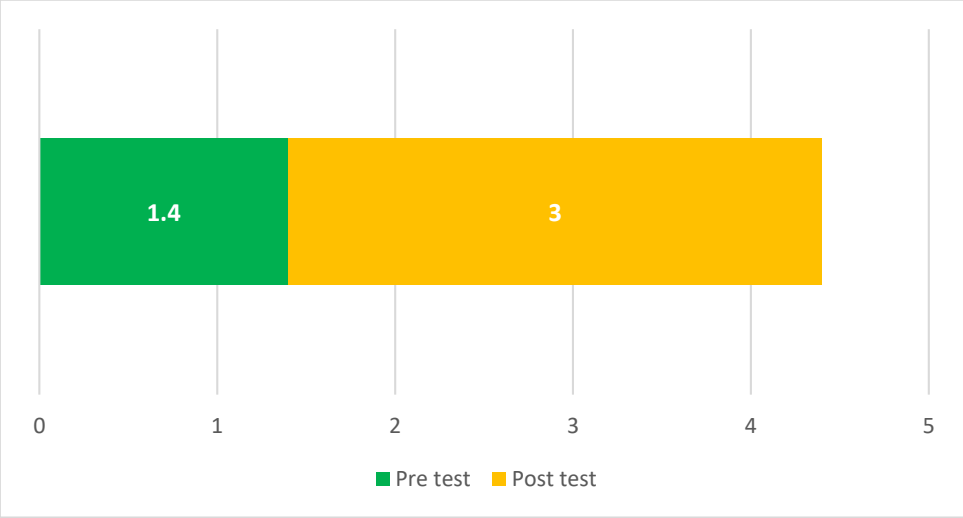


Figure 16- Abstract concept of measurement

Table 17

Abstract concept of measurement

Sl No	Pre test	Post test
1	1.4	3

Gaining abstract thinking capability is very difficult especially with regards to measurement. Once the respondent had completely understood the concept of concrete measurements, the next level of intervention leads to abstract measurement concept. The gradual progression paired with activities had led to higher retention of knowledge regarding the concept of abstract measurement among the respondents. Hence the intervention can be considered as effective.

SUMMARY AND CONCLUSION

CHAPTER - 5

SUMMARY AND CONCLUSION

The study undertaken by the researcher was on "***Development of an Activity Book for Instilling the Concept of Time, Money, and Measurement''***. A market survey was conducted to understand the types of educational materials readily available in market. This was proceeded by a pretest which was conducted as part of the study to evaluate the awareness of he students regarding the concept of time, money and management. The Study was conducted in St. Joseph school Njarackkal, St.George school Edapally and Anglo Indian OLS LP School Kunjithai with the help of a self-designed questionnaire. The sample for the study was determined using purposive sampling technique. The required responses were collected through school visits, personal and group interviews and online test. Fourth graders including 80 students were selected for the purpose of assessment. The scores of the assessment were evaluated carefully to assess the need for intervention. A score below 20 out of 45 was considered as the limit to determine intervention. Thirty students were identified to score below 20 marks in the assessment, and these students were provided with intervention. The intervention was conducted with the help of developed activity kit and work book. The work book included several activities on the concept of time, money and measurement in the form of three modules with the suggested activities suitable for different types of learners. Posttest was conducted to evaluate the effectiveness of the intervention and prepared tools among the participants. The results were analyzed by finding the mean score and comparing the mean scores before and after the intervention.

Findings

The findings of the study can be summarized as below

5.1 Market Survey to Identify the Available Educational Materials

The survey indicated a shortage of educational tools for the selected concepts and a scope for development of new tools on the topics of time, money and measurement.

5.2 Development of Workbook and Activity Kit

- The work book consisted of activities that the child can undertake to understand the concept of time, money and measurement. The activities were systematically arranged so that the child can proceed from simpler topic to complex one. Separate sections were provided for the concept of time, money and measurement.
- A toolkit with three activities each for the concepts of time, money, and measurement were also prepared.

5.3 Concept of Time

- The intervention with regards to the concept of time was conducted. Significant improvements were observed in the post test scores which was conducted after the intervention. The most significant difference observed was with regard to the concept of identification of time and Recognition of AM and PM.

5.4 Concept of Money

- The intervention provided for the concept of money included practical exposures regarding money transactions. From the results it's evident that the children could gain better insight regarding the topic after intervention. Sharp increase in mean score was observed regarding awareness of various factors like denominations, correct transaction and concept the concept of balance amounts.

5.5 Concept of Measurement

- The concept is of high relevance in daily life yet the pretest scores concerning this concept were poor. The intervention was conducted using activity kit and workbook which significantly improved the post test scores. Significant difference was observed in the concrete concept of measurement were the pretest score of 1.3 improved to 2.9 after intervention.

Conclusion

The present study discusses on "***Development of an Activity Book for Instilling the Concept of Time, Money, and Measurement''.*** This study was proposed in order to assess the knowledge of the respondents on the concepts of time, money and measurement. A workbook and activity kit was prepared as a part of intervention.

From the study, it's apparent that the respondents had limited knowledge on the topic before providing with intervention and from the posttest results we can conclude that the students had great improvements upon their knowledge on the concept of time, money and measurement. This study points out that better classroom management and teaching strategies should be implemented by the teachers and school authorities to help the children gain better understanding on the concepts of time, money and measurement and learn about it more effectively.

Limitations

- A diverse group of students could be included
- More concept regarding to mathematics can be included in intervention

Recommendations

- The study put forth the following implications
- There is a need for development of kinesthetic based mathematical learning material
- The study can be extended covering larger group a

Work book and activity kit can be developed including more

BIBLIOGRAPHY

BIBLIOGRAPHY

- A textbook of child development, Rajammal .P. Devadas, N. Jaya , Macmillan India Limited, Pp: 35-36 ,41-48 ,1984
- Aerni, P. W. (2008). Teacher self-efficacy and beliefs for teaching mathematics in inclusion settings (Publication No. 3353198) [Doctoral dissertation, The College of William and Mary in Virginia]. ProQuest Dissertations Publishing.
- An introduction to child study 3rd edition ,Ruth Strang , The Macmillan company- New York ,Pp: 365-378 ,396 -401 , 1951
- Danya Hashem Advances in Medical Education and Practice 13, 275, 2022
- Frederiks, Anita and Sahay, Akshay (2021) Studying Maths. In: Academic Success. University of Southern Queensland, Toowoomba, Australia. ISBN 9780648769842 URL: https://usq.pressbooks.pub/academicsuccess/chapter
- http://iiuksagepub.com>files
- http://www.alchemer.com/resources/blog/ purposive -sampling
- http://www.tntech.edu>math's/what is mathematics
- http://www.voxio.com/blog/ research- methodology
- https://doi.org/10.1111/cdep.12249
- https://study.com/academy/lesson/teaching-kids-about-money-tips-lesson.html
- https://tophat.com
- https://www.educba.com/money-measurement-concept/
- https://www.readers.com/blog/education/learning-to-tell-time/
- https://www.researchgate.net/publication/221537828_Kinesthetic_learning_in_the_classroom
- https://www.researchgate.net/publication/341106102_Effects_of_Using_a_Variety_of_Kinesthetic_Classroom_Equipment_on_Elementary_Students'_On-Task_Behavior_A_Pilot_Study
- Kinesthetic Learning: Benefits and Careers for Hands-On Learners, By Indeed Editorial Team, October 6, 2021.

- L. S Blackman and R.P Capobianco " An Evaluation of programmed instruction with the Mentally Retarded Utilizing Teaching Machines" American Journal of Mental Deficiency, LXX(1965) , 262-269.
- Oliver P.Kolstoe , Holt Rinehart and Winston , Library of congress cataloging in publication data ,pp: 119-141 ,1976
- Real Life in Everyday and Academic Maths. Tomlin, Alison, 2002
- Schecter, D. E., Symonds, M., & Bernstein, I. (1955). Development of the concept of time in children. Journal of Nervous and Mental Disease, 121, 301–310.
- Schecter, D. E., Symonds, M., & Bernstein, I. (1955). Development of the concept of time in children. Journal of Nervous and Mental Disease, 121, 301–310. https://doi.org/10.1097/00005053-195504000-00001
- Teaching Educable Mentally Retarded Children 2nd edition
- The Kinesthetic Learning Style: Traits and Study Strategies , By Kelly Roell Updated on September 11, 2018.
- The teaching of secondary mathematics, Charles .H. Butter ,Flynwood Wren 2nd edition ,M C Graw – Hill Serier in education ,Pp 276 – 277, 1951
- William .M.Cruickshank " A Comparative Study of Psychological Factors Involved In The Response of Mentally Retarded and Normal Boys to Problems in Arithmetic" , unpublished doctoral dissertation (Ann Arbor : University of Michigan, 1946).

APPENDICES

APPENDIX

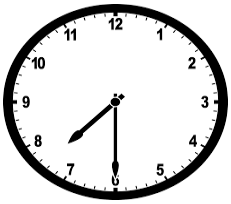
A pretest was conducted to evaluate the knowledge with regard to the concepts of time, money and measurement.

Name :

Grade. :

School :

1. If Anu reaches school at 9.15 am and the bell ring at 8.30 am. How late is she?
2. Complete the sentence using earlier or later and then work out the last two questions.



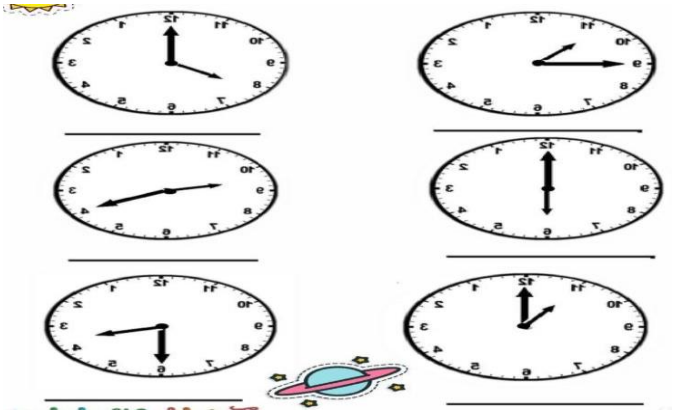
Tom

Alex

Teena

a. Alex went to bed ……. than Teena
b. Teena went to bed …….. than Tom
c. Tom went to bed ……. than Alex
d. …… went to bed the earliest
e. ……. went to bed the latest

3. Figure out the digital clock shows



4. Write am / pm against the following

a. Eating breakfast at 7.30 ……

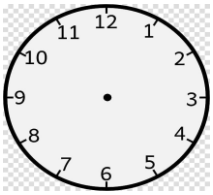
b. Good morning at 8.30 ……

c. Break time at school 11.45 ……

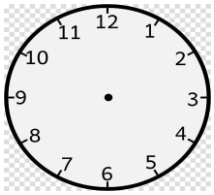
d. Play time after school 5.00 ……

e. 12.30 …….. in the night

5. Draw the hands to show the given time



04.45

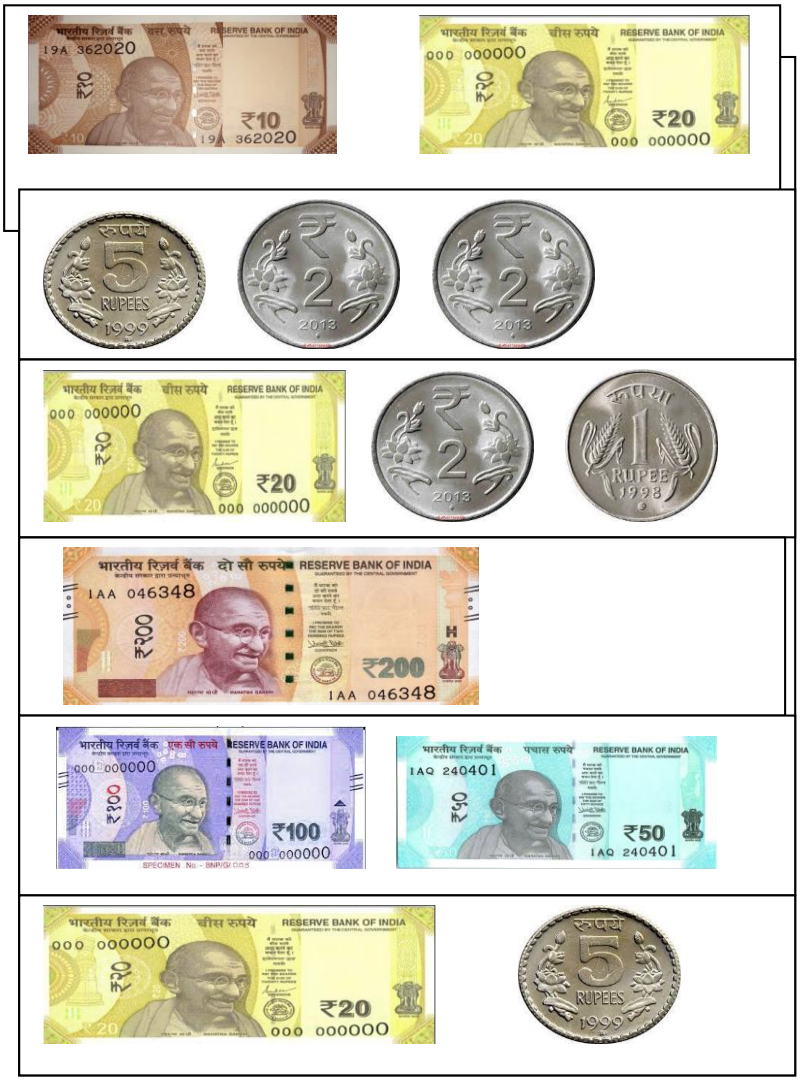


02.20

Money

1. Match the notes and coins

200
150
25
30
23
9



2. Add the following

+ +	110
+ +	50
+ +	85
+ +	80
+ +	100
+ +	55

a. How many 2 Rs coins make 20 Rs.
…….

b. How many 5 Rs coins make 15 Rs.
……

c. How many 2 Rs coins make 12 Rs.
……..

d. How many 1 Rs coins make 7 Rs.
……..

4. The following amount of money in figures

a. Sixty seven rupees

……

b. Seven hundred three

……

c. Four hundred fifty two rupees

……

5.Fill the box

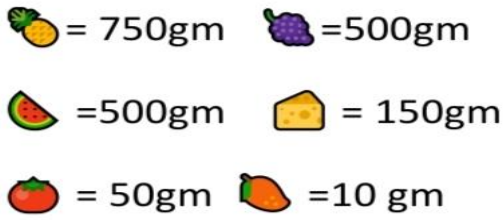
ITEMS	PRICE	AMOUNT PAID	BALANCE AMOUNT
Lays	5	10	
Cap	15	20	
Cupcake	8	10	
Yippee	12	15	
Biscuit	20	50	
Candy	10	20	

Measurement

1. Fill in the blanks by choosing the answer from the bracket

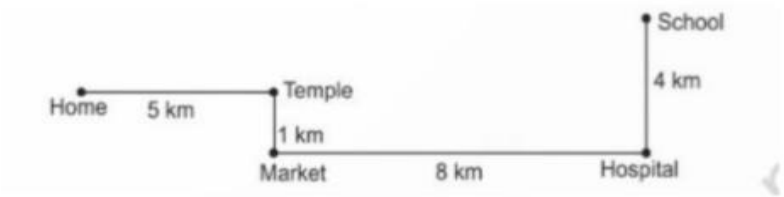
a. The capacity of a jug can be measure in …… (liter /milliliter)
b. 4 l = …… ml (4000/ 400)
c. The capacity of a medicine dropper can be measure in…… (liter/ milliliter)
d. 5000ml = ……. liter(5 / 10)
e. 25 ml = …….. ml (25000/250)
f. 32000ml =…… liter (32 / 3200)

2. Measure the weight



encil.

+ +	660gm
+ +	770gm
+ +	1050gm



4. Find the total distance covered by Arun from his school to home.

5. Measure the length of the given items.

a. .....

b. .....

c. .....

d. .....

e. .....

f. .....

Scoring for pretest

Scoring was based on simple analysis of the scores/ grades attained for the individual criteria. Three starts were awarded for each correct answer.

Scoring	Grade	Marks
Excellent	⭑⭑⭑	3
Good	⭑⭑	2
Poor	⭑	1