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RESEARCH ARTICLE

Innovative Science Practices for Mentoring Potentially Gifted Students in India

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Abstract

Objectives: India's National Education Policy 2020 has a mandate to nurture the excellence of gifted students. Mentoring of gifted is the most important aspect of this program. This article reports innovative science pedagogical practices developed for mentoring potentially gifted students in the Indian educational school setup. **Methods:** For mentoring, DIMP (Developmental Identification and Mentoring Program) tools were used to identify the potentially gifted students from various parts of India. The students were from age group 11-15 years corresponding to class sixth to tenth. In workshop mode, more than ten mentoring sessions following innovative science practices were organized at the University of Delhi with around 50 participants in each session. These innovative science practices were also discussed with teachers during their orientation programs. **Findings:** Gifted students show unmatched interest and capabilities in a particular subject. These students can do wonders if their talent is discovered at an early stage and nurtured well. The pedagogical needs of gifted students are very different and have to be tackled differently. Mentoring such students is a challenging task. As the gifted children are keen observers, exceptionally curious, very focused and highly imaginative, their pedagogical needs cannot be met with regular and usually practised mentoring methods. This article reports four innovative science pedagogical practices implemented for mentoring potentially gifted students. These pedagogical innovations helped in generating academic interest and curiosity for new and independent learning among students. If every teacher during his tenure of teaching develops one or two or more such innovative pedagogical methodologies a compilation of these can act as a good resource for mentoring gifted students. **Novelty:** The innovative mentoring practices provided gifted students with the opportunities to reflect on their ideas, brush up on their analytical skills, strengthen their critical and creative thinking capacities, and demonstrate initiatives.

Keywords: Gifted students; Pedagogical Innovations; Mentoring; Mentoring practices; Hands-on learning

1 Introduction

Giftedness in children is a hidden, untapped and innate potential. Technically, gifted children usually have advanced cognitive abilities, higher intellectual capabilities, accelerated domain-specific learning capabilities, different quantitative approaches towards learning and exceptional motivation to learn in a specific domain. These characteristics make every gifted child unique in his or her own way. Gifted children do not show overall growth in all subjects but only in the field of their own interest. It is not always that gifted students do well on their own. For fully developing the talent of gifted students, they need mentoring by well-trained mentors. Globally, many countries including Australia, Brazil, Canada, Norway, Singapore, the United Kingdom and the United State of America have developed indigenous programs for the identification and mentoring of gifted children. Around 2012, the Office of the Principal Scientific Advisor (PSA) to the Government of India (GOI) observed that the pedagogy in school setups does not have ways of identifying and nurturing the potential of gifted students. Accordingly taking note of the issue, PSA, GOI initiated three exploratory projects to develop indigenous methods to identify gifted children and develop suitable mentoring mechanisms for them, namely in (i) the University of Delhi, (ii) the National Institute of Advanced Studies (NIAS) Bangalore and (iii) Agastya International Foundation – Bangalore[(1)]. The research team of the University of Delhi developed a multi-layered and comprehensive model of identification, termed as Developmental Identification and Mentoring Process (DIMP) to identify gifted children, with a particular focus on Mathematics and Science for the age group 3-15[(2)]. It is a multi-layered learner-centric identification process. This process is easily adaptable to diverse learning conditions and can be customized to suit the learning conditions of the target group. The NIAS Programme on Education for the Gifted and Talented (NIAS-EGT) also developed multiple protocols to identify gifted children in both rural and urban populations[(3)]. As a next step, to carry the work forward, from 2014 to 2019, the Office of PSA, GOI gave further financial assistance to the University of Delhi for the project "Establishing Process-Based Identification and Mentoring Practices for Potentially Gifted Children in Science and Mathematics". The project aimed at verifying the gifted children identification tools DIMP and developing mentoring modules for potentially gifted children. The author is one of the members of the research project team that worked on developing mentoring practices in science and mathematics for students in the age group 11-15 years corresponding to class sixth to tenth.

Once identified as gifted, mentoring is the most important aspect of any gifted education program. For letting a gifted child explore his or her potential it is necessary that he or she be mentored by appropriately selected and suitable mentors. The mentoring shall be in addition to his or her school education. From time to time, many gifted education scholars have highlighted the need for specialized mentors or mentoring practices for gifted children to maximize their potential. Subotnik et al[(4)] reported a developmental view of mentoring, in which it is suggested that for young students the mentoring shall be conflated with outstanding teaching to help young people fall in love with a topic, question idea, or domain. Ali H et al[(5)] recommend the use of technology for enabling the teachers to provide gifted and talented students with advanced content beyond their grade level. They also emphasised the need to develop more innovative practices using technology in gifted education. Garcia AI et al[(6)] analysed the group mentoring for gifted high school students that take place in a workshop format. It is noted that Mentor's skills, the mentor's ability to foster a good classroom environment, and the mentor's accessibility are factors that enable the learning and well-being of the participants in workshop mode. Kurup A[(3)] reported the mentoring of gifted students through specially designed Advance Learning Centres where students are initially mentored by student mentors and later by experts. They employed methods of weekend classes, summer and winter residential workshops on contemporary topics, monthly lecture series and an annual exhibition of selected project work for mentoring. Ismail SAA et al[(7)] reported that UAE uses Hamdan Giftedness Test (HGT) to identify gifted students and for mentoring short and long term enrichment programs are conducted at different times such as after school, at weekends, short and long holidays, etc. In addition, they have established a Global Talent Mentoring Hub (GTMH), a virtual platform to serve and support the international community of gifted students to cultivate their talents in STEM (science, technology, engineering, and math, including medical sciences). Bailey P & Newman J L[(8)] emphasised on 20Time Project-based learning for meeting the needs of gifted and high ability students. This classroom project concept provides an engaged learning environment. This creates a classroom culture of thinkers who use 20% of their classroom time each week to pursue an innovative project-based learning idea or problem that results in an authentic product or service.

Even though the available literature on mentoring gifted students is quite enriched and detailed, however, it is short of reporting on live classroom pedagogical practices. This paper reports four innovative pedagogical practices related to science (mainly physics) worked out during the more than ten mentoring sessions with potentially gifted students. These students identified through DIMPs were from class sixth to tenth having significant potential in 'Science' and 'Mathematics'. The same pedagogical innovations were also discussed in various orientation programs organized for the school teachers with the objective of handholding the gifted students in a natural school setup.

After the successful completion of the University of Delhi's project on gifted education, the Office of PSA, GOI has integrated the concept of gifted education into the National Education Policy -2020. Accordingly, NEP - 2020 very rightly points toward the need for support for gifted students or students with special Talents [9]. An excerpt from NEP-2020 quotes "There are innate talents in every student, which must be discovered, nurtured, fostered, and developed. These talents may express themselves in the form of varying interests, dispositions, and capacities. Those students that shows particularly strong interests and capacities in a given realm beyond the general school curriculum. Teacher education will include methods for the recognition and fostering of such student talents and interests".

Concerning mentoring gifted students as per NEP-2020, it is necessary to develop a pool of subject-specific innovative mentoring practices and make it available online as open-source material. This article is an initiation in this direction and to motivate both the school teachers and university faculty for doing the same.

2 Methodology

The project titled, "Establishing Process-Based Identification and Mentoring Practices for Potentially Gifted Children in Science and Mathematics" of the Office of the Principal Scientific Adviser to the Government of India was awarded to the University of Delhi for the period 2014-19. During the project period, the research team came up with methodologies for discovering, nurturing, fostering, and developing the innate talents of gifted students in the existing Indian educational setup. The Developmental Identification and Mentoring Process (DIMP) tools [2] were used for identifying the potentially gifted students. It is a comprehensive, in-depth and multi-layered procedure based process that works in four stages, namely, (i) referral stage (ii) selection stage (iii) scaffolding stage and (iv) advance mentoring stage.

It is from the third stage (scaffolding stage) onwards that selected potentially gifted students are provided with appropriate nurturance programs through the mentoring process. For this, more than ten "National Summer Mentoring Workshops" were organized by the University of Delhi at its Cluster Innovation Centre during the project's tenure. The selected children were from different schools (Government schools, Private Schools, Kendriya Vidyalaya (KVs), Jawahar Navodaya Vidyalaya (JNVs) and DAV Schools) and different grades (classes 6 to 10) and were from places including Delhi, Kanpur, Guwahati, Vadodara, Ujjain and Haryana. The workshops were of two-week duration with around 50 participants in each workshop. Here reported pedagogical innovations were practised during the mentoring sessions in the above-mentioned workshops.

Along with these workshops, around six orientation programs were also conducted for teachers from schools of the shortlisted gifted students. There were around 20 teacher participants in each orientation program. These programs aimed to equip the teachers with pedagogical innovative practices in various subjects to cater for the needs of gifted students from time to time at their end. A glimpse of workshops with gifted students and orientation programs with teachers are shown in Figure 1.

Fig 1. Glimpse of workshops with gifted students and orientation program with teachers

In addition to this, at different stages of the DIMP process, the following other mentoring methods were also employed - Weekend mentoring programs, Block mentoring programs (5 days), Small group interactions, and Personal mentoring.

3 Mentoring and Innovative Science Mentoring Practices

The role of a mentor is to assist the mentee academically, professionally and personally. As the mentee is often less experienced the mentor educates, protects and guides him to a righteous path through continuous interaction and helps him or her to achieve optimal learning potential. The focus shall be on improving intellectual and technical skills through an effective learning process. This surely needs deep involvement, commitment and collaboration between the mentor, mentee and the academic institute involved in it. Further, mentoring has to be distinguished from tutoring which is a well-structured way of educating someone with specified objectives. Tutoring is pre-planned and mostly commercialised activity while mentoring is a dynamic, evolving, unplanned but most productive assistance methodology for career advancement and societal benefits. Time devotion, building up trust following untraditional methods of teaching & learning and informal evaluation are features of the mentoring process.

From the studies of a series of mentoring programs designed especially for gifted and talented students, Vrabie T and Crețu C M [10] concluded that in the field of gifted education there is not an "extensive" mentoring program which should be considered suitable for each child or school; however mentoring programs shall take the form of research projects, various hands-on activities and innovative pedagogical practices. Based on a survey of students who had participated in a university-based gifted mentorship program in high school, Alhanaya M [11] in his study has recommended that mentoring programs for gifted students shall focus more on the student's interests and give them more time to expand his research scope. Many students said a different teaching methodology followed by a mentor helped them in connecting well with the subject.

As gifted students' hunger for learning in their field of interest is immense and that to happen at an accelerating rate, this makes frequent crafting in mentoring process for gifted children a necessity. Every mentor must undergo lots of pedagogical changes to fulfil these unending demands and needs of gifted students. It is in this reference, that the role of innovative mentoring practices becomes important. This aspect of mentoring can be a game-changer in mentoring process for gifted students. Innovative pedagogy plays a vital role in fulfilling the academic hunger of gifted students. Here it is important to note, that every teacher cannot be innovative every day and cannot teach the whole curriculum innovatively. However, there are various topics in every subject that when taught innovatively, act as stimulators for generating academic interest and assist the children in showcasing their creativity and innovations. With this in mind, during the project "Establishing Process-Based Identification and Mentoring Practices for Potentially Gifted Children in Science and Mathematics", the research team worked on developing innovative mentoring practices both in science and mathematics. In one of our earlier studies, innovative pedagogy for writing mathematical theorems is explained [12]. This was part of mentoring sessions. In another article [13] the author has reported the designing of an innovative device for the determination of values of trigonometric functions with a single measurement. Along with these, an innovative mathematical resource laboratory is also being developed at Cluster Innovation Centre, the University of Delhi where lots of models are designed and hands-on activities are developed to explain various mathematical concepts to assist teachers in mentoring gifted students.

Here, we are reporting four innovative pedagogical practices practised in the science sessions during the workshops organized for mentoring gifted and potentially gifted students. It shall be noted that even though nothing new is invented here, however, the way of presenting it is innovative. This distinguishes innovation from an invention. These pedagogical innovations helped in generating academic interest and curiosity for new and independent learning among children.

3.1 Newton's First Law: A book on a table

It shall be noted in the beginning that his methodology was practised with students not familiar with Newton's first law of motion. During the mentoring session, students were shown a picture of a book lying at rest on a table as shown in Figure 2. They were asked to carefully observe it and answer the following five simple questions in either Yes or No.

1. Can the book lie at rest on the table move on its own? **Yes/No**
2. Can you move the book without pushing, pulling, lifting or pressing it? **Yes/No**
3. Are push, pull, lift or press etc. types of forces? **Yes/No**
4. Can any object lie in a state of rest move on its own? **Yes/No**
5. Can you move any object lying in a state of rest without pushing, pulling, lifting or pressing it? **Yes/No**

Each student gave the following answer to these questions:

1. No
2. No
3. Yes
4. No
5. No

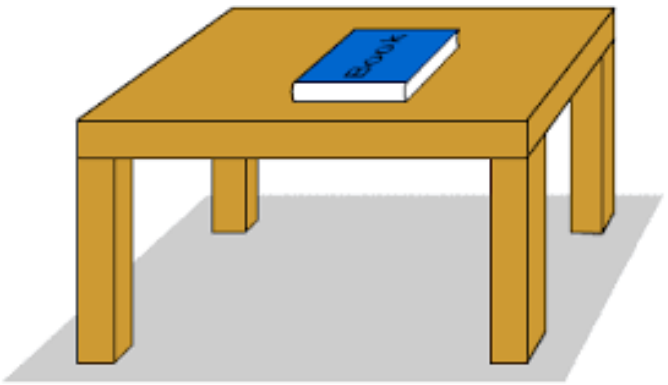

Fig 2. A book lying on a table

As the next step, they were asked to write a single conclusive statement by combining answers to all these questions. After reading out all individual conclusions written by students, the finally accepted most commonly drawn conclusion was:

"An object's state of rest cannot be changed by itself or by without applying a force on it."

Students were amazed when they were later told that by simple observation and careful analysis, they themselves have summarized a statement which is part of "Newton's First Law of Motion". It motivated them that they can also do what a great scientist Isaac Newton did long ago. In the second part of the activity, not discussed here, they were introduced to the remaining part of Newton's first law of motion related to objects in the state of uniform motion.

The same exercise was also done during the orientation program for teachers for mentoring gifted children. Even though teachers were familiar with Newton's First law, they too appreciated the pedagogy. During feedback, many said if they would have taught in this manner, using innovative pedagogical practices, during their days of learning it would have definitely impacted their way of teaching. Most of them agreed to follow these practices in classrooms. They were advised to develop one or two such methodologies of their own.

3.2 Talking Images: Building up a story

Talking images is a science context-based learning innovative pedagogical practice. This was first tested with teachers and later taken to students. During the workshop session, teachers were shown around 40 sequentially arranged images (slides) related to ISRO's Mars Orbiter Mission that took place in 2014-15. Some of these slides are shown in Figure 3 for indicative purposes.

After seeing each slide, every participant was asked to write one sentence in a notebook based on his or her observations. At the end of the slide show, each one had around 40 sentences related to Mars Orbiter Mission.

In the next step, they were asked to combine the sentences and make a story out of them.

During the entire slide show, not a single word was spoken but after the session, each participant was well versed with ISRO's Mars Orbiter Mission and was able to communicate the same to the others. All teachers appreciated this new pedagogical approach.

For further hands-on practice, teachers were asked to create similar slide shows on different topics using an internet search. Some of the topics they successfully implemented were:

- Underground construction work of Metro Train in Delhi
- Process of electricity generation in a hydropower plant
- The trajectory of a spinning ball during the cricket match

When the same session of ISRO's Mars Orbiter Mission was carried out for students' the results were very fascinating as their imagination got wings and the stories developed by them were far more enjoyable. The participative nature of the exercise helped them to comprehend information from images.

Fig 3. Images related to ISRO's Mars Orbiter Mission in 2014-15

3.3 Simple Pendulum: Device Designing

In this innovative practice session, students were taught to design a device for measuring the height of a person out of the topic 'simple pendulum'.

As some of the students attending the workshop were not familiar with the simple pendulum a brief description of it was given beforehand. They were shown a simple pendulum which is a weight suspended from a pivot so that it can swing freely. The period of oscillation (T) of a simple pendulum is given by the formula

$$T = 2\pi\sqrt{\frac{L}{g}}$$

Here L is the length of the pendulum in meter units which is the distance between the pivot and the centre of the weight and g is the acceleration due to gravity having a value of 9.8 m/s^2.

First, students were asked to think about how a device can be made for measuring the height of a person just by looking at (i) a simple pendulum and (ii) its formula of the period of oscillation.

Later, students were told that to design such a device, one need to do the following:

(i) Make a mechanism for adjusting the length of a simple pendulum as per the height of the person (say between 4 to 7 feet or 120 to 220 cm) as shown in Figure 4.

(ii) Using the formula of the period of oscillation calculate T for various values of L between 120 to 220 cm. Multiply each value of T by 10 and make a table showing T for 10 oscillations against the value of L as the height of a person in cm as shown in Figure 4 .

Now, using the adjustable pendulum and the given table, one can ask a person to stand on the pendulum platform and adjust its length as per his or her height. Next, the person shall make a measurement of the time period for 10 oscillations by displacing the simple pendulum a little bit. From the measured time period one can find his or her height from the table.

Further, this device can be converted into a technology-based device if one makes a mobile app that measures the time period of the pendulum using its camera and then programmed to do calculations to give results as the height of the person. This task was later completed by undergraduate students of B. Tech.

During the mentoring sessions and teachers' workshops, this device was designed in actuality, and participants' heights were measured. All participants appreciated the actual use of a concept learned in classrooms.

T (seconds) for 10 Oscillation	Height of person (cm)	T (seconds) for 10 Oscillation	Height of person (cm)
22.0	120	26.3	172
22.2	122	26.5	174
22.3	124	26.6	176
22.5	126	26.8	178
22.7	128	26.9	180
22.9	130	27.1	182
23.0	132	27.2	184
23.2	134	27.4	186
23.4	136	27.5	188
23.6	138	27.7	190
23.7	140	27.8	192
23.9	142	27.9	194
24.1	144	28.1	196
24.2	146	28.2	198
24.4	148	28.4	200
24.6	150	28.5	202
24.7	152	28.7	204
24.9	154	28.8	206
25.1	156	28.9	208
25.2	158	29.1	210
25.4	160	29.2	212
25.5	162	29.3	214
25.7	164	29.5	216
25.8	166	29.6	218
26.0	168	29.8	220
26.2	170	29.9	222

Fig 4. Adjustable Simple Pendulum and Table depicting the height of a person

3.4 Vernier Caliper: Identifying Problem - Looking for Solution

Posing a problem differently helps students to learn innovatively.

During mentoring session students were given a commonly available measuring scale (having a measuring count of 0.1 cm) and were asked the following questions:

Can you measure 2.1 cm and 2.2 cm using this scale?

All confidently said yes.

Can you measure 2.13 cm using this?

All said, No.

So, the problem at hand now is:

How to measure the length of an object using this scale if its length is more than 2.1 cm and less than 2.2 cm?

Almost none has the answer.

To solve the problem, they were told to cut out a piece of paper measuring exactly 0.9 cm and carefully mark on it equidistant 10 marks.

Now to measure the length of a given object, place the scale and the marked paper as shown in Figure 5.

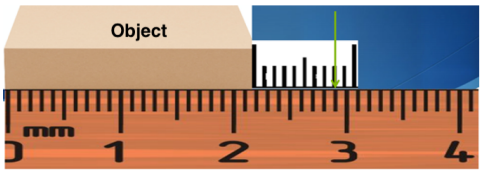

Fig 5. A common scale along with avernier scale

Look for the mark on the paper that exactly coincides with a mark on the scale. As in Figure 5, it is the 8th mark on paper which is exactly coinciding with a mark on the scale so the accurate length of the object is 2.18 cm.

The students were amazed when they were told that a French Mathematician named "Pierre Vernier" has identified and solved this problem almost 500 years ago. He made use of two scales to measure fractions between two readings. The bigger scale is called the "Main Scale" and the smaller paper scale is named after him as the "Vernier Scale". An instrument based on this principle called "Vernier Caliper" is commonly available in school science laboratories.

When the activity was explained to the teachers, most of them said that they all are using the Vernier Caliper instrument in labs without understanding and explaining to the students why was it designed or invented. All felt that such innovative pedagogical changes are a must for promoting inquisitive learning behaviour among students.

4 Discussion

The pedagogy for mentoring gifted students is always at the core of gifted education. Accordingly, a major section of research work on gifted education focuses on developing pedagogical practices for gifted students. It is the most effective measure in gifted education as it can lead to improvement-oriented learning with its high goals for gifted individuals [(14)]. Talking about the applicability of mentoring of gifted, Cakir L and Kocabas I [(15)] emphasised that the mentor should know, understand the child, and have full knowledge of pedagogic formation. Further, effective mentoring can only be achieved by employing experienced and knowledgeable mentors. For this, there is a need for a system to train mentors. Discussing recent trends in mentoring for gifted students in Saudi Arabia, Saeed MAA [(16)], expressed views that for empowering the gifted students there is a need for a modern pedagogic and psychological orientation in the field of caring in schools and programs. For this, he suggested designing quality mentoring programs. Kurup A [(3)] in her studies on challenges of mentoring gifted children in developing countries addresses the issue of the under-representation of mentoring of children from disadvantaged communities in programmes of education for the gifted and talented. It is observed that providing an opportunity for mentoring to such a group can be very rewarding. For helping this group, there is a need to develop a network of available mentors in local communities. Further, it is suggested to make use of technology support to link gifted children with experts at the state and national levels. In UAE, where schools do not have separate provisions for mentoring gifted students, Ismail SAA et al [(7)] reported that usually, gifted students seek help on the premises of specialized centres or associations that offer services and programs and have facilities and equipment for gifted students to practice and develop their potential. However, staff in such centres have very limited knowledge and training in gifted education and mentoring students with different talents. In Turkey, there are Science and Art Centres (SACs) where gifted individuals receive an education. Here, Ozbek G and Dagyar M [(16)] reported that a pyramidal structure of mentoring methodology which has five stages is followed. The advancement in the programs gradually narrows from the general to the specific in line with the individual's abilities. The emphasis of these programs is to enable the individuals to produce solutions to real-life problems, conduct scientific research and make inventions. From South Africa, Mahlangu V P [(17)] reported that during the pandemic period e-mentoring, e-tutoring and e-supervision aspects of distance education were used for mentoring gifted students in higher education. E-mentoring eliminated the time, location and space constraints and allowed low-income high school or university students to communicate with scientists face to face. The challenge in this was to ensure that students stay on track.

It is evident from these research studies that awareness about gifted children and their immense potential is globally acknowledged. Accordingly, most developed countries and many developing countries are crafting educational policies for inventing ways of mentoring gifted students. These research studies also point out that educating gifted children is the responsibility of many. All stakeholders including parents, schools, teachers, mentors, society and the gifted children themselves have to understand the task at hand and be ready to overcome the challenges. Even though all these research articles suggest various ways and means of mentoring gifted students, however, none suggest or demonstrate innovative pedagogy that is to be followed while mentoring the gifted students in classroom settings. This aspect is very important both for gifted students as well as for the teachers to prepare or train them with mentoring skills to explore the hidden potential of gifted students. Developing reliable, tested and validated innovative practices in very essential and shall not be delayed any further. A mentor can contribute to both the short-term and the long-term success of gifted students through his orator skills, evolving new insights, encouragements, inspirations and invoking new thoughts in the mind of the gifted child during these innovative practice sessions. The present study highlights these issues and accordingly reports innovative practices followed in actual for mentoring the potentially gifted students in a classroom setting environment.

Once identified as gifted, the search for an appropriate mentor is very essential. Mentoring process of gifted students is mutually beneficial for both mentee and mentor. For mentees, it provides an enhancement in the knowledge base at an accelerated rate, a role model to follow, ways of expressing her ideas creatively and being innovative. For mentors, it provides a drive for developing innovative pedagogical practices, exploring research areas and being good at designing enrichment activities. Further, as every gifted child is unique, the mentor also has to be unique based on the compatibility and needs of the gifted child. Sometimes mentors need to be oriented to understand the concept of giftedness for rightful mentoring. While

mentoring a gifted child, the mentor shall keep the following point in mind:

- The mentor needs to be flexible as he needs to cater for the interest of a gifted child beyond the school curriculum.
- From time to time, the mentor needs to alter his strategies to complement classroom learning.
- The mentor shall maintain a friendship kind relationship that gives the opportunity to the gifted child to communicate with ease.
- The mentor shall plan learning activities based on the gifted child's interest and creative skills.
- The mentor shall assign a specific goal-oriented task to the gifted child and enhance the level of a task in sync with the pace of the child's learning ability.
- The mentor shall have a feedback mechanism for proper up-gradation of the guidance.

These challenges give every mentor an opportunity to work on innovative pedagogical practices. Even if every teacher during his teaching tenure develops one or two such methodologies, a compilation of these can act as a good resource for all. Here, it shall be noted that the school administration also has a responsibility and a big role to play in exploring the potential of Gifted children. The schools need to provide a healthy support system to teachers in developing such innovative pedagogical practices. These sessions or activities will give opportunities to the gifted students to reflect on their ideas, brush up on their analytical skills, strengthen their critical and creative thinking capacities, and demonstrate initiative. Such sessions also motivate gifted students to develop higher-order skills and to engage individuals in meaningful inquiry-based learning that has genuine value and relevance for them personally and also to our society.

5 Conclusion

The innate talent of every gifted child is a valuable human resource that shall be nurtured well. Even though these children are genetically endowed with intellectual gifts but they require an intellectually challenging and stimulating environment to prosper and grow. These promising minds can develop as exceptional thinkers, only when put among the community of like-minded 'Mentors' who can guide them, nurture them and facilitate them. This makes the identification of gifted children and developing the appropriate mentoring process for tapping their potential a global problem. From the beginning of the present century, many countries including Australia, Singapore, the United State of America, South Africa, Saudi Arabia, UAE, Turkey and now India too are focusing on this most valuable underutilized and unexplored human resource. Accordingly, most countries have come up with policies for gifted education in their respective countries. In 2020, India has also included Gifted Education in its National Education Policy. The role of mentors in this whole process is of central importance. As gifted students' hunger for learning in their field of interest is immense and that to happen at an accelerating rate, this makes frequent crafting in mentoring process for gifted children a necessity. Every mentor must undergo lots of pedagogical changes to fulfil these unending demands and needs of gifted students. The challenge is fascinating but definitely doable. Various types of learning techniques and innovative ways of teaching have to be adopted by the mentors for keeping the interest of the gifted child alive in their field of interest. Project-based learning, hands-on activities, Lab-based experimentation, interactive participation sessions, model designing, e-learning modules and contemporary social-network based activities are some of the methods which most mentors employ for mentoring gifted students.

None of these methods can beat the time tested direct classroom teaching if embedded with innovative ways. This makes developing innovative pedagogical practices for mentoring gifted students an inevitable task. With this in mind, the present article focused on demonstrating innovative science practices used for mentoring potentially gifted students in an Indian classroom like environment. If every teacher during his teaching tenure develops one or two innovative pedagogical methodologies, a compilation of these can act as a good resource for all the mentors. India in its National Education Policy 2020 has already taken an initiative in this direction. It is the most appropriate time that we equip our teachers with skills of innovative mentoring practices and create a pool of such practices for mentoring gifted children.

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