Mathematical Concept in Folk-Games of Bengal

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Abstract

The term mathematics comes from the Greek word 'máthēma' and also ancient India contributes a lot in this field. From the beginning of the civilization men invent the way of living as per their necessity depends on the availability of the resource. This growing system of the society is called folk culture. Every society has a strong level of folk culture towards the civilization. Very early of the life the children like to play with their friends in a normal social situation without any special treatment. This type of games is called folk-game. During playing some figure is drawn on the land provisionally those are nothing but the mathematical figures. There is also some calculation solved easily in the folk way. In this paper we would like to show that the children go through the mathematical concept during the playing innocently.

Keywords: Folk-Games, Mathematical Figure, Calculation

1 Introduction

Every society is formed by their specific culture using the common equipment from their own place of the universe. Day to day experience is the most unique source of their development towards the civilization. Without the special drive of cultural efforts, the group of people those are called folk used to know that various way of the living is only the way to survive from the disfavor atmosphere. Every part of their living depends on the immense personal experience as well as the experience of the group or folk. It is very interesting that they are using and plays some role of various so far intelligence innocently. To survive a discomfort atmosphere their folk culture was the only way of living by which their flow towards the front both biologically and culturally.

2 Folk-culture

Traditionally the group of people use some equipment, believe the rituals, tell some stories, invents some way of living and other parts of the living in the society, these types of cultural is made by the association of the people. This is folk culture. A cultural heritage of a race or a nation mostly depends on their folk culture. During the pass of the American Folklife Preservation Act (Public Law 94-201) by the U.S. Congress in January 1976, it is said about the folk that,

"...[Folklife] means the traditional expressive culture shared within the various groups in the United States: familial, ethnic, occupational, religious, regional; expressive culture includes a wide range of creative and symbolic forms such as custom, belief, technical skill, language, literature, art, architecture, music, play, dance, drama, ritual, pageantry, handicraft; these expressions are mainly learned orally, by imitation, or in performance, and are generally maintained without benefit of formal instruction or institutional direction."
(94th Congress, H. R. 6673, January 2, 1976)
According William Bascom to William Bascom major article on the topic there are "four functions to folklore". As-
• Folklore lets people escape from repressions imposed upon them by society.
• Folklore validates culture, justifying its rituals and institutions to those who perform and observe them.
• Folklore is a pedagogic device which reinforces morals and values and builds wit.
• Folklore is a means of applying Social pressure and exercising Social control.

3 Folk-Game

Usually, playing a very old instinct of the animal family. So basically, the younger are more interested for

playing. They often use to play games both indoor or outdoor without any international strong rules, it is also truth that there is not any hard and fast rule at all. This type of games is called folk-game. We would like to find out the concept of mathematics in the very common folk games of the undivided Bengal. Concept of circle is related to the drawing of the very common play named 'Sita Haran' and 'pata Lukano'. Fiction is found in the 'Ekka-Dokka'. In this finding we would like to explain about the mathematical concept from the various angel of the folk games. Hare one game 'Ekka-Dokka' is taken for the example.

4 Ekka-Dokka

Ekka-Dokka is one of the popular folk-game of Bengal. This popular game is played by both male and female children. It is famous in all of the areas of undivided Bengal. A geometrical figure is drawn on the ground by using straight lines before the starting of the game. It may be rectangular in shape containing the ten number of blocks. The figure may be as below-
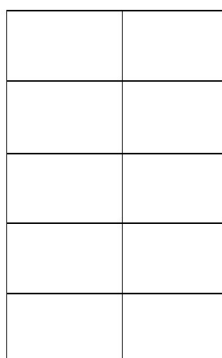
Another way it may be the square in shape containing the ten number of blocks. The figure may be as below-
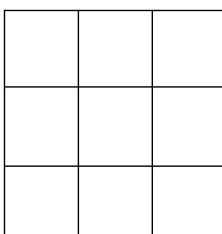
The instrument of the play is the broken pitcher. The player throws the broken pitcher and the player jumps with a single leg uttering 'kit-kit', a local version of mother tongue only one time breathing. If anyone unable to collect the broken pitcher and complete the step in all the block by one breathing and uttering 'kit-kit', it will be disqualified. Only after the completion of a single round stepping in all the block of the drawn chart on the land in a single breathing, the concerned player can occupy a single block and that very block will be marked by cross. The figure is as below-

(separate colors for separate player)

The conceptions of mathematics are coming in various way. Firstly, the drawn figure is either rectangular or square shape. This is fully related to geometry. The little player always tries to maintain every blocks of the drawn figure is the same in the shape and measure. It is also found that the players who are able to draw the figure properly on the ground are get preference to do it. Secondly, the conception related to fraction are also growing from the result of the playing. Every player has got chance to occupy the blocks. During the jumping in a single breathing, the player ale to enjoy rest in theirs occupied blocks where the cross marks are already existing one or more. Also, a block may be shared with other. A player gets one ninth part of whole containing the nine-block figure. This may be express as –

Occupied parts $= \frac{1}{9}$

Similarly, $\frac{1}{9}, \frac{2}{9}, \frac{3}{9}, \ldots \ldots \frac{9}{9}$

The upper limit is $\frac{9}{9} = 1$ or whole

It is very interesting to show that when the numerator and denominator are same, it is the whole. It may say another way; all parts of a fraction are equal to whole.

It can be explained by to ways. The conception of fraction is as usual comes and on the other hand they use to know the process of addition as well as the multiplication of the fraction are also implemented in it.

As for example, if one player able to occupy two blocks, it can explain-

$$\frac{1}{9} + \frac{1}{9} = \frac{2}{9}$$

If a payer gets all parts of the figure, this is shown as-

$$\frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} = \frac{9}{9}$$

or whole

Similarly, if a player gets 5 blocks, it can be shown in the form of multiplication.
As for example-

$$\frac{1}{9} \times 5 = \frac{5}{9}$$

Or a player gets 9 blocks, it can be shown in the form of multiplication.
As for example-

$$\frac{1}{9} \times 9 = \frac{9}{9} \text{ or whole.}$$

Thirdly, the whole figure of the drawing is a geometric shape either rectangular or square. The figure containing nine blocks is a quadrilateral symmetrical in two-dimensional space. So, the children have a chance to start the playing from the any side of the diagram. We like to show the following drawing for four players demarcated by four colour.

The figure containing ten blocks is a bilateral symmetrical in two-dimensional space. So, the children have a chance to start the playing from only two specific opposite sides of the diagram. We like to show

the following drawing for two players demarcated by four colour.

5   Calculation

Riddle is the most interesting folk-literature of our folk culture. But it is also used in the form of indoor playing. In Cambridge Dictionary we find,
". . . a type of question that describes something in a difficult and confusing way and has a clever or funny answer, often asked as a game."
During riddle minimum two children are needed for question and answer. An interesting thing is that the responder is highly confusing or searching answer to win the game by the supply the answer, but the new or reasonable answer is not accepted. The folk answer is also fixed in the concern folk society. As for example, a common riddle of south-western Bengal is placed here,
"TIN TERO MODHYE BĀRO,
CHĀR DIYE PURON KARO.
ETE ĀCHE SWĀMEER NĀM,
ĀMI JĀBO NANDIGRĀM."
Some words note from Bengali-
Tin- Three (3)
Tero- Thirteen (13)
Modhye- In
Baro- twelve (12)
Char- Four (4)
Diye-By
Puron Karo- Fill in
Ete ache swamir nam- Husband's name is in it.
Ami jabo Nandigram- I shal go to Nandigram.
Hare the calculation is-
Tin Tero
= 3 x 13 = 39
Modhye Baro
= + 12
Total = 39 + 12 = 51
Char diye puran karo

= + 4
Grand total is
= 51 + 4
=55

The nearest name of the calculation (Panchannana in Bengali) is Panchanan which is the name of the said husband.

It is seeming that this is a small calculation, but a rich culture of mind of a rural student during the playing.

6   Conclusion

During playing the children do not know what is the importance of the game. The sense of physical fitness a player deals a healthy life by playing, but modern trends of multidisciplinary approach of knowledge, human physiology, psychology, medicine and so many others field is related to the games and sports. We would like to show that a hidden concept of mathematics is enriched in the mind of little children. It may be applicable in the play way method of teaching in the lower class.

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