The Social Sciences 3 (2): 66-72, 2008
ISSN: 1818-6125

Sustaining Children's Interest in Mathematics Via Interactive Activities

A.A. Popoola
Department of Curriculum Studies, Faculty of Education, University of Ado-Ekiti, Nigeria

Abstract: The interest of young people in formal education should be secured early if the purpose of schooling in inculcating skills and know-how is to be achieved. Mathematics being serious and abstract in nature can be enjoyed by children if their nature is taken into cognizance in the planning and delivery of classroom lessons.

Key words: Children interest, classroom environment, games, mathematics

INTRODUCTION

The need to sustain the interest of children in Mathematics is very obvious. The energy, time and resources that go into the Universal Basic Education (UBE) scheme are so huge that it is unthinkable that the scheme could fail. The possibility of failure is, however, there. Failure is when the objectives/goals of the scheme are not met. One of the objectives of the scheme is to ensure the acquisition of the appropriate levels of literacy, numeracy, manipulative, communicative and life skills…….needed for laying a solid foundation for life-long learning.

Two ways to evaluate the success of the scheme are: the extent to which the pupils can pass prescribed mathematics tests (or accomplish specified mathematics tasks) and the ability to transfer the knowledge of mathematic across other life situations. Records, however, show that more children fail mathematics than they do in other subjects. Yet children are natural mathematicians. The Maths Academy Online (1997), reported that children enjoy counting and are fond of showing off their ability with numbers. They also, enjoy building blocks, tinker with toys and engage in other spatially challenging activities and even abstractions can occasion serious and meaningful discussions with them. Yet by the time they are half way through primary school, most children have developed reduced taste for Mathematics. Is there a way in which schools kill children's interest in Mathematics? The purpose of this study is to argue that children's interest in Mathematics can be better sustained if schools adopt strategies that follow the natural inclination of children more than is present practice.

PRESENT CLASSROOM PRACTICE

The practice in our Primary Schools is not strange to anyone. Most of the time, children work on textual or symbolically presented tasks. They carry out these tasks by writing a sequence of texts which ultimately lead to an answer (a terminal text). In presenting the tasks to the pupils the teacher usually verbalizes what he is presenting on the chalk board or flashcard or textbook and finally the teacher responds to the efforts of the pupil by a tick or crosses, award marks together with a brief written comment. In an analysis of the mathematics activity of the pupils, Earnest (1997) posited that the classroom is a complex, organized social form of life which includes:

- Persons, interpersonal relationships, patterns of authority, pupil-teacher roles etc.
- Material resources, including writing media, texts, furniture, an institutionalized location and routinized times.
- The language and register of school Mathematics which include:
  - The content of school mathematics; the symbols, concepts, conventions, definitions symbolic procedures and linguistic presentation of mathematical knowledge.
  - Modes of communication; written and oral codes.

A close observation of classroom practice would indicate that the form which those activities take and the environment in which they take place may be far from the behaviour of children. Typically, a task is a text presented by someone in authority (the teacher), specifying what to do and expecting some level of performance. A correct response from the pupil's elicits encouragement and an incorrect response a frown. All of the time, the strategy is learning by rules. Learning of rules may have their advantages which have been summarized by Skemp (1976) the rules cannot be lost by a more enjoyable process. Teachers know (or ought to know) that children love to play especially in the early stages of primary education and so the recommendation has always been that most learning materials should be

presented to them in more playful forms. There are many things that children of today love to do: they would rather watch a video game, play football, read cartoon or watch animated films, run around, play war games etc, but would not want adults present. The classroom environment and teaching strategies should take these into consideration.

Classroom environment: The present classroom arrangement where pupils sit in rows/columns facing the chalkboard is inadequate. There should be more room for pupils to move around and it should be possible to re-arrange sitting conditions to vary with the prevailing activity. This suggests a mathematics laboratory for kids where the pupils can play the mathematics.

The physical feature of the classroom notwithstanding, serious considerations should be given to the issue of:

- Interpersonal relationship
- Patterns of authority
- Pupil-teacher roles
- Toutinized times.

Apart from the issue of routinised times, one consideration on the three other issues is based on the assumption that most of the time, children would rather be left to their own devise. The teacher therefore, should be more of a facilitator and guide the pupils to an understanding of the mathematics concepts imbeded in their play. On the issue of routinised times, present practice is that every subject has a period on the time-table. But every other subject lesson is also a time to show for example the 2ness in 2. The attention span of children in any given activity is short, so varied activities are usually designed in any one lesson for them. This idea could be extended to the whole day and the teacher should always draw attention to the mathematics embedded in all the daily activities in the classroom.

The language and register of school mathematics: The major considerations here concern the issue of mathematics content and the mode of communication. Typically, the teacher-pupil dialogue takes place at two levels: spoken and written. More emphacy should be placed on spoken mode of communication. Pupils should be allowed to talk about what they are doing as the activities are being carried out especially among themselves. This implies that group work should be predominant and arguments encouraged among them. Hopefully this should ensure:

- Opportunity for pupils expression of their innocent viewpoints.
- Opportunity for group deliberations, work and discussion among the pupils.
- Opportunity for the teacher to observe the development of each pupils progress.
- Pupils access to learning resources.
- The selection of tasks appropriate to the needs of the pupils.
- Opportunity for the teacher to know how the pupil thinks.

Use of cartoons: The use of cartoons can interest primary school pupils and advantage can be taken of this to teach mathematics. Cartoons are diagrammatic images representing children playfully teaching mathematics to each other. Examples of this, reproduced from Davis (1997) are shown in Fig. 1-4.

Figure 1-4 speak for themselves. The pupils are presented with human like characters interacting in cartoon like formats to deal with the problem of making mathematics relevant to the lives of school children. The characters, who are always having fun should provide a radical departure from the current ever serious features of present mathematics texts in the schools. One understanding of children is that if allowed, they could go ahead and provide more fun characters among themselves to 'teach' the various topics.

The use of cartoons in this forms assist the teacher to simplify the perspectives, compress the details and because speech and thought bubbles are used, the thinking of the pupils could be directed on the tasks. One distinct feature of cartoons is that they are not just pictorial, they talk.

Games: Games constitute another strategy by which children can imbibe mathematical knowledge in an enjoyable form. Work in this area has not just started, Collins and Ferguson (1993) in responding to the question of what learning communities do offered that learning communities generate new knowledge by participating in certain defined culture patterns or forms.

According to them, completed forms contain new knowledge and adhere to defined structures accepted by the community. The game resides in the set of rules or conventions that must be followed in generating a given epistemic form. Three types of games were suggested:

Structural analysis games: Indicating the components or elements of a system.

Functional analysis games: How are the elements in a system related to each other?

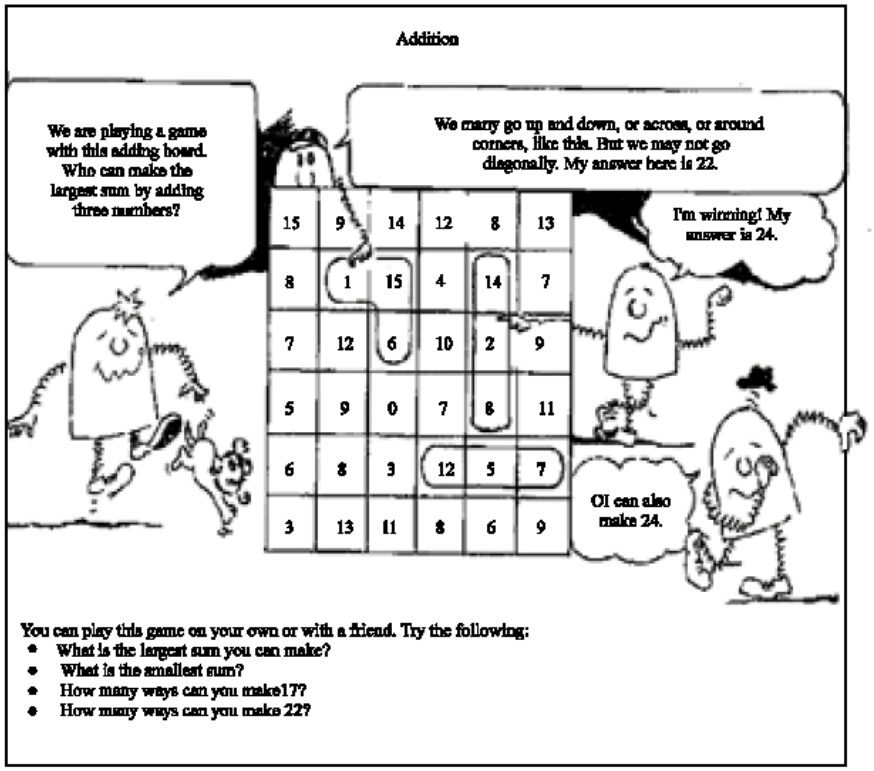

Fig. 1: Addition

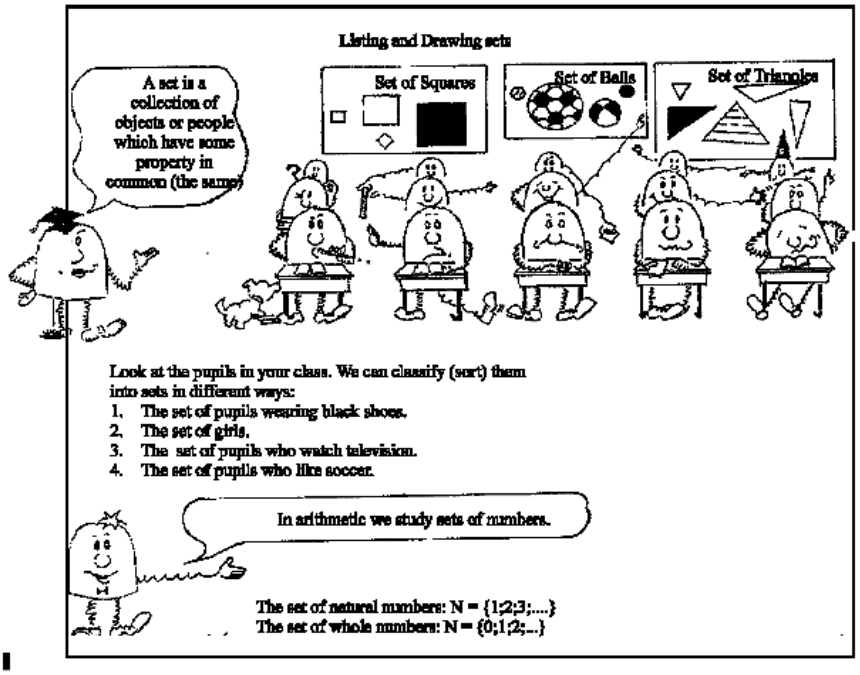

Fig. 2: Listing and drawing sets

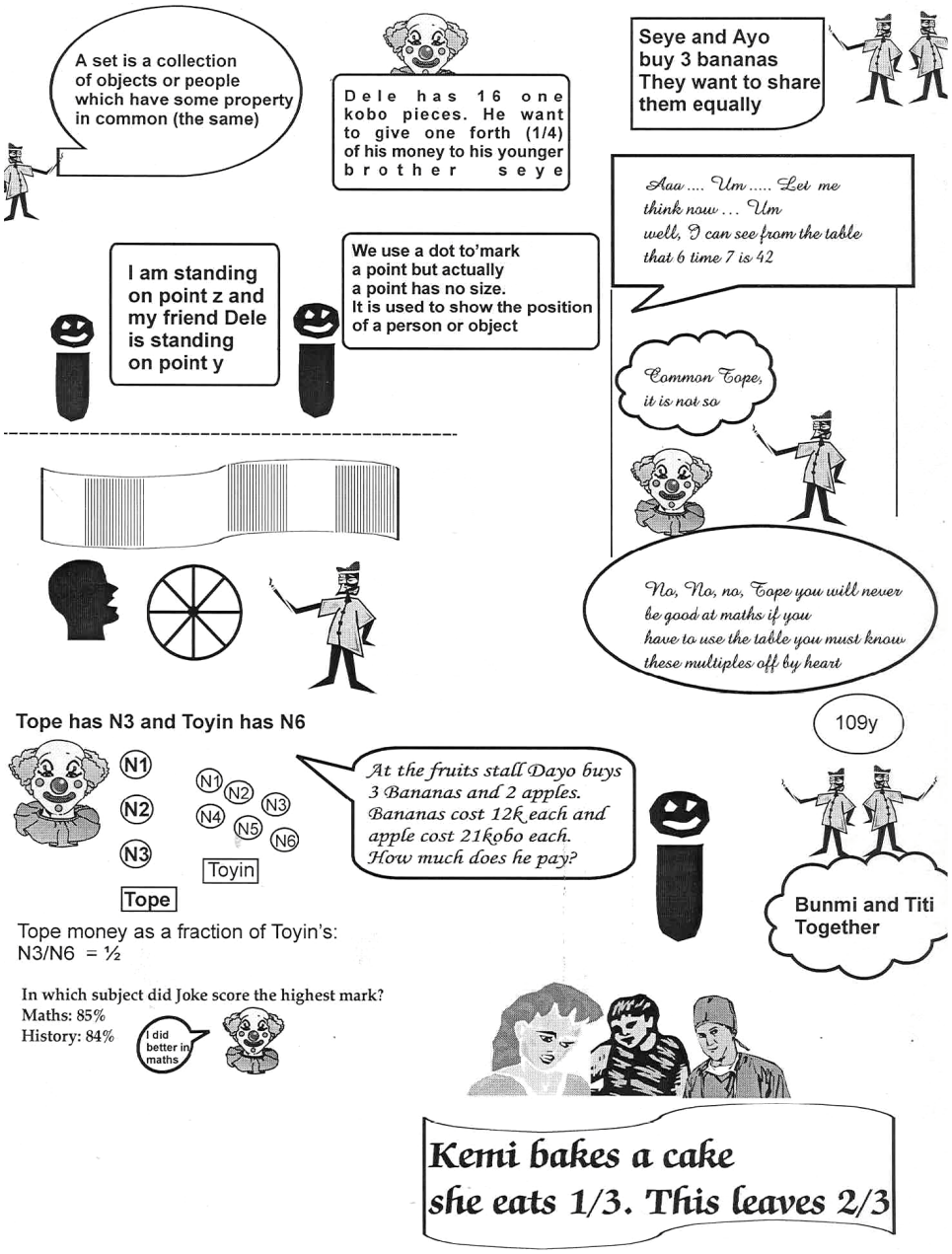

Fig. 3: Adapted form Zain Davis (1997)

Process analysis game: How does the system behave? The structural analysis game appears to be more amendable to mathematics learning among children, some categories of these games include:

List: Make a list of answers to a specific question. e.g., list the elements in a set.

Temporal decomposition: Make a list of sequential stages of a process……

Compare and contrast: Compare salient features of entities e.g., compare and contrast the characteristics (features) of geometric shapes.

Cost-benefit: Identify the pros and cons of choices e.g., (Fig. 5a-m).

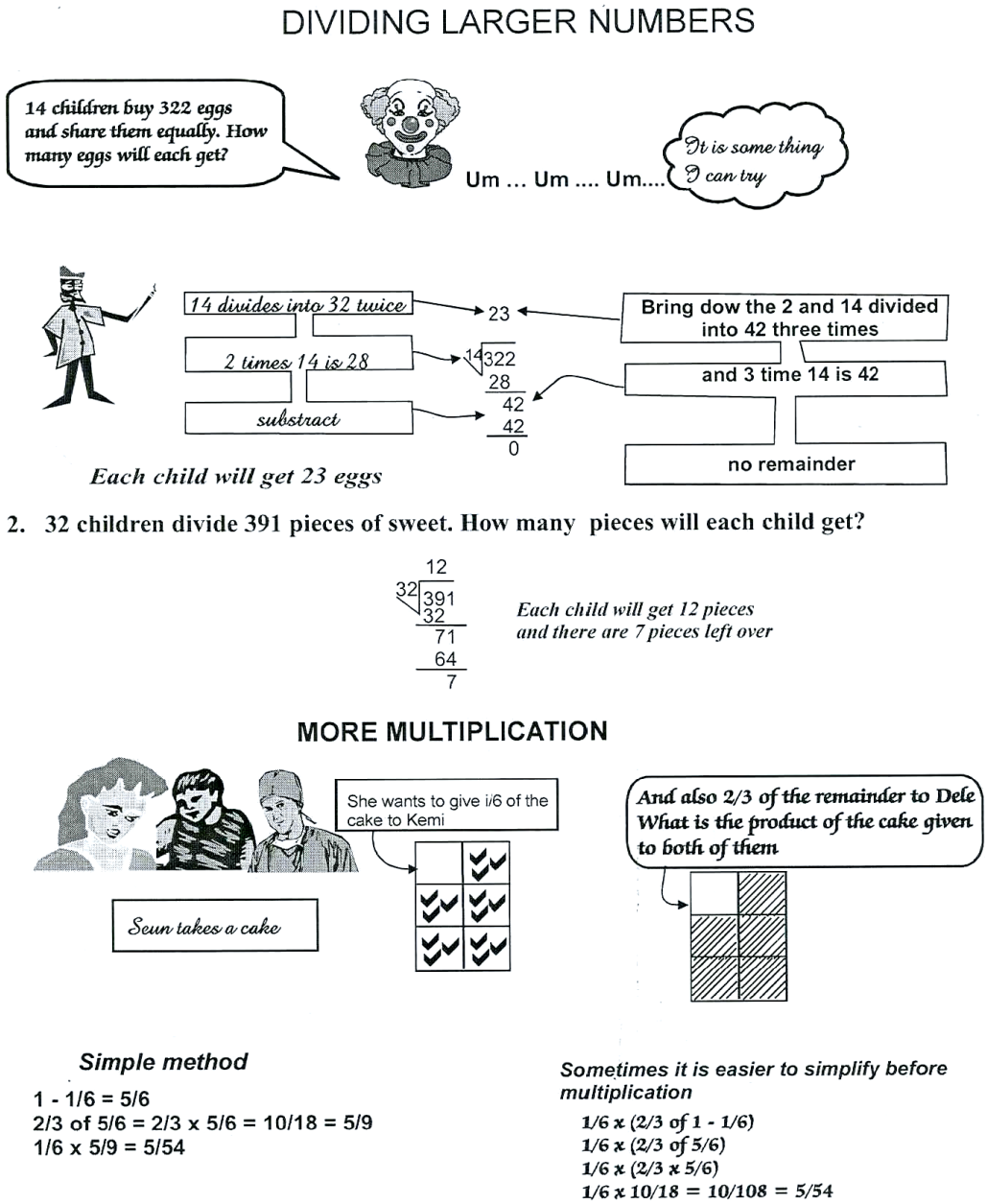

Fig. 4: Adapted from Zain Davis (1997)

Engaging children in these games not only set them in competition among themselves, they are also challenged to think out appropriate contributions. This is because the games are not without rules. According to Collins and Ferguson (1993), the playing of these games exihibit the following characteristics:

- There are constraints to playing. For example, to play the list game, the items listed must be similar but distinct from each other. The list should be comprehensive (i.e., nothing important can be left out) yet brief and succinct.
- Players occasionally may transfer from one game to another. For example, the list game may shift to a hierarchy game when the structure of list elements begins to assume a form containing sub-categories e.g., odd and even numbers in a set.

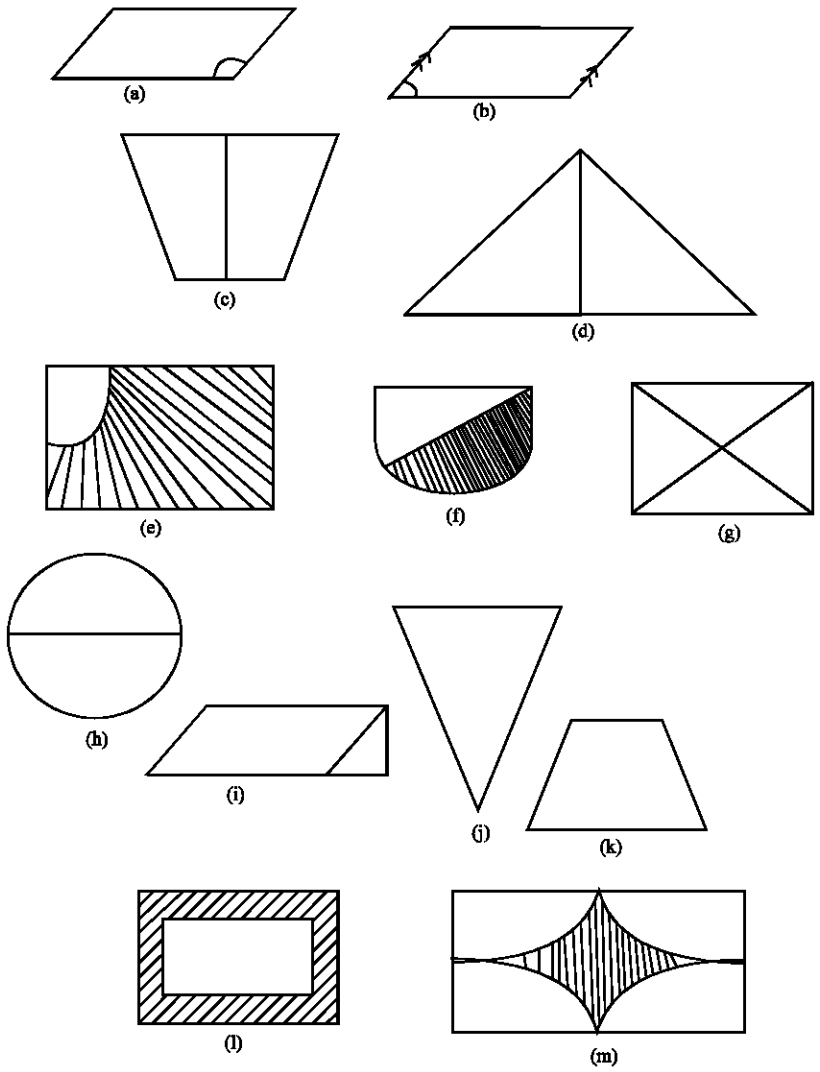

Fig. 5: The prots and cons of choices

- Whole numbers. The list of games is inexhaustive and teachers and pupils can think out various challenging games for classroom use.

RECOMMENDATIONS

- The various games can be put on charts.
- Book publishers should also show more innovations in their illustrations in primary mathematics.
- The teachers should become more resourceful in the classrooms.
- Teachers of mathematics at the school level should hold talks among themselves to share experiences on what pupils enjoy more.
- They should also exhibit greater confidence in themselves by being ready to try new ways of doing their work.
- The SUBEB officers must organize training workshops for mathematics teachers from time to time where varied strategies and ideas can be discussed for possible adoption and implementation.

CONCLUSION

All children could enjoy mathematics through out their stay in school if schools will let them. The best ways to allow pupils to enjoy their learning activities is to tailor classroom activities along their natural inclinations.

REFERENCES

Collins, O. and Ferguson, 1993. Children's Conception and Mathematics. Children Math. Behav., pp: 2.

Maths Academy Onine, 1997. Writing for a Maths Class. Platonic Realms Minitexts.

Paul Ernest, 1997. Mathematics Activity and Rhetoric: A semiotic Analysis of An Episode of Mathematical Activity. Philosophy of Mathematics Edu. J., pp: 10.

Skemp, R., 1976. Relational Understanding and Instrumental Understanding Mathematics Teaching.

Zain Davis, 1997. Gender and Mathematical Ability: A Semiotic Reading Textbook. Philosophy Math. Edu. J., pp: 10.