



**ORIGINAL RESEARCH PAPER**

**Education**

**RAMANUJAN A ROLE MODEL FOR SELF-DIRECTED LEARNING (SDL)- A PERSPECTIVE**

**KEY WORDS:**

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“Never do anything for a student that he is capable of doing for himself. If you do you, you’ll make him an educational cripple... a pedagogical paraplegic.” - Howard Hendricks

COVID 19 has given new meaning to life. It has affected all domains of life. It has changed every aspect of living conditions and daily activities. It has forced people to wear face masks, maintain social distancing and follow hygienic practices. From business to educational institutional activities have started to rely on virtual platforms, online activities and networking facilities. Education has become digital and home has become the central place for students to receive their instructions from the teachers. The change brought about by the viral infection has revived the need to transform instructional model of teaching to student learning methods.

Self-directed Learning is a process in which learners take the initiative, with or without the help of a teacher, to diagnose their learning needs, formulate learning goals, identify human and material resources for learning, choose and implement appropriate learning strategies, and evaluate learning outcomes. (Knowles,1975) In other words Self Directed Learner is independent, has the desire to learn, has to manage the process of learning and develop problem solving skills.

The life and story of Indian Mathematics Genius Srinivas Ramanujam provides an unique example of SDL. Srinvasa Ramanujan was born on Dec.22, 1887. He had his primary education on Verandah of a Primary school, in Kumbakonam, a village in Tamilnadu, India.

The student is made to recite a collection of vedhic verses to develop their mnemonic ability. This process of recitation help them indirectly develop logical thinking and reflective introspection.

The students were made to recite the number, vocalize it, and draw it on a medium. This process helped them to inculcate the habit of vocalization, visualization and memorization. This is named as recollective memory. Ramanujan developed his interest in numbers in the verandah of primary school. In his school education among the different subjects that are taught to him as a part of the syllabi, mathematics become the subject of his interest. Numbers fascinated him, theorems, formulae become the alphabets of his learning. His innate ability to learn and master pure mathematics made him devour the contents of mathematics text books of higher standards. He mastered them easily. He spent all his time recording in his own handwriting the problems, prime numbers, solutions and theorems in diaries. He had three such diaries which had all his research work on different aspects of pure mathematics.

He had great desire to learn mathematics and search for highest form of truth about the world through mathematical language. His research was inborn, had reference to any other research papers or books or teachers to help him carry forward his journey in the realm of Math. His obsession for mathematics was so great he never gave attention to the learning other subjects. This acted against him to qualify or get a degree in a college. The letter he wrote to Dr.Hardy,UK

stands as a proof of his inherent genius:

*“I have had no university education but I have undergone the ordinary school course. After leaving school I have been employing the spare time at my disposal to work at mathematics. I have not trodden through the conventional regular course which is followed in a university course, but I am striking out a new path for myself. I have made a special investigation of divergent series in general and the results I get are termed by the local mathematicians as 'startling'.*

The example of Ramanujan's learning opens up a fresh idea that the syllabi need to be flexible and the freedom to make a choice of learning that interests the learner.

The learning capacity of an individual has to be nurtured in an environment which provides that freedom of learning. Rather learning must be spontaneous and self-reliant. For such a learning the mind must be fertile, fresh and unpolluted by instruction of a formative education or any other form of instruction.

“Education is not to reform students or amuse them or to make them expert technicians. It is to unsettle their minds, widen their horizons, inflame their intellects, teach them to think straight, if possible.” - Robert M. Hutchins

To make this statement relevant and reliable further insights into the academic career of Ramanujan will shed light and suggest that our educational system need to take note.

While he was studying in the Town High School he came across a mathematics book by G S Carr called Synopsis of elementary results in pure mathematics which was the only reference book for his learning mathematics.

Ramanujan married a nine year old girl Janaki which made him look for a job. He was helped by many during the process of his learning including Ramachandra Rao, the founder of Indian Mathematical society. Through recommendations he got a job of a clerk in Port Trust of India. Chennai. During that time he wrote a letter to Professor Hardy of Cambridge University stating his interest and condition for doing research with him. ( few lines of the letter is referred above).Prof Hardy was impressed by his letter and the equations which prompted him to accept him for a position with him after he made him solve problems he wrote in his reply. He was a child prodigy who had contributed immensely to the field of pure mathematics.

His work on composite numbers got him the Bachelor of Arts by Research degree in March 1916 part of which was published in the Proceedings of the London Mathematical Society. Ramanujan was elected to the London Mathematical Society followed by Fellow of the Royal Society, (youngest member ) and later elected as a Fellow of Trinity College, Cambridge.

All his work was written in three diaries which was printed by Tata Institute of Fundamental Research, Bombay so that others would benefit and know the genius of the man.

"I was struck by the extraordinary mathematical results contained in [the notebooks]. I had no mind to smother his genius .....Ramasamy Iyer.

**Some of the contributions known are:**

The Ramanujan prime, the Ramanujan theta function, partition formulae and mock theta functions, have opened entire new areas of work and inspired a vast amount of further research.

His contribution and formulae have universal application in networking including the social networking like Face Book.

Ramanujan was deeply religious person who felt that mathematical knowledge was revealed to him by his family Goddess Namagiri Thayar.

"An equation for me has no meaning unless it expresses a thought of God." That was Ramanujan's view of his genius.

His total devotion to learning mathematics made him develop his own self-styled self- directed learning.(SDL) and that method continued until his death at the age of 32 years devoted fully to the working and solving mathematical problems.

Therefore, the educational system need to consider in extraordinary circumstances to provide an opportunity for a learner a choice to study a subject of learner's interest with no compulsion to divert the learner's energy learning other subjects.

Or we need to make the education more flexible providing opportunities for a learner to develop the skills or a mastery of a subject of interest by making it optional to learn other subjects to qualify for a degree.

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