Self Regulatory Behaviour and Minimally Invasive (MIE) Education: A Case study in the Indian Context

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ABSTRACT

The current paper provides insight into the self – regulatory learning strategies adopted by children working at Minimally Invasive Education (MIE) Learning Stations. Previous research has clearly indicated that children in the age groups of 8–14 years learn by themselves in groups and construct their own environment. This learning takes place due to self – motivation, intrinsic goal orientation, rehearsal and elaboration which results in school going children learning computer literacy on their own and doing well in academics or out-of-school children joining formal schooling. The paper describes the process of self-regulatory learners. It has been observed that children, if exposed to a situation where learning is not induced, actively construct their own knowledge and develop critical insights into how they think. These traits of self-regulation allows a child to consciously reflect on what might be the most effective way to master the learning goal and chooses an appropriate strategy to accomplish the goal. MIE captures the curiosity and self-organizing behavioural traits of the children which drives their interest towards further education. Hence, schools are not the only privileged sites of learning.

Keywords: *Shared Cognition, Self-regulatory behaviour, Collaborative learning, Minimally Invasive Education*

EDUCATIONAL SCENARIO- INTRODUCTION

Sustenance of any country is determined largely by its education and, the growth of any nation hinges primarily on elementary education. "Universalization of Elementary Education for All" has been one of the major challenges in India. Equally important is the quality of elementary education which also has been a major source of concern. Dr Mitra et al. (2008) did a study on the effects of remoteness on the quality of education in schools and as found remoteness has an impact on quality of education. Government of India has taken various initiatives such as District Primary Education Programme (DPEP) in 1994, Mid-Day Meal (MDM) Scheme in 1995 and **"**Sarva Shiksha Abhiyan" or SSA in 2001 to universalize, retain, and improve the quality of elementary education through community ownership of elementary education. Despite all these efforts, universalization of elementary education still remains a distant dream. According to 2001 census, the literacy rate is 65.38%, wherein female literacy rate is only 54.16%. Another major area of concern is the gap between the rural and urban literacy rate. While 80.3% urban people are literate, only 59.4% of the rural population is literate (2001 Census). Thus, reduction in poverty, promotion of female education, emphasis on rural education, providing incentives for retaining the children from weaker sections of the society would have to go together so as to achieve the target set by Sarva Shiksha Abhiyan in India and the Millennium Development goal by UNESCO.

BACKGROUND OF THE STUDY

As stated above, Elementary education in India is faced by multiple challenges despite efforts to incorporate all sections of population in the current educational system. It is at this point that Minimally Invasive Education (MIE) proves to be a successful alternative educational approach. Minimally Invasive Education (popularly known as the Hole-in-the-Wall or HiWEL) is defined as a pedagogic method that uses the learning environment to generate an adequate level of motivation to induce learning in groups of children, with minimal, or no, intervention from adults. The central idea is that groups of children learn on their own without any direct intervention, from which, emerges the concept of social networking, self motivation and self- regulatory behaviour among children. In short, children learn in an unsupervised environment where self-organization plays the most important role. This concept was, for the first time, brought into light in 1999 in an experiment.

THE KALKAJI EXPERIMENT AND OTHER EXPERIMENTS

In early 1999, the first experiment was conducted where a 'hole' was carved in a wall facing a slum in Kalkaji, New Delhi and a computer was embedded in it. This computer (learning station) was easily accessible to slum children in and around the area and it was observed that children learnt on their own how to use the computer. This HiWEL learning station was well equipped with stimulating games and content that provided 'minimally invasive' educational inputs. The success of this experiment led to replication of the same experiment at other sites with similar findings. It is in 2001, that Hole-in-the-Wall Education Ltd. (HiWEL), a joint venture between NIIT Ltd and International Finance Corporation (IFC) was commissioned.

In the year 2002, 48 learning stations were set up in 17 rural sites all across India. This was the period when extensive research was undertaken for three years and the result yielded that irrespective of ethnicity, geographic, linguistic and cultural variations, "*groups of children when provided appropriate resources will attain computer literacy with minimum intervention*" (Mitra 1988). Figure 1.0 is a diagrammatic representation of the amount of learning of computer literacy during the three year intensive research. Examining the figure closely, it was found that children start recognizing icons with an initial knowledge of 12.69% and after nine months with a growth rate of 1.17% they achieved about 85.98% of their potential (on the 9th month). After the point of inflation i.e. recognizing 47.363% of icons, intervention will be required to enhance icon recognition. $R^2 = 0.968$ and M.S.E = 4.868, show a good fit. There is fairly steady rise in the recognition of icons in other words, children picked up computer literacy on their own [(Mitra, S., Dangwal, R., Chatterjee, S., Jha, S., Bisht, R. & Kapur, P. (2005)].

Figure 1.0: *Learning curve on computer literacy for India*
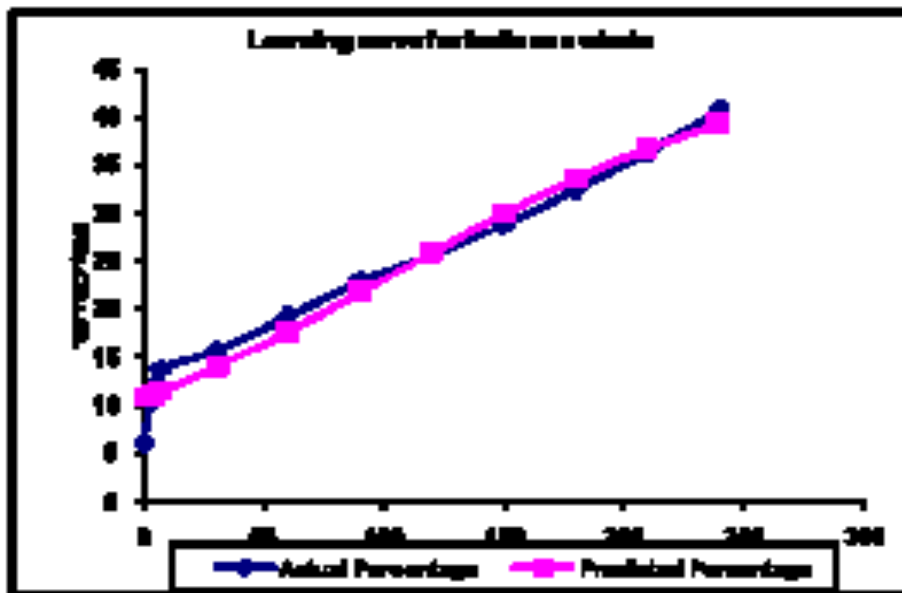
In 2005, approximately 90 computers were placed in 23 locations all over India. Independent studies were carried across these learning stations and it was observed that children not only pick up computing skills (already proven) but changes are observed in their academic performance using HiWEL learning stations (Inamdar, 2004). Behavioral changes too were observed; like, change in values, collaborative learning, paradigm shift in the perception of parents and teachers regarding the fact that children can 'learn on their own without any intervention from adults', as a result of public, unsupervised access to computers (Dangwal et. al 2005)

CURRENT STATUS

Currently, there are nearly 200 HiWEL learning stations comprising of two computers each across the length and breath of India. These are situated in remote, rural and difficult terrains; a few are in tribal areas and juvenile homes. Sarva Siksha Abhiyan, under Delhi Programme has set up 56 learning stations for out-of-school children in the year 2008. *UNESCO Institute for Statistics (2007) considers a child to be out of school if he or she was of primary school age and not enrolled in either primary or secondary school*. The underlined assumption for setting up HiWEL Learning stations was to assess the positive impact on elementary education and computer literacy for children particularly those who are out-of-school living in slum areas.

Figure 2.0: *An out-of-school child working at the learning station.*

How does the MIE pedagogy work?

It has been well researched and documented that Hole-In-the-Wall pedagogy stimulates children's natural curiosity and provides an enabling environment where they can learn on their own. The findings and observations at all these learning stations clearly indicate that:

1. Children become computer literate on their own, that is, they can learn to use computers and the Internet for most of the tasks done by lay users. (Mitra, 2000)
2. Children start discovering and learn the basics of education on their own.
3. Children form their own social network at these learning stations, which hence, develop collaborative learning in them (Dangwal and Kapur, 2008)
4. There has been notable change and improvements in the social interaction skills and value systems of the children (Dangwal and Kapur, 2009).

Not only this but despite the huge regional, linguistic, cultural variations among & across sites, these learning stations have enabled children pick up computing skills on their own, increase their intellectual maturity significantly and improved their school performance (Dangwal, 2005).

[. . .] *The desire of the children to learn and their curiosity drives them to explore the environment in order to satisfy their inquisitiveness. As the children explore the environment they relate their new experience with their previous experience and thereby new learning takes place. The implications of the results of the experiments are not just restricted to computer literacy but education in general* [. . .] (Mitra, 2000).

LITERATURE REVIEW

Extensive research work and theories have been propounded by psychologists and researchers on how children learn and nearly all of them have stressed on the importance of Self regulatory behaviour**.** Researchers have clearly demonstrated that students who employ self-regulated, self-determined approaches to learning achieve more and are more satisfied in their work (**Pintrich, 2000; Ryan & Deci, 2000)**. The term self-regulated can be used to describe learning that is guided by metacognition (thinking about one's thinking), *strategic action* (planning, monitoring, and evaluating personal progress against a standard), and *motivation to learn* (Butler & Winne, 1995; Winne & Perry, 2000; Perry, Phillips, & Hutchinson, 2006; Zimmerman, 1990; Boekaerts & Corno, 2005).
Finally, students who are self-regulated learners believe that opportunities to take on challenging tasks, practice their learning, develop a deep understanding of subject matter, and exert effort will give rise to academic success (Perry et al, 2006).

Self-regulation from the Social Cognitive Perspective looks at the triadic interaction between the person (e.g., beliefs about success), his or her behavior (e.g., engaging in a task), and the environment (e.g., inputs from friends) Zimmerman et al. specified three important characteristics of self-regulated learning:
1. Self-observation (monitoring one's activities);
2. Self-judgment (self-evaluation of one's performance) and
3. Self-reactions (reactions to performance outcomes).

The core of self-regulated learning is self-motivation; without self-motivation many of the choices and processes would not be executed. In contrast to learners who remain passive recipients of instruction determined by an outside authority, the self-motivated learner has an intrinsic or internal goal-directed toward drive self-improvement. Without strong self-motivation, the learner will remain inactive or merely reactive to externally imposed demands (Zimmerman and Martinez Pons 1986, 1988; Zimmerman 1989; Meece 1994). Therefore, self-motivation is at the center of the self-regulatory learning model. The importance of self-motivation is underscored by the emphasis placed on it in the research literature (see for example: Meece 1994; O'Neil and Drillings 1994; Reeve 1996).

Self-awareness also plays an important role in learning outcomes. For example, Hunter-Blanks et al. (1988) found that students displaying low levels of accuracy in evaluating their performance were less successful at learning relative to those with high levels of self-awareness. It appears that the accuracy of one's self-awareness influences the capability to self-regulate the learning process. Resourcefulness refers to the ability to control physical surroundings in a way that limits distractions to the learning effort, and to successfully search out and use the references and expertise needed to master what needs to be learned (Zimmerman 1989). The mark of resourcefulness is active pursuit of information. The self-regulated learner is significantly more likely to organize and control the physical learning environment to optimize focus and to minimize distractions (Zimmerman and Martinez-Pons 1986, 1988; Zimmerman 1989). The self-regulated learner is also more likely to seek assistance and will determine which resources should be consulted for expert guidance.

Cognitive learning strategies include approaches such as rehearsing, elaborating, modeling, and organizing. A self-regulated learner consciously reflects on what might be the most effective way to master the learning goal and chooses an appropriate strategy to accomplish that goal. Those who are not self-regulated learners tend to do what they are told to do or they use strategies without reflection on their efficiency or effectiveness. The self-regulated learner tends to use strategies that support mastery goals rather than strategies that support performance-oriented

(e.g., grades) goals (Meece 1994). Choice of strategy is requisite to self-regulated learning because it emphasizes that the individual chooses and structures his or her achievement experience (Zimmerman 1990).

Importance of Self-Regulation- In general, self-regulation increases the degree that human behavior is flexible and able to adapt (Baumeister & Vohs, 2007). This flexibility allows people to adjust to societal and situational demands that they encounter on a daily basis (Baumeister & Vohs, 2007). Specifically, self-regulation places one's "social conscience" over selfish impulses, allowing people to do what is right and not what they want to do (Baumeister & Bushman, 2008). In addition, the self-regulatory process prevents impulses that could be costly to the individual in the long-run, even when there are short-term benefits (Baumeister & Vohs, 2007).

Objective of Research

The research study aims at measuring and monitoring development of self-regulatory behaviour traits in children using the learning stations. It takes into account, feedbacks given by children, observations made by field researchers at 17 sites on the behaviour of children and dairies maintained by children on how they work at the learning stations. The study also observes how self-observation, self-judgment and self-reaction come into interplay at forming the base of self-regulatory behaviour for out-of-school and in-school children.

RESEARCH METHODOLOGY

In the present study the data collection is purely qualitative in nature. For school-going children, data comprises from 17 rural sites across India:
- South Zone: Karnataka and Tamil Nadu
- North Zone: Uttaranchal, Jammu and Kashmir, Uttar Pradesh
- East Zone: West Bengal
- West Zone: Rajasthan and Maharashtra

For out-of-school children, 56 sites were studied in Delhi. In order to map the Self-Regulatory Behaviour in children, various qualitative techniques were employed:
- Case Study for out-of- school children
- Daily Observation Reports for school-going children
- Children's Diaries for school-going children

THE FINDINGS

Self-Regulatory Behaviour & Out-of-school Children

Let us first examine the out-of-school children who after working on the HiWEL Learning Station enrolled themselves into formal schooling. It is interesting to know that even after spending several thousand crores on elementary education; the government has been able to bring down the dropout rate in primary schools by two per cent in the last 10 years.

The reasons of children not going to school or dropping out at any early age are varied. The main issues being inadequate school infrastructure, poorly functioning schools, high teacher absenteeism, large number of teacher vacancies, poor quality of education and inadequate funds. To a certain degree, gender, regional, and caste disparities also exist (Lall, 2005).

Figure 3.0: *Learning stations in Delhi*

It is in this respect that Sarva Shiksha Abhiyan (SSA) put 56 HiWEL learning stations in Government schools identified by the Education Department, Government of NCT of Delhi in various districts (*Refer to Figure 3.0 & Annexure 2*). At each of these learning stations, there is a caretaker who maintains a diary of the children using the learning stations and keeps a track of out-of-school children going back to formal schools.

Table 1.0 indicates that in a span of two years, 20% of the out-of-school children were enrolled in Government schools and this primarily was because these children were working at the HiWEL learning stations which got them interested in furthering their education (*Refer to annexure 1*). It is important to note that these children come from homes where their parents are illiterate, working as daily wage labourers to sustain themselves. The families live in poor hygienic conditions and most importantly, parents are remotely aware of educating their child/children. The profession of most of the members of the families was rag picking which the children also involve themselves in. These learning stations are the only form of entertainment and edutainment which pulls these children to use their spare time working at the learning station. With no coercion from Government, or any agency, these children show self-motivation to go back to formal school is indeed a paradigm shift.

Table 1.0: *Percentage of children enrolled*

No. of out of School children (Delhi)	1332
Mainstreamed 2009-10 (till July)	277
Percentage mainstreamed	20.80%

Case study1 gives a glimpse of what triggered children to go back to formal schooling.

<u>**Case Study 1**</u>

Name: Pachi   **Age:** 6 years
Gender: Male   **Resident of:** Vishnu Garden, Delhi

Pachi's parents are hawkers in Vishnu garden area of Delhi. He and his siblings pick rags to add to the meager family income; none of them have ever attended school. As a daily affair Pachi collected waste material in the area around the HiWEL learning station. Curious about the 'television' that children of his age group was busy playing with, he inquired the facilitator (caretaker). Pachi was amazed at using the computer for the very first time and became a regular at the station from the very next day. Initially he visited the LS alone. When he got familiar with some of the content and hardware, he started bringing his siblings and friends to the LS.

Pachi's efforts were well observed by the facilitator of the learning station and with her support Pachi was *successfully mainstreamed in the month of July 2010* in the MCD School Khayala-1. He is the first in his family to be attending a school.

Pachi and his friends still come to the HiWEL learning station to play educational games. He has a high affinity for the mathematical games and with time, has earned good command over MS Paint. He loves setting up his painting as wallpaper on the desktop.

Observations: Pachi, though at first was driven towards the Learning Station by curiosity, his attendance at the learning station was dependent on the interest that he developed towards learning new things and gaining knowledge. His everyday activity and learning was controlled by his motivation and even the social networking skills he displayed when bringing his friends and siblings is determined by his ability to judge and observe his own acts. Pachi's learning was largely governed by the cognitive inputs that he gained form the environment and through collaboration using his individual efforts. Once when motivated to use the LS regularly, he makes use of his judgment where he constructs his own learning environment to acquire information and through realization of the same, forms a structured network of his own to ascertain the information. Pachi organizes himself in such a manner that he benefits from the learning station without any external enforcement while also making progress in his learning. His acts of learning, retaining and memorizing is all controlled by his cognitive behaviours of self- learning and judgment. His self-realization determines his ability and desire for enhanced learning at the station.

Teachers Testimonials: In order to get a comprehensive data, the government schools teachers were interviewed on their perception of learning stations and how it is impacting the users. These are the schools in which the drop-outs have joined. For the present study, views of teachers have been incorporated**.**

*'One seeing is better than thousand hearing'. These were the words for HiWEL learning stations from the assistant teacher **Mr. Sunil Viswakarma, Kukdajagat** Middle school. According to him, the pedagogy to teach underserved children via Computers is just excellent. He also added that HiWEL pedagogy is not only improving the level of quality education but also making it entertaining for the children. He said for the students belonging to rural area it's a great experience and if the teachers are given training then they can also contribute to this noble activity.*

*Another Assistant teacher **Mr. Shiv Kumar Singare** at Khajri said that HiWEL Learning stations are very useful for the children especially belonging to rural areas. The contents provided at the LS are of immense use for the children and uses the LS very efficiently whenever they get some time after school.*

***Ms. Jyoti Aggarwal**, teacher from Government Adarash Upper Primary School said that HiWEL LS is eliminating the 'Fear Phobia' and hesitation from the children for computers. The LS is helping the children to understand the subjects better through its contents.*

***Mr. Ramesh Chand Chhipa,** Headmaster Government upper Primary school Suwans thanked HiWEL for making studies so interesting. He added that because of HiWEL learning stations the average presence of students in school has increased. He also added that HiWEL should also provide the contents in regional language so that students from rural areas can understand the concepts easily.*

HiWEL users and Self-Regulated Learners: School-going Children

Dr. Mitra (2001) has categorized most of the teaching-learning interactions in the following manner:

➢ Those where the teacher or external resource determines the learning content and methodology.
➢ Those where the teacher or external resource determines the learning, in consultation with the learners.
➢ Those where the learners determine their own learning outcomes and how they will go about it.

The last of these encompasses theories such as Piaget's, Situated Cognition and Constructivism, which in turn match the MIE approach. In the past decades, authors seemed to have worked with this theory (Piaget 1973, Vygotsky 1978, Forman & Pufall, 1988; Newman, Griffin, and Cole, 1989; Resnick, 1989). One of the foundational premises is that children actively construct their knowledge rather than absorbing ideas told by teachers. In the process, their ideas gain in complexity and power, and with appropriate support they develop critical insight into how they think and what they know about the world (Dangwal et.al 2005). In a class room situation the child is often a passive learner, but given a computer in a natural setting, the child comes forth as an active learner (Dangwal. Jha and Kapur, 2003). Hence, group activity creates more activity and leads to learning from peers.

One of the key attributes of a self–regulated learner is that s/he uses metacognition i.e. thinking about one's thinking and uses strategic action (Butler & Winne, 1995; Winne & Perry, 2000; Perry, Phillips, & Hutchinson, 2006; Zimmerman, 1990; Boekaerts & Corno, 2005). A self-regulated learner consciously reflects on what might be the most effective way to master the learning goal and chooses an appropriate strategy to accomplish that goal. This is implicitly reflected by the way a child works at the learning station. S/he knows the task at hand and also the path to take in order to achieve the task/goal (Table 2.0)

Table 2.0: Sample Daily Observation Report
Location is Kalludevanahalli (Southern India), Machine No. 01; Time: 1:00 p.m.

Names of children	Application & Time spent	Application Remarks
Kiran Umesha Lokesha Arun Girls Rajani Babitha	Word pad, 30 minutes	Lokesha went to Start + Program + Accessories + Word pad + Enter key. He opened WordPad. First he went to font and clicked over it and selected 36 size. He then typed his name and selected it by dragging over it. Next he went to bold option and clicked it. He told me that he clicked over B to get his name in bold, and that he has learned this by himself. Then he went to Italic and told me that he pressed over *I* to get his name in slanted letters. He pressed backspace to delete his name. Again he typed his address. This time changed font and color as well. He selected red color for his name. Then he typed his friend's name and used different colors. He pressed enter key to start a new paragraph and space bar to maintain the gap between the words. After that he went to file option and saved the file in the name of Lokesha. Then he closed the word pad by pressing over close option.

Source: Dangwal and Kapur, 2008

Collaborative learning & Self Regulatory Behaviour: Children have free access to computers but they are not provided with any teacher, instead they learn by operating in groups i.e. learning through peers who, by trial and error and/or observation, construct knowledge about it. In other words, they learn by "collaborating or by shared cognition" (Bathla, 2002). Secondly, the MIE environment encourages peer group learning, which enhances the level of aspiration (goal setting behaviour) among children (Bathla, 2002; Cappelle, Evers and Mitra, 2004).

The interplay of the two salient aspects in learning processes are: (1) Cognitive inputs from the environment, and (2) social networking/collaboration. These two aspects have come to form the core concern of Minimally Invasive Education Learning Stations (MIE LS) paradigm. The emergence of MIE groups of children is of salience because it has been noted that the group functions by imparting not only the impetus for learning but also provides the necessary structure in laying the foundation of ongoing learning. This collaborative effort of children has been termed as "social networking" (Mitra *et al.* 2005).

An important aspect that needs to be noted is that when children work in groups at the MIE LS, synergy is generated in collaborative contexts. This synergy provides a significant platform that produces or creates a learning environment. Interestingly, the nature and setting of the MIE LS encourages positive outcomes such as sharing, collaborative learning, etc.

Self Motivation & Self-Regulatory Behaviour: Self Motivation is at the centre of Self regulatory behaviour. Children are intrinsically driven towards pursuing their goals. The Minimally invasive pedagogy of Hole-in-the-wall environment drives the child to work at the computers. There are no teachers or adults pushing the child to learn. Through collaborative learning and sharing of information, children enjoy working at the learning station and as an off shoot pick up the content

that is in these learning stations. Thus, MIE children are self –driven and self-motivated which makes them self-regulatory learners.

Self-organizing & self regulatory behaviour: While working with each other children soon realize that there is no room for any negative behaviour like bullying, or seeking control or dominance. They realize that it is only through sharing and helping each other that they can achieve their goal i.e. to complete a task at hand, especially when they get stuck.
Ongoing research at Hole-in-the-wall Education Ltd. suggests that children frequenting MIE LS indicate some positive behavioural changes, such as helping their friends to solve a problem," "working together," "learning not to shout when a teacher asks a question, but to raise their hands and wait for the teachers sign to answer" and "organizing themselves at the learning station" (Mitra *et al*, 2005). All these aspects indicate a high level of self –awareness among children using the learning station. Accuracy of one's self-awareness influences the capability to self-regulate the learning process (Hunter –Blanks et al. 1988).

Shared Cognition & Self –regulatory behaviour: MIE research confirms the view that young children learn most efficiently when they are engaged in interaction, rather than in merely receptive or passive activities, as has been observed in formal schooling practices. Learning in the MIE setting establishes that shared cognition is both within and between individuals; and although the individual needs significant others to learn and shape each others' knowledge and reasoning processes, we must not lose sight of the learning strategies used on the individual level to consolidate the learned information, namely the processing of information—cognition. *The power of MIE lies in the social network and of the interrelationships that exists among them* (Dangwal and Kapur, 2008)

Cognitive strategies & Self-regulated learner:

Self-regulated learning includes students' metacognitive strategies for planning, monitoring, and modifying their cognition (Brown et al. 1983; Corno, 1986; Zimmerman & Pons, 1986, 1988). Different cognitive strategies such as rehearsal, elaboration, and organizational strategies have been found to foster active cognitive engagement in learning and result in higher levels of achievement (Weinstein & Mayer, 1986).

Children at the HiWEL learning stations use various cognitive strategies while handling a task at the learning station. Figure 4 shows the process of learning in the HiWEL learning station:

   (i)   *Trial & Error:* Children start with trail and error, this is a fundamental initial method of learning, especially when there is no other source of receiving or obtaining information. This activity serves as an indication of the inquisitive nature of young children. However, the child does not make any connection between his action and what happens on the computer.
   (ii)   *Rehearsal:* Trial & Error is followed by rehearsal which covers a fairly good portion in the learning process of a child. There is an initial element of randomness where "something happens" accidentally on the computer. The next element is that of awareness, in which the child makes the connection between what he did and what appeared on the screen. The child repeats the action deliberately and here, the child begins from a state of no awareness or comprehension.
   (iii) *Self-Discovery:* The child then embarks on a journey of self-discovery and explores further to learn more. Here, there is a gradual crystallization of learning. *(iv)* **Practice & Drill:** In order to get expertise they indulge in Practice and drill. This drilling leads to assimilation and consolidation of functional knowledge, which is dependent on the self-observation and reaction.

Figure 4.0: Process of learning- Method
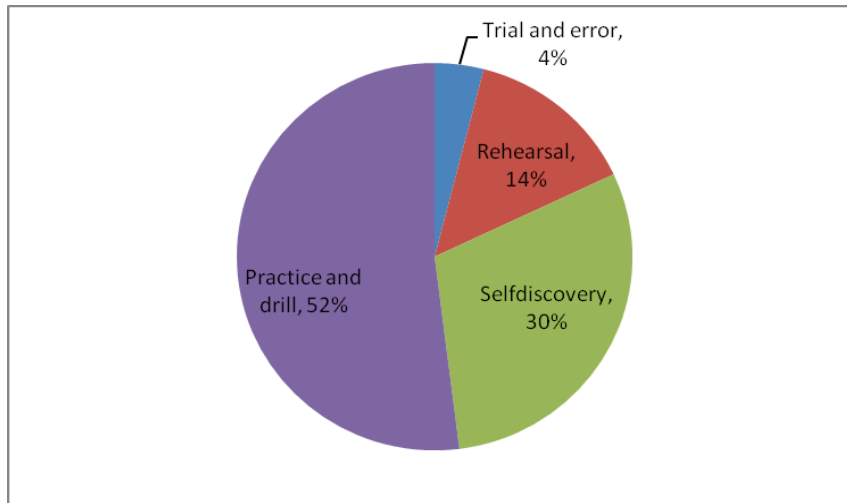
Source: Dangwal and Kapur, 2008

Even when a child learns through self-discovery, rehearsal or trail and error, the actions are all controlled by the self-regulation ability that a child exhibits. The need to explore on their own is a strong motivating aspect that provides the necessary impetus to go ahead with learning. Not just that but they have self-regulatory capability which is to be able to deal with failure and building resiliency to setbacks. During the trial and error process, they go make mistakes and then keep at working at the task till such time hat they are able make the connection. Thus, these children are able to regulate their efforts, which is none other than a self-regulatory component. Effort regulation, or volition, is "the tendency to maintain focus and effort toward goals despite potential distractions" (Corno, 1994, p. 229).

CONCLUSION

The study infers that a self-regulated learner is one who is metacognitively, motivationally, and behaviorally active participant in his or her own learning process (Zimmerman & Martinez-Pons, 1988, 1990)) and have motivational advantage of high levels of self-efficacy and intrinsic motivation. Interestingly it has been observed that the Hole-in-the-Wall pedagogy is an environment that encourages curiosity leading to self –motivation, collaborative learning, shared cognition and self-organizing behaviour. It is an environment in which a user actively selects and creates his/her social environment which helps him/her optimize his/her learning processes.

FUTURE DIRECTION

As seen in this paper, the above stated self-motivation, self-judgement and self-reaction are all salient components of a self-regulatory behaviour. Keeping in mind this fact,

- Can we then safely say that a child who is driven to use the learning station is predominately self-regulatory? or
- Can we say that only a self-regulatory learner uses the HiWEL learning station?

Thus, the bigger question is whether the pedagogic environment in which the learning station operates inculcates self-regulatory behaviour or only those children use the HiWEL learning station who has self-regulated attributes?.

Keeping in line with these questions, we are now measuring the self-regulatory behavior of children who are using the HiWEL learning stations.

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Annexure 1   **Children enrolled in various Government schools in Delhi**

SR. NO	NAME	AGE	GENDER	LOCATION	CLASS ENROLLED	SCHOOL
1	Sunil	10	male	F4/484 Sultanpuri	4	MCD
2	Deepak	10	male	Sultanpuri	4	MCD
3	Lakhan	11	male	F$/164, Sultanpuri	5	MCD
4	Bunty	9	male	19/05, Sarai Rohilla	3	MCD
5	Kunal	7	male	19/05, Sarai Rohilla	2	MCD
6	Kaalu	6	male	19/06, Sarai Rohilla	1	MCD
7	Kunaal	9	male	In front of the school	1	MCD
8	Riraj	11	male	Shakurpur	4	MCD
9	Sanjay	12	male	Shakurpur	6	Sarvodaya Vidyalaya
10	Ruchi	13	female	Shakurpur	6	GGSS
11	Priya	8	female	Shakurpur	2	MCD
12	Salman	11	male	Shakurpur	3	MCD
13	Roshini	9	female	Shakurpur	2	MCD
14	Versha	14	female	B/ 157, Shakurpur	6	GGSS
15	Rakesh	14	male	14A/202, Shakurpur	8	GBSSS
16	Surender	8	male	14A/202, Shakurpur	5	MCD
17	Jitender	15	male	A/351, Shakurpur	9	GBSSS
18	Dipti	6	female	Shakurpur	1	MCD
19	Seema	9	female	Shakurpur	4	MCD
20	Ajmida	12	female	Shakurpur	6	GGSS
21	Bharat	14	male	Shakurpur	8	GBSSS
22	Estali	13	female	Shakurpur	6	GGSS
23	Abhishek	7	male	Shakurpur	1	MCD
24	Anushika	6	female	Shakurpur	3	MCD
25	Vinita	6	female	D/336, Shakarpur	2	MCD
26	Deepak	17	male	A/331, Shakarpur	12	NIOS
27	Prabath	6	male	D/336, Shakarpur	1	MCD
28	Jaikrishan	7	male	Shakurpur	2	MCD
29	Rajesh	14	male	Shakurpur	6	GBSSS
30	Vinay	14	male	Shakurpur	6	GBSSS
31	Anita	15	female	Shakurpur	8	GGSS
32	Ghanshyam	10	male	Shakurpur	4	MCD
33	Aditi Roy	12	female	Shakurpur	6	GGSS
34	Kiran	9	female	Shakurpur	4	MCD
35	Nasim	9	male	Shakurpur	3	MCD
36	Vasim	10	male	Shakurpur	2	MCD
37	Priti	13	female	A/331, Shakarpur	6	GGSS
38	Sahdab	6	male	Shakurpur	1	MCD
39	Reena	6	female	Shakurpur	1	MCD

40	Ashu	6	male	Shakurpur	1	MCD
41	mangal	6	male	badarpur	1	MCD
42	Ritik	6	male	badarpur	1	MCD
43	Rajan	7	male	badarpur	1	MCD
44	Iccha	11	female	badarpur	2	MCD
45	manisha	8	female	badarpur	2	MCD
46	Roshani	7	female	badarpur	1	MCD
47	Tulsi	8	male	badarpur	1	MCD
48	Meera	10	male	Amichan khan	2	MCD, Giri Nagar
49	Ravi	6	male	kalkaji k block	1	kalkaji k bloke
50	Khusbu	9	female	Giri Nagar Kalkaji	4	MCD, Giri Nagar
51	balvinder	11	male	kalkaji k block	3	kalkaji k block
52	Rahul	12	male	D/1 -185 Madan giri Ambedker nagar	6	MCD GOCMT g/B school
53	Komak	7	female	D1 /131 Dr. Ambedkar Nagar	4	MCD, Saket
54	Rinku	8	male	Near Virat cinema	5	MCD
55	Rohini	6	female	D1 /131 Ambedkar Nagar	4	MCD, Saket
56	Suraj kumar	6	male	E/290 Kpp Vasant Vihar	1	CPWD MCD Vasant Vihar
57	Suraj kumar 2	7	male	D-1 97 Kusumpur pahari	1	CPWD MCD vasant vihar
58	Vishal	7	male	A/340 Kusumpu r pahari	1	CPWD MCD vasant vihar
59	Sumit	5	male	C/40 kusum p p	1	CPWD MCD vasant vihar
60	Vishal (2)	6	male	D/ 216 KPP	1	CPWD MCD vasant vihar
61	Sonu	6	male	E/78 KPP	1	CPWD MCD vasant vihar
62	Akash	6	male	Gu No 41 Priyaka camp	1	CPWD MCD vasant vihar
63	Pustandre	6	male	A/47 KPP	1	CPWD MCD vasant vihar
64	Ajay kumar	5	male	C-245v KPP	1	CPWD MCD vasant vihar
65	Mohit	5	male	A-340 KPP	1	CPWD MCD vasant vihar
66	Amit	5	male	C-240 KPP	1	CPWD MCD vasant vihar
67	Vivek	5	male	C-345 KPP	1	CPWD MCD vasant vihar
68	sachin	8	male	C-335 KPP	1	CPWD MCD vasant vihar
69	rohan	9	male	D-12 KPP	1	CPWD MCD vasant vihar
70	Davendre	7	male	A-172 KPP	1	CPWD MCD vasant vihar
71	jogendre	7	male	A-172 KPP	1	CPWD MCD vasant vihar
72	Vikas Navariya	7	male	E-141 KPP	1	CPWD MCD vasant vihar
73	Ravi k	5	male	CM -183 Kuli camp vasant vihar	1	CPWD MCD vasant vihar
74	Golu	6	male	E-240 KPP	1	CPWD MCD vasant vihar
75	Arun	7	male	E-380 KPP	1	CPWD MCD vasant vihar

Annexure II: **List of Schools where MIE Learning Stations are Located**

Sr. #	District	Constituency	School Name	Addess
1	South	Badarpur	GBMS/GGMS	Madanpur Khadar Extn., JJ Colony
2	South	Badarpur	GBSSS/ GGSSS	Badarpur No 3 & No. 2,
3	South	Badarpur	SKV - 1	Molar band, Badarpur
4	South	Saket	GBSSS	Deoli Village
5	South	Saket (Sangam Vihar)	GGSSS	Sangam Vihar
6	South	Kalkaji	GGBSSS, No. 3	G-Block, Kalkaji, Delhi - 19
7	South	Malviya Nagar	RRMR, SKV	Hauz Rani, Delhi
8	South	Malviya Nagar	GBSSS	Malviya Nagar
9	South	Okhla	GBP. S. B. Vidyalaya,	Sriniwaspuri
10	South	Dr. Ambedkar Nagar	Y.A.S.V., Sec. IV	Sec. IV, Dr. Ambedaker Nagar
11	South	Mehrauli	GovtSS. Co-Ed	Maidangarhi
12	South West - A	Mahipalpur	Govt (Co-Ed) SSS	Sector-B1, Vasant Kunj, New Delhi
13	South West - A	R.K. Puram	Govt Sarvodaya (Co-Ed) SS	Vasant Vihar, New Delhi
14	South West - A	R.K.Puram	Govt (Co-Ed) SSS	Sector-6, R K Puram, New Delhi
15	South West - A	Janak Puri	SBV	D-Block, Janakpuri
16	South West - A	Rajinder Nagar	GBSS, JJ Camp, Naraina	J.J. Camp, Naraina
17	South West - A	Sarojini Nagar	S. (Co-ed) Sr. Sec. School, Moti Bagh II	Nanakpura
18	South West - A	Sarojin Nagar	NP Middle School	Nauroji Nagar
19	South West - A	Sarojini Nagar	GBSSS, No. III	Sarojini Nagar, Delhi
20	West - A	Vishnu Garden	GGSSS -1, Khayala	Khayala Village
21	West - A	Vishnu Garden	GGSSS -2, Khayala	Khayala Village
22	West - A	Hari Nagar	SBV	Ashok Nagar
23	West - A	Rajouri Garden	SKV	Basai Darapur
24	West - A	Rajinder Nagar	SKV	Ranjit Nagar
25	West - B	Sultanpur Majra	GGSSS	J. J. Colony, Nangloi - , Zone 17
26	West - B	Hastsal	GBSSS, No. 2	Uttam Nagar
27	West - B	Palam	GSKV	Kakrola, Delhi - 43

28	West - B	Palam	SKV	Matiala, School Code: 1618070
29	West - B	Janakpuri	G. (Co-ed) SSS	Posangipur, Sec. B-1, Janakpuri
30	South West - B	Najafgarh	GBSSS, No. 1	Najafgarh
31	South West - B	Palam	GBSSS	Raj Nagar, Delhi 77
32	South West - B	Nasirpur	SBV No. 2	Palam Enclave (Bagh Wala School)
33	South West - B	Nasirpur	SKV No. 1	Sagarpur
34	North West - B	Mangolpuri	Sarvodya (Co-ed) Vidyalaya	J- Block, Mangolpuri, Delhi
35	North West - B	Mangolpuri	GGSSS	F- Block, Sultanpuri, Delhi
36	North West - B	Badli	R. P. Sarvodya (K) Vidyalaya	Sec. 5, Rithala, Delhi
37	North West - B	Badli	SBV	Sec. 16, Rohini, Delhi
38	North West - B	Shakurbasti	GGSSS	Anandwas, Delhi
39	North West - B	Adarsh Nagar	SKV, No. 2, G.P. Block	G. P. Block, Pitam Pura
40	North West - B	Tri Nagar	GGSSS	Narang Colony, Trinagar, Delhi
41	North West - B	Wazirpur	Sarvodya (Co-ed) Vidyalaya,	J. J. Colony, Wazirpur, Delhi
42	North	Chandni Chowk	SKV	Magazine Road, Delhi - 54
43	North	Kamla Nagar	SKV	Sarai Rohilla
44	North	Chandni Chowk	GBSSS No. 1	Mori Gate
45	North		GB/G SSS	Azad pur
46	North	Dev Nagar, karol baag	Govt. girls Sr. Sec. School	Dev Nagar, Near Karol Bagh
47	North	Timarpur	Patrachar Building (CAL LAB)	Patrachar Building (CAL LAB)
48	East	Gandhi Nagar	GGSSS	Kailash Nagar, Delhi 31
49	Central / New Delhi	CP	N P Girls Sec. School	Havlok Square Kali Bari Marg
50	Central / New Delhi	India Gate	NP Co-Ed Middle School	Sangli Mess
51	Central / New Delhi	Chanakya Puri	N P Girls Middle School	Netaji Nagar
52	Central / New Delhi	Chanakya Puri	NP Primary School	Sanjay Gandhi Camp
53	Central / New Delhi	Matia Mahal	Govt. Boys Sec. School (GBSS)	Bela Road
54	Central / New Delhi	Matia Mahal	SKV, No. 1	Jama Masjid, Delhi
55	Central / New Delhi	Ram Nagar	SBV	Rani Jhansi Road, Delhi
56	Central / New Delhi	Minto Road	GGSSS	Zeenat Mahal, Kamla Market

Annexure III: Teacher Feedback form

Hole-in-the-Wall feedback form

Hole-in-the-Wall Feedback Form

Your opinion, suggestions and comments are very important for us. We will respond to every query that we receive. We appreciate your taking the time to fill out our feedback form.

Personal Information

Name: RAMESH CHAND CJHIPA

Age: 56 yrs.   Gender: Male/Female

Organization: GOVT. U.P.S. SUWANS

Designation: HEADMASTER

Contact Address: GovT U.P.s SUWANS
Mob. No. 94145-21434

Project Feedback

1. What has been your experience with Hole-in-the-Wall project?

This is very good and useful project for children. The children learning himself without problem. This project is very useful for learning. children are learn by doing.

2. Are there any concerns issues related to HiWEL learning stations that you would like to bring to notice?

In this project use mother tongue instead of English because this station is located in rural area.

3. Do you have any suggestions about changes or additions to make the impact of HiWEL Learning Stations more effective?

Please add more material on G.K and general science and maths also.

4. What additional information would you like to have regarding this project?

This project make learning process enjoyful and interesting. It provides more students in school. It increases average presence in school.
with Thanks

Original article at: http://ijedict.dec.uwi.edu//viewarticle.php?id=1246