Mathematical Concept Exploration Using Turiyam Cognition

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Abstract

Recent time Turiyam set is considered as one of the prominent tool to explore unknown or undefined objects. The elementary school is one of the suitable examples where child explore each of the unknown objects. In this stage the child develop its Turiyam cognition based on its consciousness. It can be characterized as true learning (t), false learning, (f), uncertain learning (i) and last liberal or unknown or not required at this stage which can be explored later (l). The child refused to learn any topic can be found via 4-($t+i+f+l$) in case of four independent events otherwise 1-($t+i+f+l$) in case of dependent events. These unknown or liberal examples which include child quantum cognition need Turiyam logic. This paper tried to explore those concepts and examples in this paper.

Keywords: Consciousness; Four Valued; Non-Euclidean; Turiyam Cognition; Turiyam Set; Unknown.

1. Introduction

Recently several applications of Turiyam set are introduced for knowledge processing tasks [1-3]. In this process a problem is addressed by several researchers that Turiyam depends on Human quantum Cognition and its consciousness rather than unconsciousness [4-12]. It used to expand based on human awareness. It means Turiyam consciousness based on exploration rather than fixed value of unconsciousness set. One of the suitable examples is teaching in primary school [13]. There are many children which Turiyam consciousness and its exploration is fast. The blind child also explores his/her learning based on Turiyam consciousness. There are many real life unknown problems used to be explored via Turiyam consciousness [14-17]. The path of robotics [18-19] or self driving [20] is another example where Turiyam cognition requires [21]. The reason is that it requires four dimensional spaces for data exploration [22-24]. It needs some new mathematics and exploration [25] as three dimensional set [26] has many issues discussed by Rivieccio [27]. Cricket is one of the suitable examples for Turiyam consciousness where Decision Review System is totally based on consciousness of the player. The maintenance of run rate higher than other teams to qualify the tournament is another example for Turiyam cognition. The Run rate criteria are totally beyond the win, draw or loss of the match. DRS (Decision Review System) system is another example of Turiyam set which is totally based on cognition of the captain. The performance in warm up match is also one of the examples of Turiyam Consciousness. There are many matches between India-Pakistan, Pakistan-Bangladesh, Pakistan-Afghanistan is beyond the Win, Draw or Loss. Some cricket matches among Weak or Strong team already known that which team will win. It is based on human Turiyam Cognition. There are many matches in ICC tournament which win, draw or loss does not impact the qualification of a given team. To understand that this match has no meaning and watching these matches are waste of time can be called as Turiyam cognition. It means the Turiyam set provides a way to deal with unknown objects and its exploration based on expert Turiyam Consciousness. The teaching is one of the best examples for Turiyam cognition. In this paper,

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author focused on providing some useful exampled for exploring Turiyam consciousness in child. One of the scientific reasons is that the Teaching and Learning is totally based on consciousness of the person rather than ambiguity and uncertainty. Many logics are unknown to the child as compared to teacher. In this case the learning of logics and its exploration is totally based on teaching consciousness of the faculty.

To explore this some of the examples for primary school is considered in this paper. It will help in incorporating the Turiyam logic in schools.

Rest of the paper is organized as follows: Section 2 provides basics of Turiyam set and its mathematics in Section 3. Section 4 provides some of the examples of elementary school followed by conclusions, acknowledgments and references.

2. Preliminaries

Turiyam set provides a way to explore the unknown or undefined objects based on Human consciousness. It means the representation of Turiyam set is based on time which changes the interpretation of data at given phase of time. It can be characterized as follows [1-3]:

1. The first state is the waking state. This state provides a way to represent those events which everyone is aware in their daily life. It can be represented as true membership value as (*t*).
2. The second state can be considered as dreaming state which is false state. It can be denoted (*f*).
3. The third state is the state of deep sleep or unconscious state (*i*).
4. The last one is super consciousness or full awareness state. It can be represented as Turiyam or Liberal State (*l*).

The last one liberalization state is much related to child. It is the doctrine of temporal state. It contains several ontological states for an object's and its persistence based on defined time. It means the children extend his/her awareness in another dimensions based on true, false or third state. It means the Turiyam Set may contain 4-tuple: truth (*t*), Indeterminacy (*I*), falsity (*f*), and liberalization (*l*). Each of the dimensions is independent to each other as: $-4 \leq t + i + f + l \leq 4$. The Turiyam value 0 represents the universal neutral values, -4 represents universal false cases and +4 represent the universal truth cases i.e. $T = \{\langle x : t, i, f, l\rangle : x \in \xi\}$. It means this set contains a true, a false, an indeterminacy membership values and a liberalization values which can be characterized independently in [0, 1]. $T = \{<k; t_t(k), I_t(k), F_t(k), l_t(k)>: k \in \xi\}$. In case of dependent can be represented $0 \leq t + i + f + l \leq 1$. The last one is refusal state which can be computed as 4-(*t*+*i*+*f*+*l*) in case of four valued independent. It means the refusal degree depends on types of independency in case of three independent values the refusal degree will be 3-(*t*+*i*+*f*+*l*) and vice versa. It can be observed in cricket data sets. In case of two independent event the refusal degree can be computed as 2-(*t*+*i*+*f*+*l*) . In case of dependent event or normalized event the refusal degree can be computed as follows: 1-(*t*+*i*+*f*+*l*). It can be observed in any self driving or robotics path or social network analysis. In the next section the preliminaries about Turiyam logic is given for understanding the elementary school child awareness and their exploration.

3. Turiyam Logic in Teaching and Learning

The precise analysis of Turiyam logic and its introduction in Teaching Learning process is one of the most difficult tasks. It depends on teacher and its awareness that students are learning or not. Turiyam means explaining the concept beyond its true, false or ambiguity ways. The teacher explains the mathematical concepts via advanced drawings, pictures, or various shapes to explore the Turiyam awareness of child. The goal is to make the students familiar with the given logic using several examples.

There are many examples which a student remember (*t*), does not remember (*f*), uncertain (*i*) and unknown (*l*) about them. The last one the student refused to remember 1-(*t*+*i*+*f*+*l*). The last one student used to explore based on their Turiyam Cognition. It happens in case of recognizing the images. A student can easily recognize the friends of his/her class (*t*), he/she not from their class (*f*), uncertain about his/her class (*i*), unknown to them (*l*). The student refused to recognize 1-(*t*+*i*+*f*+*l*). In similar way the student learning can be characterized for true image (*t*), false image (*f*), uncertain image (*i*) or unknown image (*l*). The teacher used to explore the unknown image in the class in case

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most of the students unaware about it. The teacher needs to use his/her Turiyam consciousness that each of the students may learn it. Teacher need to explain the difference among true image, false image, distorted image or unknown. It can be explained via images drawn by students as:

True shape: The pattern can be found at each regular interval

False shape: There is no pattern

Uncertain Shape: The pattern repeated irregularly.

Unknown Shape: It needs awareness or daily exercise for to explore its pattern.

Turiyam consciousness plays an important role in Teaching and Learning. The reason is impossible to explore some unknown tools, cars, or models. The student or teacher used to explore and learn by his/her consciousness. The teaching is totally based on Turiyam logic as everyone follows same syllabus. The preparation of presentation is true, false, uncertain or nothing is based on consciousness of the teacher and target students. In the next section some of the examples given based on Turiyam logic.

4. Illustration of Turiyam concept in Teaching Learning

In this section, some of the real life examples are shown for exploring the Student Turiyam awareness. It can be taught via keeping hand or pencil on the given figure by teacher as follows:

Example 1: (Flying Animal and its Characterization)

(A) Flying Animals (*t*): The examples of flying animals can be explained as Birds, insects, and bats. These are animals which cannot walk. One of the images of the flying animals can be represented to the students for their awareness as shown in Figure 1.

Figure 1: The Example of Flying Animal (1, 0, 0, 1)

(B) Animals do not fly (*f*): The examples of animals that do not fly can walk only as the ostrich, emu, rhea, kiwi and cassowary. One of image of not flying animal can be represented to the students for their awareness as shown in Figure 2.

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Figure 2: The Example of Animal does not fly only walks (0, 0, 1, 0)

(C) Uncertain animal who do fly and walk both (*i*): The examples of animals that can walk, fly and swim as Cockroaches, Ducks. One of image for these types of elements can be represented to the student as shown in Figure 3.

Figure 3: The Example of Animal which does both walk and fly (0, 0, 1, 0)

(D) Animal who do not know anything (*t*) : The small child of any animals do not know anything. They are like small pupils of students. They used to learn and explore things to walk or fly based on their Turiyam consciousness. One of the images can be represented for student understanding that these Childs are like you which explores Turiyam cognition. Hence you do not know anything means nothing to worry. Even other species explores things based on their Turiyam cognition.

Figure 4: The Example of Animal who does not aware of any thing (*t, i, f, l*)

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Example 2: (Shape Characterization)

In this example the teacher can take some shapes and ask the students to characterize them based on its pattern as given below :

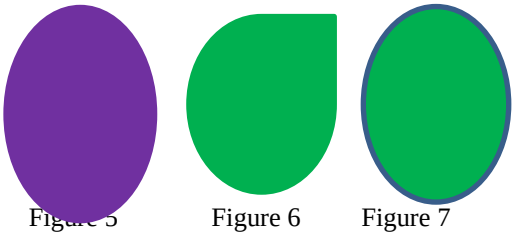

Figure 5 Figure 6 Figure 7

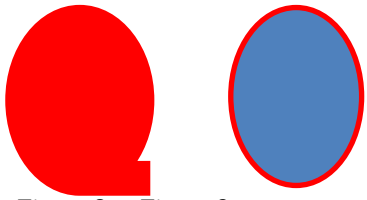

Figure 8 Figure 9

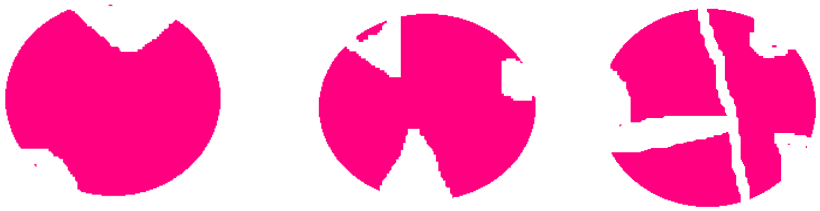

Figure 10 Figure 11 Figure 12

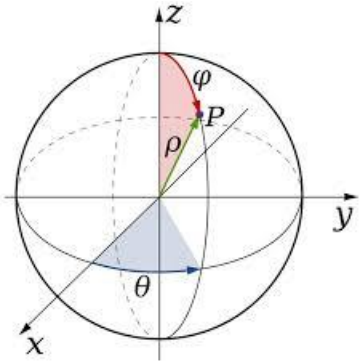

Figure 13

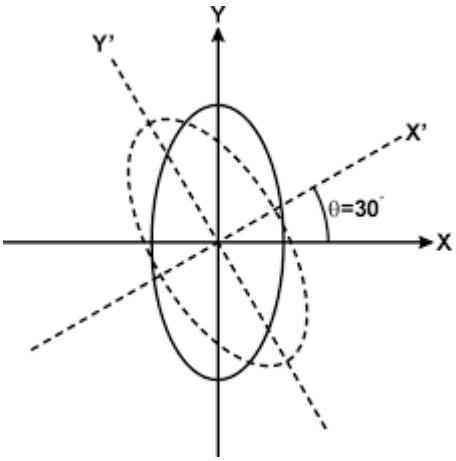

Figure 14

It can be observed that the Figure 5, Figure 7 and Figure 9 represent a circle. Figure 6 and Figure 8 looks like circle but not circle. Figures 10, Figure 11, Figure 12 are uncertain as some vacant space exists. The last Figure 13 and Figure 14 is unknown and not in syllabus of the children. It will be explored later based on their Turiyam intelligence (*t, i, f, l*) at the given stage.

Example 3: (Bird or Animal Characterization)

Figure 15 represents real butterfly image. Figure 16 represents not butterfly image whereas Figure 17 and Figure 18 are uncertain image of Butterfly. Figure 19 and Figure 20 are unknown which need exploration about butterfly image. It just looks like Butterfly but unknown images. It can be explored by Turiyam cognition of Teacher that Figure 19 is butterfly knot and Figure 20 looks like Butterfly sketch rather than real image. Hence

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to draw the butterfly image one needs to think consciously (*t, i, f, l*) about its image for butterfly characterization rather than uncertainty.

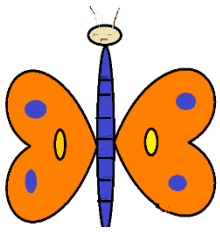

Figure 15

Figure 16

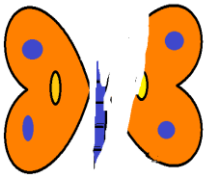

Figure 17

Figure 18

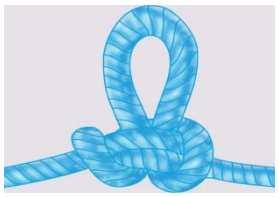

Figure 19

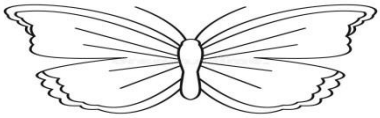

Figure 20

Hence Turiyam provides a way to characterize any type of pattern which will be helpful for the child.

Example 4: (Teaching Learning of the Pattern)

Turiyam helps in teaching learning to develop the consciousness of the child while characterization of any pattern. The Pattern can be considered as periodic repetition of anything. Figure 21 represents a pattern. Figure 22 represents not a pattern. Figure 23 represents uncertain pattern. Figure 24 represents unknown pattern.

▲▲▪▪▲▲▪▪ (it is a pattern)

Figure 21: It is a Pattern (1, 0, 0, 0)

▲▲▲▪▪▲▲ (it is not a pattern)

Figure 22: It is not a Pattern (0, 0, 1, 0)

▲▲ ▪▪▲▲▪▪

Figure 23: It is an Uncertain Pattern (0, 0, 1, 0)

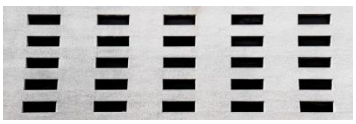

Figure 24: It is an Unknown Pattern (*t, i, f, l*)

Example 5: (Characterization of Color and its Pattern)

The characterization of coloring and its pattern can be taught to students based on Turiyam cognition. Figure 25 represents a pattern. Figure 26 represents a pattern of color changing after two dots. However Figure 26 does not follow this pattern after two dots but contains same color. Figure 27 is uncertain pattern as contains many colors and its pattern with indeterminacy. Figure 28

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represents unknown pattern which need exploration. Same time Figure 29 represents the case of color blindness. This type of child cannot understand the color blindness pattern. It is unknown for them. They need different way to explore these types of pattern based on Turiyam cognition.

Figure 25: It is a Pattern (1, 0, 0, 0)

Figure 26: It is not a Pattern (0, 0, 1, 0)

Figure 27: It is Unknown Pattern (0, 1, 0, 0)

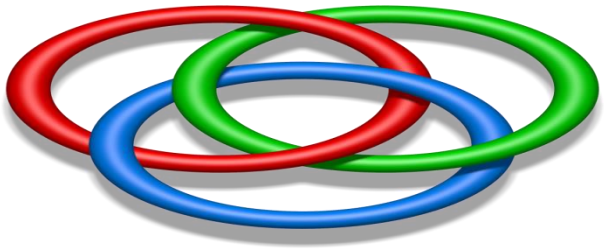

Figure 28: It is an Unknown pattern (*t, i, f, l*)

Figure 29: It is an Unknown Pattern due to color Blindness (*t, i, f, l*)

Example 6: (Characterization of Human and its Types)

The characterization of human and its types is totally depends on Turiyam Cognition of the child. Figure 30 represents image of Man. Figure 31 represents image of Woman. Figure 32 represents image of Transgender. Figure 33 represents image of unknown human.

Figure 30: It represents a Man (1, 0, 0, 0)

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Figure 31: It represents a Woman (0, 0, 1, 0)

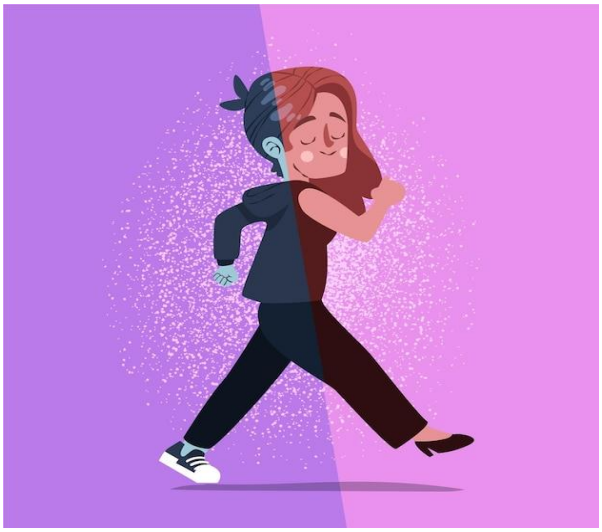

Figure 32: It represents a Transgender (0, 1, 0, 0)

Figure 33: It represents Half Human and Half Lion which is Unknown (*t, i, f, l*)

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Example 7: (Animal Characterization Based on Turiyam Cognition)

The characterization of animal is one of the major tasks for the students. It is totally depends on Turiyam cognition of Teacher's and their learning process. Figure 34 represents the Male Lion having more hairs. Figure 35 represents Female Lion having fewer hairs. Figure 36 represents a Figure to characterize both Male and Female Lion walking together. Figure 37 represents Transgender Lion walking or sleeping alone. Figure 38 and Figure 39 represents unknown Lion can be called as Chimera. It is half Lion and half animal or Human. This type of image and its exploration require human Turiyam Cognition for better understanding. In this way the Tuiryam cognition provides a way to characterize the any animal.

Figure 34: It represents a Male Lion (1, 0, 0, 0)

Figure 35: It represents a Female Lion (0, 0, 1, 0)

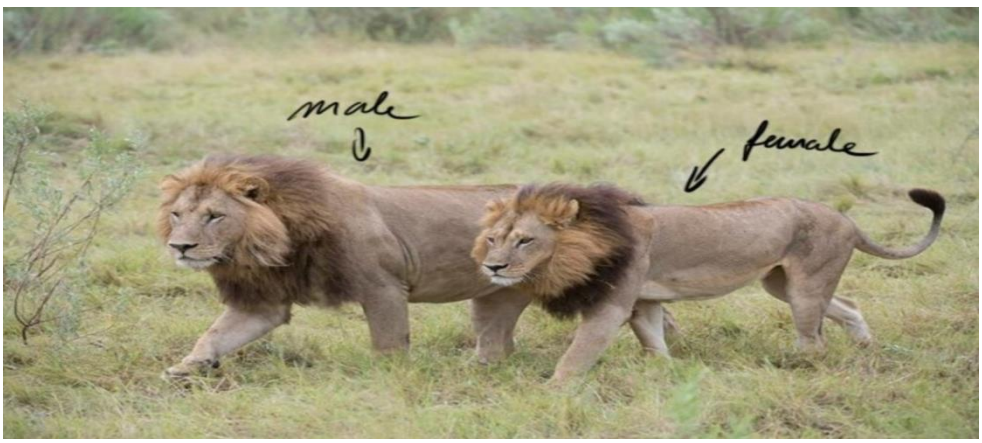

Figure 36: It represents difference among both Male and Female

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Figure 37: It represents Transgender Lion (0, 0, 1, 0)

Figure 38: It represents Unknown Lion can be called as Chimera(*t, i, f, l*)

Figure 39: It represents Unknown Lion or Lion Man can be called as Chimera (*t, i, f, l*)

Example 8: (Learning Steps Based on Turiyam Cognition): In case the teacher wants to teach the Learning steps using the images. Here again the Teacher need to explain via his/her Turiyam Cognition. Figure 40 represents the true learning or reading position for a child. Figure 41 represents false learning process which happened unconsciously. Figure 42 represents show off or uncertain learning process which happened unconsciously. The last one is learning of blind people based on his/her Turiyam cognition as shown in Figure 43. The blind people require Turiyam cognition to learn or explore the mathematics or other books.

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Figure 40: Awake or True Learning using Consciousness (1, 0, 0, 1)

Figure 41: It represents False Learning which happened in Unconsciousness (0, 0, 1, 0)

Figure 42: It represents show off or uncertain learning in Unconsciousness (0, 0, 1, 0)

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Figure 43: The Blind people learning requires Turiyam Cognition (*t, i, f, l*)

Example 10 (Friendship Characterization) : The friendship characterization of one of the major issue for the child due to less consciousness about people behavior. It can be easily taught by the teacher using the Turiyam cognition. It means child need to explore the people and their behavior for making the friendship. It can be explained in simple way via images to understand. Figure 44 represents image of Friends. Figure 45 represents image of not friend. Figure 46 represents uncertain friendship. One cannot decide that the close friend of any two person. The last Figure 47 represents about unknown friendship. You help anyone without knowing about them. He/she become your unknown friend. In case he/she need to find you again then they have to explore about your address or background.

Figure 44: The two students as Friends which happened in Consciousness (1, 0, 0, 1)

Figure 45: The two students are enemy which happened in Consciousness (0, 0, 1, 1)

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Figure 46: The uncertain that who is friend of whom happened unconsciously (0, 1, 1, 0)

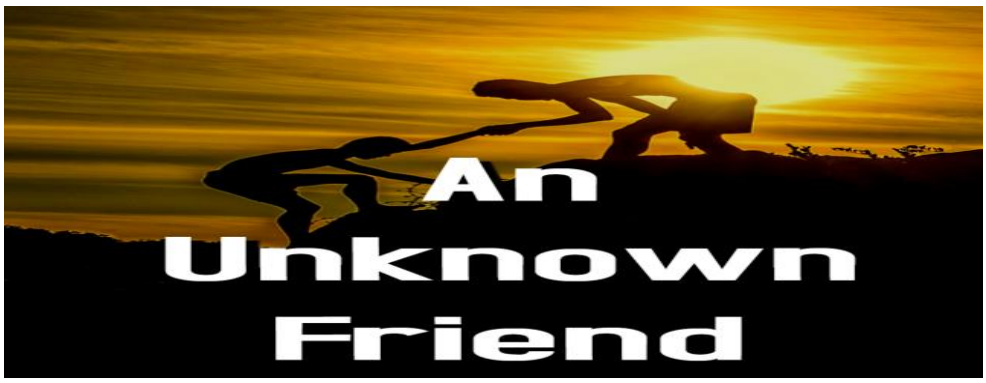

Figure 47: Helping any one make unknown friend (*t, i, f, l*)

Example 10 (Data with Turiyam attributes) : There are many researchers asked about data with Turiyam set. One of the suitable examples is Cricket data sets as shown in Table 1. The win is true regions (*t*), loss is false region (*f*), draw is uncertain (*i)* whereas the Run rate is Turiyam (*l*). The run rate is totally beyond the win, draw or loss of the match which effect at time of same points. It can be easily observed that the addition of (*t+i+f+l*) for south Africa crossed 3.3+ or almost in dimension 4 which is highest. It means the south Africa may have less point than India but their performance is better than India when compared to Run rate or other parameters. In similar way other teams and their Turiyam cardinality can be measured and analyzed precisely.

Table 1: It represents the point Table for the ICC cricket WC 2023.

ICC CRICKET WORLD CUP POINTS TABLE

	TEAMS	M	W	L	T	N/R	PT	NRR	Series Form	Next	For	Against
1	INDIA	5	5	0	0	0	10	1.353	W W W W W	vs ENG	1201/196.2	1191/250.0
2	SOUTH AFRICA	5	4	1	0	0	8	2.370	W W L W W	vs PAK	1727/243.0	1151/243.0
3	NEW ZEALAND	5	4	1	0	0	8	1.481	L W W W W	vs AUS	1414/229.1	1163/248.0
4	AUSTRALIA	4	2	2	0	0	4	-0.193	W W L L –	vs NED	958/185.2	1026/191.2
5	PAKISTAN	5	2	3	0	0	4	-0.400	L L L W W	vs SA	1409/248.2	1394/229.3
6	AFGHANISTAN	5	2	3	0	0	4	-0.969	W L W L L	vs SL	1137/249.0	1216/219.4
7	NETHERLANDS	4	1	3	0	0	2	-0.790	L W L L –	vs AUS	935/193.0	1078/191.2
8	SRI LANKA	4	1	3	0	0	2	-1.048	W L L L –	vs ENG	1142/198.2	1250/183.4
9	ENGLAND	4	1	3	0	0	2	-1.248	L L W L –	vs SL	1031/200.0	1193/186.2

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The Turiyam cognition helps in solving following problems as given below:

(i) In case two teams have same number of win, draw or loss or share equal points then the team having more net run rate (NRR) in league matches can be placed on top.

(ii) In case both teams are still equal then they will be ordered according to win, draw or loss of match among the selected team in the league match.

(iii) DRS (Decision Review System) is totally based on Turiyam cognition of Captain which is again beyond the win, draw or loss of the match. MS Dhoni an Indian Player uses DRS which become successful many times. In this case the Turiyam cognition of Dhoni can be considered as better. It means DRS or Run rate maintenance is totally based on Turiyam cognition of Captain which done in conscious way.

This paper provides several examples of Turiyam set for teaching learning in the school which will be helpful for the teachers. In near future the author will focus on analyzing the data with Turiyam set and its lattice exploration [28] for various decision making process.

7. Conclusion

This paper explores some of the examples for exploring the Turiyam cognition of child. It contains several examples, images pattern and other data sets for understanding the Turiyam cognition. This paper will help to the new faculty for teaching learning process and improve the quality of weak students.

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Availability of Data Sets: The cricket data sets can be considered as example for Data with Turiyam set shown in Table 1.

Ethics approval: This article does not contain any studies with human or animals participants.

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