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Introducing six thinking hats as a teaching learning tool in first year professional MBBS students

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ABSTRACT

Introduction: After the revision implementation of New Medical curriculum after almost 25 years by the Medical council of India, serious changes need to be introduced in biochemistry teaching learning methodology to make it an interesting, more clinically oriented subject. Also the aim is to enhance problem solving and critical thinking skills in the medical students. To achieve the same, small group learning forms the cornerstone of various teaching Learning strategies. Six Thinking Hats strategy, discovered by D'bono can go a long way to help switch in Thinking.

Materials and Methods: The present inter ventional study was conducted in the Department of Biochemistry, SGRDIMSAR Amritsar. The faculty and students were sensitized with this new six thinking hats teaching learning tool. Activity was conducted during practical classes of first year MBBS students where they were already divided into batch of 75 students in each. Students were informed one week prior about the topics. On the day of event, 75 students were divided into four groups comprising of 18 students each. Six students from each group were selected randomly using chit method were given coloured hats indicating different purpose. At the end of each session, the students were assessed by post test and pre-validated (validated by faculty) feedback questionnaire.

Results: Data was statistically analyzed and 89.4% of students agreed that it played an important role in enhancing critical learning. Students also agreed that Six Thinking hats helped them increase their analytical skills to solve the given problem and 88.7% found it helpful in future application of this biochemical knowledge in future application of their clinical classes.

1. Introduction

The requisite of teaching thinking skills is perceived by the growing awareness of the change in society and skills that may no longer be appropriate to prepare students for the world beyond school.[1] Fisher asserts that the basic premise of a "thinking skills" approach to education is that the quality of our lives and learning depends in large part on the quality of our thinking".[1,2] Thus, today's curriculum thrives towards teaching students how to think. In order to assist instructors, three ingredients to teaching critical and even creative thinking have been identified by Helgeson using relevant, real world issues; providing structure to solve problems and organize information, and a nurturing classroom environment.[1,3] Especially these type of ingredients should form a core to study some dry topics in biochemistry.

A group by definition is a number of people interacting in a face to face situation. The essential component of both these methods is the interaction among the members of the group, which is not possible if numbers are too large. About 8-12 is the optimal number, allowing all the participants to be regularly active. These group discussions can be conducted in many forms such as Tutorials (academic), personal tutorials, Problem classes, Seminars, Workshops, Problems based learning, student led groups, self help groups and Action learning sets.[1,4,5]

In 1985, Dr. Edward de Bono's introduced the Six Thinking Hats (a thinking skills tool) which allow

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thinkers to simplify thinking by dealing with points consecutively and carry out, A switch in thinking.[6,7] Whereas the Six Thinking Hats is prominent for carrying out parallel thinking, the Environmental Studies subject, emphasizes specific critical thinking skills central to "good science" – questioning, investigating, forming hypotheses, interpreting data, analyzing, developing conclusions, and solving problems. A key to connecting and enhancing the two features is through the incorporation of the Taxonomy of Education. This technique is prominent for carrying out parallel thinking which emphasizes specific critical thinking skills central to good science-questioning, investigating, forming hypotheses, interpreting data, analyzing, developing conclusions and solving problems.

1.1. Key pedagogical tenets of de Bono's six thinking hats model

Using the metaphor of wearing different colored hats, De Bono has designed a very simple model but one which when applied correctly can immensely augment critical thinking and create opportunities for solving any problems that might be confronted. The model reflects De Bono's belief that simple methods used effectively are more valuable than complicated methods that are difficult to understand and confusing to use.

1. Emotions. We often have a tendency not to think at all but to rely on instant gut feeling, emotion and prejudice as a basis for action.
2. Helplessness. We may react with feelings of inadequacy: "I don't know how to think about this. I don't know what to do next".
3. Confusion. We try to keep everything in mind at once, with a mess as a result.[8,9]

The requisite of teaching thinking skills is perceived by growing awareness of the change in society and skills. It provides a space for critical thinking and creativity. Six thinking hats include white hat thinking (just the facts), yellow hat thinking (Benefits, pluses), Black hat thinking (difficulties and problems), Red hat thinking (feeling, gut instinct, intuition), Green hat thinking (creativity, ideas, possibilities) and Blue hat thinking (Managing the thinking).[9]

2. Materials and Methods

The present interventional study was conducted in the Department of Biochemistry, SGRDIMSAR Amritsar. The ethical consideration was taken from institutional ethical committee. The faculty and students were sensitized with this new six thinking hats teaching learning tool. Activity was conducted during practical classes of first year MBBS students where they are already divided into batch of 75 students in each. This activity was performed twice and students were informed one week prior about the topics. On the day of event, 75 students were divided into four groups comprising of 18 students each. Six students from each group were selected randomly using chit method.

Students from each group performed first activity on Diabetic ketoacidosis.

White Hat: Define Diabetes Mellitus. Which laboratory test do you request

Black Hat: Can we give insulin injection as treatment protocol?

Red Hat: Narrate the feeling & emotions if anyone in your family or place yourself as individual having diabetes?

Green Hat: Treatment protocol- Clinical finding, Management clinical signs & symptoms and correlate with biochemical changes , metabolism, short term & long term complications.

Blue Hat: Conclusion & summarize.

Yellow Hat: Possibilities of any solutions you can advice to the patient after he recover.

Second activity on jaundice was performed in next practical schedule.

White Hat: Define Jaundice.

How will you investigate further?

Black Hat: To find the cause of jaundice and treatment protocol.

Red Hat: Narrate the feeling & emotions if anyone in your family or place yourself as individual having jaundice.

Green Hat: Clinical symptoms & correlate with biochemical changes with management.

Blue Hat: Summary & Conclusion.

Yellow Hat: Possibilities of any precautions you can advice patient after recovery. (Figures 1 and 2)

After the process, few questions regarding the topic were asked to other students who were observers and their performance recorded by a post test. At the last of each session, the students were assessed by post test and pre- validated (validated by faculty) feedback questionnaire. Data was statistically analyzed.

2.1. Statistical analysis

The data was statistically analyzed using SPSS software version 17.0. The outcome of the program was assessed by validated semi-structured questionnaire collected from the students. Crohnbach's alpha coefficient test was used to assess the reliability of the questionnaire collected from students. The value of Crohnbach's alpha coefficient test was 0.954 (Excellent) thus representing that the questionnaire was good in content. The mean and standard deviation of the data was analyzed statistically. The median scores of the individual items were also calculated. Descriptive analysis was done for qualitative data.

3. Observations and Results

After analyzing the feedback questionnaire, it was seen that almost 88.6 % of students agreed that this method of six thinking hats promoted better understanding of the topics. 89.4 % of students agreed that it played an important role in enhancing critical learning. Students also agreed that Six Thinking hats helped them increased their analytical skills to solve the given problem and 88.7% found it helpful in future application of this biochemical knowledge in future application of their clinical classes. It was an interesting activity after those monotonous didactic lectures and 85.3 % felt motivated and wanted it as a regular part of the curriculum. (Figures 3 and 4)

They wanted similar type of sessions for other topics in Biochemistry:

1. Lipid Metabolism: 33 students
2. Molecular Biology: 31 students
3. Diseases and case studies: 28 students

74.0 % of participants justified the role of the facilitator and following suggestions were given

1. More students should get a chance to present.
2. A power point presentation should be given before the activity.

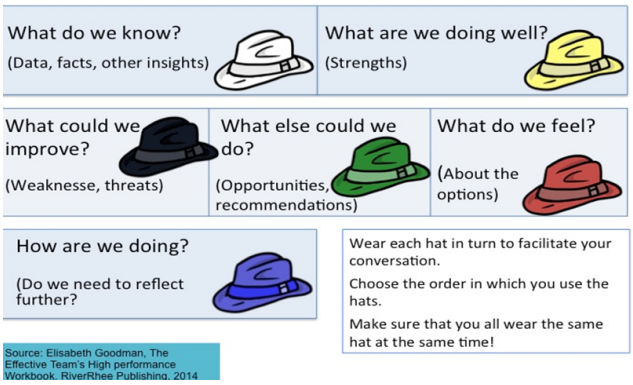

Fig. 1: Generation and evaluation of De Bono's six thinking hats model

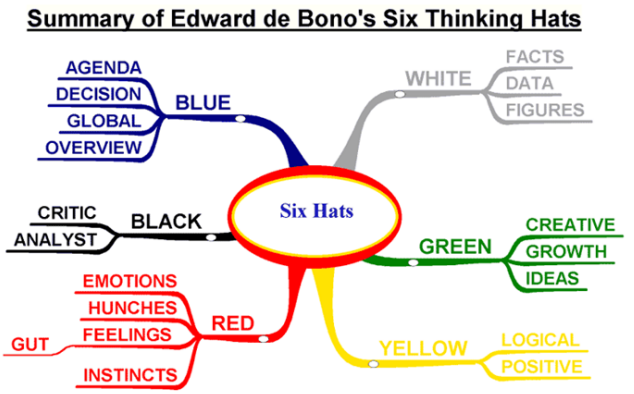

Fig. 2: Summary of Edward de Bono's six thinking hats model

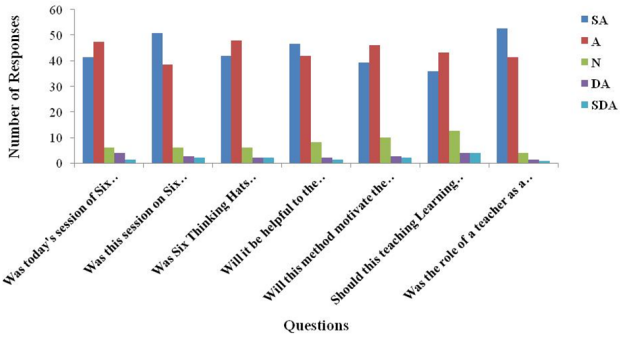

Fig. 3: Perception of students regarding six thinking hats in biochemistry

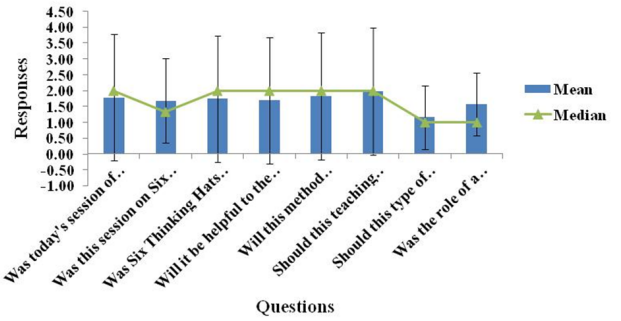

Fig. 4: Perception of students regarding six thinking hats in biochemistry

4. Discussion

Carmichael, Dobozy and Mulnix, have defined critical thinking in different ways but one that appears to capture its meaning very well is provided by The National Council for Excellence in Critical Thinking, based in California, which states it as: "the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action".[10–12] Critical thinking and problem solving are mutually interdependent because, as explained by Reynolds (2012) the practical value of critical thinking skills is the application of those skills to solve problems that enable rational decisions to be made to enhance successful human activities.

Tapscott[13] and Trilling and Fadel[14] also agree that these skills are essential for success not only at school, college and university, but also in life after studies. As

Kivunja[15] admonishes " It is critical thinking skills that enable meaning to be made in all modes of thinking whether they are legal, commercial, political, psychological, philosophical or sociological". Thus critical thinking and problem solving are essential for life. Given the convergence of expert opinion that critical thinking and problem solving are essential skills in all walks of life, it is regrettable that they do not occupy more dominant positions in the curriculum documents of many educational institutions. It might be due to some fallacious misconstruction that people think there is no need to teach thinking skills, or due to the realization that these skills are not easy to teach. It is a fact of the matter is that there is a pedagogical gap that needs to be filled. This is why it is important, and plausible, to employ a well-proven model, designed by a world-renown expert on critical thinking and problem solving whose "critical thinking models are used worldwide"[16] to teach students how to think critically and how to solve problems.

Applying those helps students to learn that critical thinking and problem solving are indeed skills that anyone can learn. They are not the preserve of a few gifted individuals or those endowed with exceptional capacity for argumentation. Just as anyone can wear different colored hats, so can anyone bring different perspectives to critical thinking and problem solving? To end this discussion with De Bono's[16] words of wisdom, if properly taught: The hats allow full attention to be paid to the critical aspects of thinking, the constructive aspects of thinking, and the creative aspects of thinking. The hats provide a framework for learning about the different aspects of thinking and for understanding thinking. Without them, it can be difficult to teach thinking.[16]

4.1. Outcomes

What this study adds According to UNESCO, the main aim of Environmental Education is: to aid learners in becoming environmentally knowledgeable and, above all, skilled and dedicated human beings, who are willing to work, individually and collectively, toward achieving and/or maintaining a dynamic equilibrium between the quality of life and quality of the environment. A Study to Investigate How Six Thinking Hats Enhance the Learning is required. In order to achieve this aim, students must engage in "deep learning", where the understanding is integrated with new information.

5. Limitations

A pre-test and A Focused group Discussion of the Faculty was not conduct ed.

6. Source of funding

None.

7. Conflict of interest

None.

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