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# Effect of use of Instructional Materials on Learner Participation in Science Classroom in Preschool in Rongo Town

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***ABSTRACT** :Participation involves working with a partner or in a small group and brainstorming in order to create a stimulating learning environment. The role of instructional materials is to glue information into learners mind as what is seen is understood more than what is heard. During the formative years, learners add increasing qualities of knowledge to what is already learnt through explorations as they grow and expand horizon on the quality of content mastered. To widen mastery of concepts, rich leaning environment which is filled with a variety of instructional materials tend to foster faster acquisition of requisite skills for sustained learning and development. Such an environment should be enticing learners to observe, actively participate, make choices and experiment which in the process results in acquisition of additional knowledge. In the absence of reach learning environment modeled by the teacher to capture requisite skills, knowledge and competence. The purpose of the study was to determine the effectiveness of use of instructional materials on learners' participation in science lesson in preschool in Rongo Town. The objective of this study was to establish importance of grouping of learners on participation in science classroom. The study reviewed literature on effectiveness of instructional materials on participation in science classroom. This study was guided by experiential learning theory. The study involved a descriptive survey research design where qualitative data was collected. The design was non experimental soliciting information from teachers on the IM they use in teaching pupils in the pre-school. This study used stratified sampling since the population embraces a number of distinct categories of teachers' qualifications. The study found that instructional materials are not effectively used in the study area due to large of number of learners per class, lack of enough compound in ECDE centers, lack of learner's confidence, language barrier, teachers' negative attitude, lack of professional skills and domestic violence. The study recommended that ECE centres be increased to cater for the large number of learners per class. The study recommended that more teachers be employed and deployed to various ECDE centres in the study area.*

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## I. INTRODUCTION

Participation involves working with a partner, or in a small group, and brainstorming in order to create a stimulating learning environment Cooke (2001). Participation in ECE involves use of different mechanisms for the public to express opinions and ideally exert influence regarding political, economic, management or other social decision. Participation is affected by the appropriate and relevancy of IM used, such as containers, kites, textbooks, strings and blackboard Armstein (2004). For examples, a teacher uses textbooks to get information needed and explains on the blackboard, learners use water in containers and blow it using straws to produce bubbles Pre-schools handbook (2008). Blowing water to produce bubbles shows learners that there is presence of air in water and this enables them gain the skills of observation.

According to Obanya (2001), IM are didactic materials things which are supposed to make learning and teaching possible. While in views of Abdullahi (2003) they are materials or tools locally made or imported that could make tremendous improvement of a lesson if intelligently used. In the same vein, Isola (2010), referred IM as objects or devices, which help the teacher to make a lesson much clearer to the learner. In support of these views, Agina (2005), describe IM as concrete or physical objects which provide sound, visual or both to the sense organs during teaching.

The components to success in participation include availability and adequacy of IM Pre-school handbook (2008). In participation the teacher should ensure that materials to be used are enough for a particular science lesson by ensuring she/he has lesson plan before the lesson. According to Sasson (2009), the quantity of materials depends on the number of learners using them, organization of the materials, group arrangement, time management, and records management. Ensuring availability and adequacy of IM, the science lesson will be learner's centred instead of teachers centred and therefore motivate learners. This is because all of them will be involved in participation using the available IM instead of listening to the teacher explain in class. For example

Adequacy of IM means that the teacher should ensure that materials to be used for a particular science class are enough depending on the number of learners using them Jacinta (2003).

According to Preschool handbook (2008), teacher need to group learners according to their different abilities so that they can assist one another. The teacher will also need to be guided by the lesson plan, where less time should be used on introduction and conclusion while most of the time should be left to learners to do the task at hand. In participation in a science lesson, IM can be used for the learners to experience air by been engaged in activities such as flying balloons and kites. The movement of kites and balloons shows that there is air in a vacuum Esther (2009).Use of straws to blow soapy water helps produce bubbles, and these bubbles enable the learners to realize that there is air in water. These activities boost participation by involving all the learners during a science lesson Preschool handbook (2009).

Wales (2009) was of the opinion that the use of IM would make discovered facts glue firmly in the memory of learners. IM make them enjoy participating in science lessons and even make them repeat the activity during their free time. This enables the learners to keep the idea in their long term memory. According to Savoury (2003), a well- planned use of IM in lessons should do much to banish apathy. In addition, he said that selection of IM which are related to the basic activity of a lesson helps in in-depth understanding of such a lesson by the learners, in that it makes the lesson attractive to them, thereby arresting their attention and thus, motivating them to learn and participate. Participation helps teachers to discover their learners' potential, to realize their talents and raise their self-esteem. In turn this can help them to question their boundaries and explore issues, voice aspirations, identify needs and facilitate their learning and personal development Clark (2005).

According to Sasson (2007) a problem is an existing negative state of events that avoid in attaining the set goals, in this study the existing problem in ECDE centres in Rongo Town is lack of effective use of IM during participation in science lesson. IM play a vital role in participation in a science lesson. They form a focal point and attract attention, arouse interest and promote a desire to learn, supplement description and help to explain words and processes, give an accurate impression of the concept, illustrate relationships, promote retention and memory, help to consolidate what has been learned, help to save teaching time, make learner to have self -esteem, learners get motivated and have the idea of sharing in participation in science lesson Kothari (2001). The issue of concern in this study is the effort of IM on the general participation in Science lesson in public preschools in Rongo Town

## II. LITERATURE

According to Joyce (2001), during the preschool and kindergarten years, learners add to what they have learned in the early explorations as learners' expands. The environment plays a critical role, the richer the environment the more concrete opportunities there are for learners to learn by interacting with IM. Teacher's role is to create an environment that invites learners to observe, to be active, make choices and to experiment Judy (2001). He further states that IM are tools used for teaching and learning hence, supports the teacher in delivery of knowledge or help to emphasize specific knowledge. According to Thungu (2008), IM meet the needs of learners, fulfill the requirements of the subjects and facilitate the teaching and learning process.

Piaget (2009) states that merely using IM does not guarantee effective teaching, to make teaching and participation effective, the IM must be appropriately selected and used. ECE teachers must, therefore become familiar with the types of IM if greater value is to be derived from their use. He further states that the primary function of IM as a communication device is to serve as a more concrete reference to meaning than spoken or written word. According to Mwangi (2010), in the teaching learning process, IM serves functions of enhancing retention which makes learning more permanent. Equally, they stimulate and sustain interest in learning by providing first hand experience with the realities of the physical and social environment.

It is necessary to note that IM are important catalysts of social re-engineering and change in learners. It is obvious that effective instructions cannot be well accomplished without the use of instructional materials. The reason is not farfetched: advances in technology have brought instructional materials especially the projected and electronic materials to the forefront as the most radical tools of globalization and social development which have affected the classroom teachinglearning situation positively. Such technological breakthroughs as networked and non-networked; projected and non-projected; visual, auditory, audio-visual electronic materials are important landmarks in knowledge transfer. With them both teaching and learning become very pleasant experiences.

According to Phyllis (2011), instructional materials possess some inherent advantages that make them unique in teaching. For one thing, they provide the teacher with interesting and compelling platforms for conveying information since they motivate learners to want to learn more and more. Also, by providing opportunities for private study and reference, the learner's interest and curiosity are increasingly stimulated. Further, the teacher is assisted in overcoming physical difficulties that could have hindered his effective

presentation of a given topic. They generally make teaching and learning easier and less stressful. They are equally indispensable catalysts of social and intellectual development of the learners.

Bolick (2003) pointed to a good relationship between effective teachings and using of instructional materials. He argued that ". . . while some educators have been fascinated by the potential of instructional materials to enhance teaching and learning, teachers lagged behind in using instructional materials during teaching and learning. Others expressed doubts that instructional materials will ever incite teaching reform on participation". Instructional materials are integral components of teaching-learning situations; it is not just to supplement learning but to complement its process. It then shows that, if there must be an effective teachinglearning activity, utilization of instructional materials will be necessary Kibe (2011).

Ema (2004) assert that, "teaching equipment and materials have changed over the years, not only to facilitate teaching learning situation but also to address the instructional needs of individuals and groups". Instructional materials are made up of objects such as printed, audio, visual that aid in the successful delivery of lesson Chuba (2000). To this end, instructional materials are said to be objects or things the teacher can use in the classroom while teaching in order to ease off his teaching activities. However, instructional materials cannot address all the teaching-learning problems but it can go a long way in solving them, simply because, they are additional apparatus that can influence the reality of teaching and learning activities.

Joof (2005) explained that, "the concept of teaching aids has gone through several evolutionary stages from the simple aids, instructional technology, and media to communication and educational technology". This however, tells us that instructional materials are not just objects or equipments used during teachinglearning process but there those objects improvised by the teacher to make conceptual abstraction more concrete and practical to the learners. Instructional materials are the relevant materials utilized by a teacher during instructional process for the purpose of making the contents of the instructions more practical and less vague Chuba (2000).

Ajayi (2006) opined that, "without the teacher who is knowledgeable, instructional materials cannot create change and progress, the only time it begins to make impact is when the teacher begins to make use of it and allows it to take over its values". This portrays the professional attributes of the teacher and general knowledge or his creativity selecting, develop and use instructional materials effectively Esther (2009). Teaching and Learning Materials design, production and their use facilitate the teaching and learning outcomes. However, the success of using IM to meet the teaching objectives demands, effective use and communication skills of the teacher to satisfy instructional delivery.

Use of IM on LPSC in ECE: Global perspective

According to Feshbach (2006), the M.O.E and the culture in England and Israel employ preschool supervisors, construct class rooms and equip classrooms with a variety of IM. In addition each preschool teacher is provided with a budget for the purchase of IM. Groodland (2009) reports that some parts of USA adopted the Montessori method while others used college laboratory preschools. One common feature about the two was the need for abundant IM. Cass (2007) conducted a research with 400 preschool teachers in London on their role in schools to provide the child with a live day where he can be living ,learning and growing all the time. From the preschool teachers responses , they all agreed that the children benefit, greatly from the active methods found in the child centered teaching methods. Teachers responded that children have the opportunity to develop at their own rate, gain confidence independence and prepared for all round development .

Usuala (2006) under took a study entitled, Education Technology in Africa .In his study, he reiterated the effectiveness of IM in preschool in Africa, for instance containers, straws and kites. He also expressed the recognition of the importance of these instructional aids by a number of African countries. This led to the establishment of educational technology centres in a number of African countries.

Allen and Hart (2009) states that beside using touching materials the teacher must ensure that variety of the same are available in class for effective teaching and learning. They say that the materials and equipment presented in early childhood setting should be chosen to provide many and varied opportunities for learners to practice and master familiar skills through a variety of materials. Hainich (2010) further support the subject by saying that the primary function of a visual aids as a communication device is to serve as more concrete referent to meaning than spoken or written word. They therefore conclude that visual aid is more clearly and easily understood than verbal messages.

**Self-esteem, effective use of IM and participation in science classroom**

Self-esteem is a term in psychology to reflect a person's overall evaluation or appraisal of his or her own worth. Self-esteem encompasses beliefs (for example, "I am competent", "I am worthy") and emotions such as triumph, despair, pride and shame. 'The self-concept is what we think about the self; self-esteem, the positive or negative evaluation of the self, is how we feel about it'. A person's self-concept consists of the beliefs one has about oneself, one's self-perception, or, as Edina (2011) expresses it, "the picture of oneself". James (2009)

described self-concept as totally perception which people hold about him/ herself. It is not the "facts" about one-self but rather what one believes to be true about one-self Sarah (2007). Early researchers used self-concept as a descriptive construct, such as 'I am an athlete' Rose (2006).

Recent theories adapted self-esteem with more evaluative statements like 'I am good at tennis' Harter (2005). The latter statement not only describes the self, as the individual identifies herself or himself, but evaluates the self by putting worthiness on it. Therefore, self-esteem is defined as both descriptive and evaluative self-related statements. As a social psychological construct, self-esteem is attractive because researchers have conceptualized it as an influential predictor of relevant outcomes, such as academic achievement Marsh (2002) or exercise behavior Hagger (2001). In addition, self-esteem has also been treated as an important outcome due to its close relation with psychological well-being Marsh (2004). Self-concept (i.e. self-esteem) is widely believed to be composed of more than just perceived competence, and this leads to the relative degree of evaluative and cognitive beliefs of the construct.

According to Harter (2010) self-esteem is considered as the beliefs about perceived competence and self-evaluative in participation and handling of IM. Self-esteem can apply specifically to a particular dimension (for example, "I believe I am a good writer and I feel happy about that") or have global extent (for example, "I believe I am a bad person, and feel bad about myself in general"). Psychologists usually regard self-esteem as an enduring personality characteristic ("trait" self-esteem), though normal, short-term variations ("state" self-esteem) also exist.

**Group arrangement and participation in science classroom**

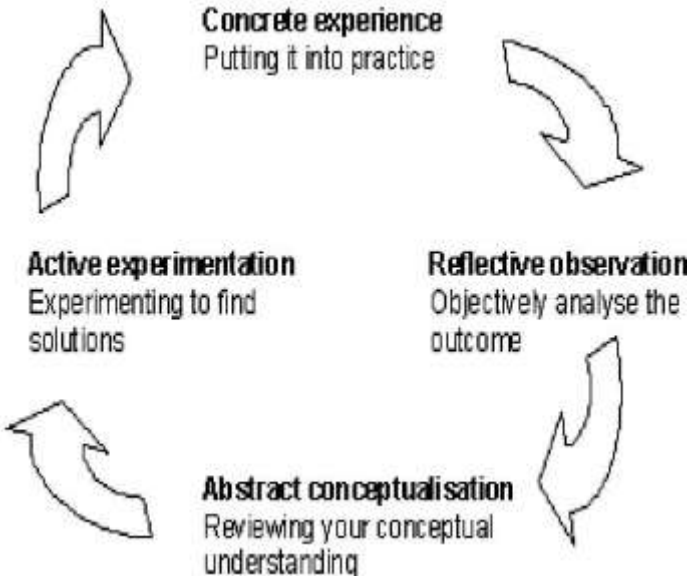
Pre-schools group can be an environment of fun if properly organized or arranged pre-schools learners are a busy bunch of people Norman (2001). The theory of Maria Montessori states that pre-schools group should be child sized. Shelving should be at such low level that the children can see every shelf, table and chair in order for them to be comfortable. Group arrangement in pre-schools centre setting can be perfected by quality of material used. Quality IM are essential in teaching about evolution and the nature of science and participation in classroom activities preschool handbook (2008). It is also important to consider the context within which specific materials will be used. Before selecting specific materials to teach evolution and the nature of science, it is important to identify criteria that can help evaluate school science programs and the design of IM.

**IM, motivation and Participation in science classroom**

According to Sasson (2009), motivation is a term that refers to a process that elicits, controls, and sustains certain behaviors. Motivation is a group of phenomena which affect the nature of an individual's behavior, the strength of the behavior, and the persistence of the behavior. Motivation enables learners to willingly participate using IM in science lessons. According to Groodland (2001), in the USA pre-schools classrooms are normally divided into smaller sections called centres. There are basic seven Centres namely Art, Blocks, Dramatic play, Science, Library, Manipulative and Music Tina Teacher (2008). Some areas like for dramatic play and blocks require larger space while areas such as manipulative and library require a quieter atmosphere for learning. The teachers ensure that the children can move from one activity to another without interfering with the other children's activities. According to Cobin (2001), in the U K, it has been realized that a carefully planned group arrangement is an effective way to prevent behaviour problems before they occur. Assigned group helps teachers assert their authority by enabling the teacher to separate rowdy children or pair up children who could help one another in group activities. Motivation is also defined as the force that activates, energises and sustains a specific goal-oriented behaviour Deci (2002). All behaviour of an organism is motivated (cause-effect), whether this motivation is known (conscious) or unknown (unconscious) to the organism Kinuthia (2009). It may also be attributed to less-apparent reasons such as altruism, selfishness, morality, or avoiding mortality (Alex 2008). According to Margaret (2010, motivation is important in participation as learners who are motivated participate more effectively. It will direct and regulate behaviour for example motivated learners work hard and focus their in achieving their goals. Motivation energizes and sustains behaviour. According to William (2001), instinct is derived from our biological make-up. All learners are born with specific innate knowledge about how to learn and use IM in participation in science lesson. These innate tendencies are preprogrammed at birth, they are in our genes, and even if the spider never saw a web before, never witnessed its creation, it would still know how to create one. Humans have the same types of innate tendencies. We are also born with particular reflexes which promote learning and participation in science classroom Michael (2011).

**Theoretical framework**

This study was guided by experiential learning theory. This theory was propounded by Kolb (2008). Kolb proposed a four-stage learning process with a model that is often referred to in describing experiential learning Beaty (2009). The process can begin at any of the stages and is continuous, that is there is no limit to the number of cycles you can make in a learning situation. In participation in science activity, learners begin from a step and then continue to the end of the activity. This theory asserts that without reflection we would simply continue to repeat our mistakes. This theory found that learners learn using IM in steps with the likelihood of developing one mode of learning more than another. The characteristics of this theory are through concrete experience, through observation and reflection, through abstract conceptualization and through active experimentation. For example, for learner to experience air in water, they observed bubbles from soapy water after they blow using IM like straws.

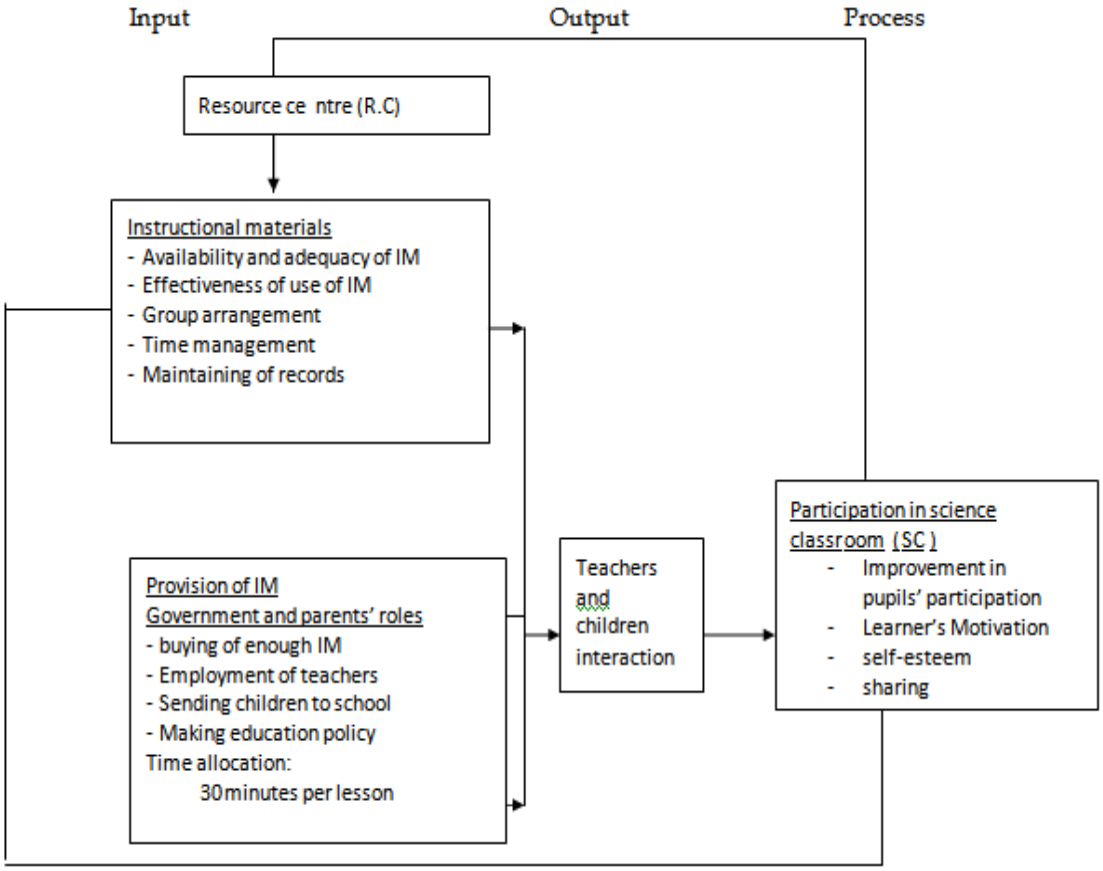



**Source:** (Kolb 2008), Experiential learning style model.

**Conceptual Framework**

A conceptual framework is used in research to outline possible courses of action or to present a preferred approach to an idea or thought Isaiah Berlin. Conceptual frameworks are a type of intermediate theory that attempt to connect to all aspects of inquiry (e.g., problem definition, purpose, literature review, methodology, data collection and analysis). Conceptual frameworks can act like maps that give coherence to empirical inquiry. Because conceptual frameworks are potentially so close to empirical inquiry, they take different forms depending upon the research question or problem. In a well-organized participation activity, learners' performance is easily achieved. This is so since in such a classroom, there is no unnecessary waste of time, essential classroom records are maintained. Well organized group arrangement enables the teacher to access the learners for individual attention. On the other hand, a poorly organized instructional material does not enhance understanding by the learners on what they are supposed to do as it lacks important components of participation. Teachers have duty to effect good participation in order to maintain a successful learners' performance. These teachers do so by using relevant instructional material in each activity. In Rongo Town, participation are carried by different IM in terms of activity to be carried out. This study conceptualizes that pre-schools centres should only use IM with the high standard for the best participation in science classroom. Perfect participation will help to maintain and improve performance in science classroom in preschools centres.

**Perceived framework of interrelationship between IM and participation in science classroom**




The conceptual framework is based on the relationship between the independent variables and the depend variables.

## III. RESEARCH METHODOLOGY

The study involved a descriptive survey research design where qualitative data was collected. The design was non-experimental soliciting information from teachers on the IM they use in teaching pupils in the pre-school. According to Dalen (2009) the design enables the researcher to collect data to assess current practices for improvement. According to James (2009), descriptive research is used to obtain information concerning the current status of phenomena to describe what exists with respect variables or conditions in a situation. Manion (2005) state that survey studies collect data with the intention of determining the relationships existing between specific events or variables. This study used descriptive survey design to collect and analyze data to determine the relationship between independent valuables and dependent valuables and further establish the effectiveness use of IM in participation in science classroom. The target population basically comprised all the preschools teachers in Rongo Town. There are 60 teachers in all public pre-schools centers in Rongo Town. Data was collected from the sample of these teachers. The collected data from field work through the use of questionnaires, interviews and observation schedule was coded first to enable the analyses. The results were tabulated using tables.

## IV. RESULTS AND DISCUSSION

**Use of Instructional Material and participation in ECE science lessons**

Response on use of instructional material in ECE. The question sought to find out if respondents know the reasons for the use of IM. IM play a vital role in participation as a topic can be supported and help learners to glue the information leant in their mind. Out of 30 respondents, 15 (50%) indicated that IM help gain and hold the attention of the learners engaging them in the activity given on participation in science lesson Esther (2009). 11 (37%) respondents indicated that handling the materials practically glue the information to learners' minds. Out of 30 respondents, 1 (3%) indicated that IM clarify the relationships between material objects and concepts stating that, if relationships are presented visually, become much easier to comprehend Lenah (2010). IM can help teachers to avoid many words to explain sound, object, or function, and instead plays a recording of

the sound, shows picture of the object, or presents a diagram of the function. Consequently, the learners learn faster and more accurately, and this saves time in the process Kirenge (2008). Out of 30 respondents 2 (7%) stated that, good IM can help solve certain language barrier problems Esther (2009). Consider the continued expansion of technical terminology in everyday usage. This, coupled with culturally diverse backgrounds of today's learners, makes it necessary for teachers to be precise in their choice of terminology. Words or terms used in an IM should be carefully selected to convey the same meaning for the learners as they do for the instructor Nyokabi (2009). They should provide accurate visual imagined make learning easier for the learners while using IM on participation in science lessons.

**Instructional materials, grouping and participation in science lesson**

The results posted by the sampled respondents on grouping of learners, use of IM and participation in science Class room. The question sought to determine the importance of grouping learners which help learners to grow relating with each other while using IM on participation in science lesson and therefore assist each other in sharing of ideas, and create friendship which avoid conflict in the absence of the teacher. Out of 30 respondents, 5 (17%) indicated that collaborative learning involves active learning by encouraging sharing of ideas that avoid boredom. According to Jane (2010), when learners get actively involved in the materials deeper learning and understanding usually results. Further 12 out of 30 (40%) respondents indicated that Learners feel less isolated and alone. Learners feel less isolated especially at the beginning of the activity in participation, they have support at the where to start stage Esther (2009). The results in table 4.4 shows that 3 out of 30 (10%) respondents indicate that depending on the activities, components are divided and workloads shared Kimaku (2001). The activity is done much faster and become easier. Less time is used in a certain activity and the learner manages to handle different tasks within a short time Edward (2008). The research shows that a group of 10 (30%) of the respondents indicated that working successfully in groups assists in development of transferable skills Emily (2009).

**Types of grouping of learners during participation in science lesson**

The summary of response on IM, grouping of learners and participation in ECE science classroom. The question sought to find out if learners are grouped while participating in science lesson. Grouping encourage sharing of skills that enable learners to use IM effectively as slow learners gain from quick learners. Out of 30 respondents 16 (53%) said that grouping is based on learner's ability stating that, ability or homogeneous grouping combines learners with similar academic needs, allowing teachers to adjust or maintain the pace of instruction according to group progress. According to Esther (2009), this provides struggling learners access to additional reinforcement, while high achievers may pursue enrichment activities like independent research. Ability grouping is appropriate during participation science lesson or after assessments, when there are apparent gaps in learners understanding. The results show that out of 30 respondents 9 (30 %) indicated that grouping is done by mixed ability stating that mixed ability, or heterogeneous groups, includes learners of all academic backgrounds, abilities, and readiness levels. This ensures diversity and high academic standards for all learners Edward (2009), therefore provides faster learners opportunities for skill modeling and peer teaching, while slower learners benefit from exposure to their teammates' higher level thinking skills. Mixed ability grouping is most appropriate when used in conjunction with other activities that support the needs of individual learners, particularly those who are academically gifted or low ability Nicholas (2010). Out of 30 respondents 2 (7%) said that it is done through learners selected. Learner-selected groups place the responsibility of creating cooperative teams entirely on learners. This method works best in smaller classes with members who know each other well. Teachers may add structure by asking learners to write down names of those they would most like to work with, and organizing them before informal activities like using IM on participation in science lesson. Learner -selected groups also form effective teams which function to support participation and review with classmates who have missed material due to absence. The results illustrate that 3 (10%) out of 30 respondents indicated that grouping is done randomly they stated that this method ensures a blend of personality types, abilities, genders and ethnicities, as learners are not grouped using pre-planned criteria. rather, they are organized by birthdays, numbers, favorite animals or shirt colors. As a result, learners do not feel labeled as slow or fast learners on participation in science lesson, and are free to collaborate without preconceived expectations of their performance. Random grouping is most appropriate for impromptu collaborative work from which learners benefit from exposure to diverse perspectives.

**Number of learners per class**

The number of learners per class in the study area. The study sought to find out the number of learners per class. The number of learners per class is very important in order to ensure that teachers get the right enrollment that is manageable.

Out of 30 respondents 20 (67%) said they handle over 40 learners in one class while 7 (23%) stated that they have over 30 learners and 3 (10%) stated that they have over 50 learners which is hectic in terms of using the available IM. They stated that they improvise some of the IM in order to cater for the large number of learners in one class. Concentrating on the weak learners individually is another challenge brought by the large number per class**.**

**Types of IM used and participation in science classroom**

Types of IM used and participation in science classroom by activity. The question sought to find out if IM used per activity is relevant in order to achieve the goal set while participating in science class room. The results showed that one of the practiced activities in science lesson is experiencing air. This was given by 21 (70%) of the respondents who concentrated on giving answers concerning the activity indicating that the IM used in participation are containers, straws and water. Learners are given task of coming up with a container full of soapy water, use straws to blow in order to observe bubbles coming out and therefore gain the knowledge that water has air. It shows that out of 30, 9 (30%) of the respondents indicated that the activity they practice while participating in science class room is properties of matter indicating that IM used are stones, leaves, papers and corks. The learners put the IM provided inside a container full of water to find out what can float and sink in the water. Appropriateness of instructional materials on participation in ECDE science lesson**.** The response of the sampled respondents on the appropriateness of IM on participation in ECE science lesson. The question sought to find out whether IM avoid boredom and make the learners enjoy the lesson enhancing understanding and remembering of crucial information concerning the lesson. Out of 30 respondents, 29 (97%) said that learners enjoy using IM while 1 (3%) of the respondent stated that they are yet to realize whether they enjoy or not. According to Esther (2009) learners enjoy using IM as boredom is avoided by ensuring that they are all engaged in a certain activity rather than being seated and listening to the teachers explaining on the blackboard. Effectiveness of use of IM and LPSC Elaborates on the reasons for ineffective of use of IM on participation in science classrooms. The main objective of the study was to find out the reasons why IM are not effectively used. This was brought up by the issue of learners not achieving the goal at the end of participation in science classroom. Out of 30 respondents, 5 (16%) indicated that the reasons for not using the IM effectively was the large number of learners per class. The ECE center consist of learners under 10 years therefore teacher need to concentrate on each to ensure that the desired concept is glued into the mind. This means that if the number of learners is large, the teacher lack sufficient time to explain to each on how to use the IM during participation in science classroom. The large number of learners resulted from the introduction of free primary education. Lack of enough field for the centres was a reason stated by 5 (16%) of the respondents. The compound set aside for ECE centres are very small compared to the number of learners enrolled per class annually. For example while experiencing moving air by the use of kites, learners do not get enough space to run in order for the kites to be blown by the moving air. Out of 30 respondents, 2 (7%) indicated that lack of learners confidence was a reasons leading to lack of effective use of IM during participation in ECE centres. Some of the learners are shy and fearful while using IM alone during participation which in turn leads to intimidation by others learners. Some of the learners comes from rich families and are not taught how to handle things by their own they always rely on their house helps. Language barrier was a reason indicated by 2 (7%) of the respondents. Speaking different languages resulted from the intermarriages in the study area make it difficult to progress or to achieve the intended objective. Teachers use English and Kiswahili while explaining during participation in the study area due to the fact the some learners are half cast been born by parents from different communities hence use Kiswahili at home, others are brought up from families using mother tongue since their childhood. Teachers find it difficult to communicate to those who are not yet fluent in English and Kiswahili. Out of 30 respondents 11 (37%) indicated that teacher's negative attitude was a reason leading to lack of effective use of IM on participation in science classroom.

This was brought up by the issue of lack of teachers' motivation. ECE teachers are not employed by government and the amount of money parents pay, do not commensurate with the teachers' workload. This leads to lack of morale in explaining fully while assisting learners during participation in science classroom. Domestic violence was a reason indicated by 2 (7%) of the sampled respondents. Sometimes domestic violence separate parents during the night leading to one partner and children encounter sleepless night and in the morning children are sent to school hungry and tired.

During participation, such learner cannot concentrate and even sleep without completing the assigned task. Out of 30 respondents, 3 (10%) indicated that lack of professional skills was a reason for lack of effective use of IM. This was evidenced by the fact that 5 respondents were untrained. Lack of these skills deny any teacher the knowledge required in imparting learners on how to handle IM during participation in science classroom. Professional skills are the specific skills that are required for any person who is working. These skills have to be worked on like going for a diploma course in ECE.

Displaying of IM and participation in science classroom

Illustrate on when the teachers display the IM while handling ECDE learners on participation in science classroom. The question sought to establish whether teachers explain before the start of the activity since explaining fist will give guideline on what to do.

Out of 30 respondents 25 (83%) stated that they display during the lesson while 5 (17%) of the respondents indicated that they display during the lesson. None of the respondents display the IM at the end of the lesson. Displaying of IM should be done either at the start or during the lesson in order to direct learners on how to use them. For example teacher should explain to the learners on how to use straw to blow in soapy water to experience the presence of air in water before they start using them.

## V. CONCLUSIONS

Following the results of the study, it can therefore be concluded that there was lack of effective use of IM in the area. This was evidenced by the fact that respondents posted different opinions which showed the reasons for this problem as follows: Large number of learners per class. The ECE center consist of learners below 10 years therefore teacher need to concentrate on each to ensure that the desired concept is glued into the mind. This means that if the number of learners is large, the teacher lacks sufficient time to explain to each on how to use the IM during participation in science classroom. The large number of learners was as the results of introduction of free primary education by GOK. Lack of enough playing ground for the centres, the compound set aside for ECE centres are very small compared to the number of learners enrolled per class every year. For example while experiencing moving air by the use of kites, learners do not get enough space to run in order for the kites to be blown by the moving air. Lack of confidence, some of the learners are shy and fearful while using IM alone during participation which in turn leads to intimidation by others. Some of the learners comes from rich families and are not taught how to handle things by their own they always rely on other persons like house helps. Language barrier, barrier to communication resulting from speaking different languages that make difficult to progress or to achieve objective.

Teachers use English and Kiswahili while explaining during participation in the study area due to the fact the some learners are half cast been born by parents from different communities hence use Kiswahili even to the children, others are brought up from families using mother tongue since their childhood. Teachers find it difficult to communicate to those who are not yet fluent in English and Kiswahili. Teacher's negative attitude was a reason leading to lack of effective use of IM on participation in science classroom. This was brought up by the issue of lack of teachers' motivation. ECE teachers are not employed by government and the amount of money parents pay, does not commensurate the workload. This leads to lack of morale in explaining fully while assisting learners during participation in science classroom. Domestic violence separate parents during the night leading to one partner and children encounter sleepless night and in the morning children are forced to attend school while hungry and tired.

During participation, such learner cannot concentrate and even sleep without completing the assigned task. Lack of professional skills was a reason for lack of effectiveness use of IM. This was evidenced by the fact that 5 respondents were untrained. Lack of these skills deny any teacher the knowledge required in imparting learners on how to handle IM during participation in science classroom. Professional skills are the specific skills that are required for any person who is working. These skills have to be worked on like going for a diploma course in ECDE

Following the results of the study it can also be concluded that grouping of learners is very important. This was evident as the respondents indicated that they knew importance of grouping in different ways. The grouping has benefited the learners to some extent of development of transferable skills as indicated by some of the respondents. The study concluded that availability and adequacy of IM assist a lot in improving pupil's participation as learners are exposed to the real world of learning and enables them in understanding and retention of information as what is seen is more remembered than what is heard. Finally the study concluded that management of records has effects in the improvement of pupils' participation in science classroom. This was evident as the respondents indicated that records help teachers to be conversant with feeble areas of the learners hence strive to enhance it, they further indicated that records management enable the teacher to group according to abilities hence quick learning through confidence rather than intimidation of slow learners by quick learners.

## RECOMMENDATIONS

The study recommends that ECDE centres be increased in number to cater for the increasing enrollment. The ECE center consist of learners below 10 years therefore teacher need to concentrate on each to ensure that the information is glued into the mind. This means that if the number of learners is large, the teacher lacks sufficient time to explain to each on how to use the IM during participation in science classroom. On the same issue, the study recommended that GOK employ ECE teachers in the study area.

The study further recommended that more playing ground be purchased to enable learners be participating fully especially while experiencing moving air by the use of kites as they need to run over a large area so as to note the effect of the moving air. Learners should be encouraged to handle IM even in the absence of teachers to gain confidence. Parents of the learners who are shy should be improvising IM at home and encourage learners to continue practicing what they had learnt.

The study recommended that teachers should ensure that learners with language barrier get information taught in class by the use of language they understand better as English and Kiswahili is introduced slowly by slowly. Domestic violence was a reason indicated by 2 (7%) of the sampled respondents.

The study recommended that affected parents with domestic violence be encouraged to seek some counseling experts on domestic violence to avoid disruption of learning in ECDE centers in the study area. Finally the study recommended that the 5 untrained teachers and those with certificates improve on their professional skills by going for Diploma course in ECE as lack of these skills deny any teacher the knowledge required in imparting learners on how to handle IM during participation in science classroom.

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