PCF 10: Track-Inspiring Innovations
Title: Self-Organized Learning in Informal Settings of Higher Education: How it Works?

Kumari Archana
National Institute of Educational Planning and Administration, New Delhi
Email- kumariarchana@niepa.ac.in, k.archana.2607@gmail.com

Introduction:

For students to learn, right kind of engagement is essential, even though students studying in reputable institutions(well resourced, with impressive teachers who teaches the right content). Also, if the institution is regulated efficiently in management and governance terms (Coates, 2015). In educational literature there has been increased recognition that more attention needs to be paid to the quality of learning of higher education students. Learning crisis in higher education is one of most pressing issue which is increasingly getting discussed globally. We cannot ensure quality learning of the students enrolled in high ranking institutes. Faculty and students needs to embrace the ongoing cumulative and collective nature of higher education learning with the aims to attain higher standards of competence (Hersh & Keeling,2012). Peer learning is an essential component which have the potential to increase the learning and effectiveness of learning among students. Students face challenge of becoming an active learner after entering into higher education institutions (Fook & Sidhu, 2014). They just don't have to just survive but they should be able thrive in the education system, as purpose of the education system is that students can learn efficiently in education system. Peer learning plays crucial role in supporting (academic or non-academic) students in learning (Carver,2011). They should be able to identify and recognize themselves with the institutions in which they are studying as it plays vital role in assisting the students to adapt to the challenge of cultural difference (Fook & Sidhu,2014).

Conceptual Framework:

The question arises that how can we make learning enjoyable and of greater engagement for students in higher education? On the application of self-organising system to students in higher education, Mitra suggested that in case of higher education students we can apply the self-organising systems theory. They are open to adventure, however they have attitude of competitiveness, if that can be tackled, then it's possible to apply self- organising system theory. (Sugata Mitra, 2010)

In education systems when students face challenging educational objectives, as a strategy they self- organise themselves into learning group and if they have easy access to internet and computers with the space/ environment to study which is minimally invasive; it all leads to learning of students. You can see figure 1 which illustrates the conceptual framework made on the basis of findings of earlier research done on the self-organising system in education.
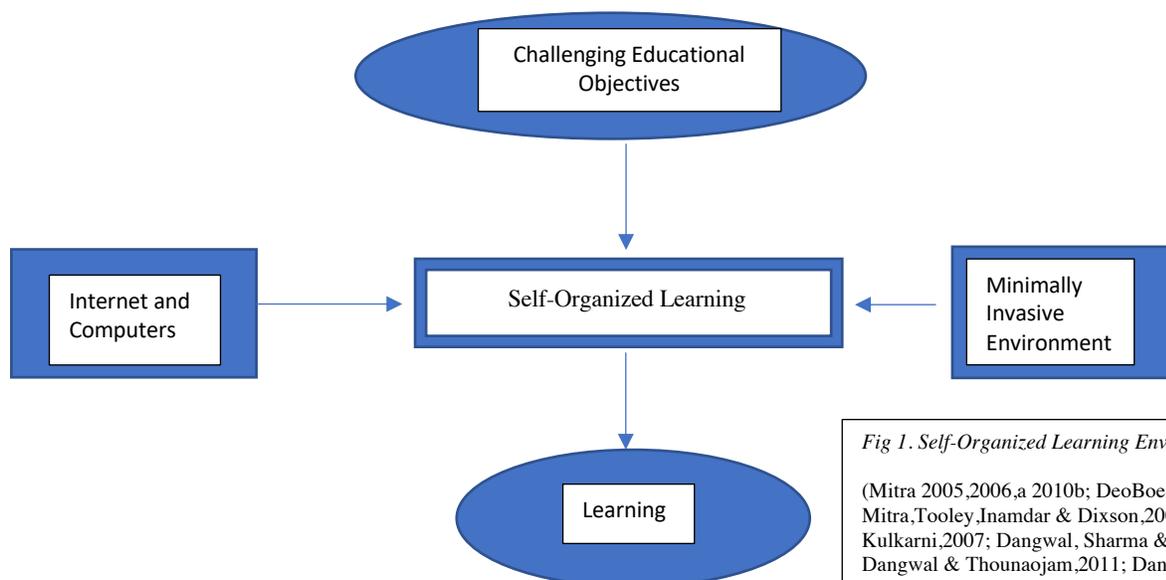

Fig 1. Self-Organized Learning Environment

(Mitra 2005,2006,a 2010b; DeoBoer,2009; Mitra,Tooley,Inamdar & Dixson,2003; Inamdar & Kulkarni,2007; Dangwal, Sharma & Hazarika,2014; Dangwal & Thounaojam,2011; Dangwal & Kapoor,2008,2009a,2009b; Inamdar,2004; Mitra,2012; Mitra, Stanfield 2016)

Challenging educational objectives are the objectives which is not easy or impossible for individual student to deal with. These objectives can be provided through formal external environment of the higher education institutions or it can be emerged through the students themselves.

Internet and Computers implies that when students have easy access to internet and computer devices which enables them to surf the internet and search for what is unknown to them.

Minimally Invasive Environment is the environment where the peer learning groups are learning with each other where there is no one to intervene unlike the traditional classroom setting where teacher generally have control over the behaviours of the students and sometimes by unsaid protocols. These spaces can be public spaces of the educational institutions' campus.

Self-Organised Peer Learning Group are the group of peers which is formed by students on their own will among their peers. This group is comfortable with each other and willing to learn together. Learning is the consequence of the process of self-organised peer learning group. Learning implies to the ability to think critically, creatively, solve problems and comprehend complex issues, along with that improvement in their communication and collaboration skills.

Research Design and Methods

The researcher has used the exploratory case study research design as the researcher wanted to study the process of self-organized peer learning in informal settings of higher education. The study adheres to the paradigm of social constructivism as it focuses on students' learning experiences, which is a constructive process embedded in socio-cultural practice. Also, the process of knowledge gaining is viable in social contexts.

The field selected for the study was the primary campus of the Indian Institute of Technology(IIT) situated in Delhi. Delhi is the capital of India, and it is the metropolitan area of the north of the country. Many students from the nation migrate to this city for the best educational and job opportunities. IIT, Delhi has been ranked 56th, 64th,65th,92nd position in Electrical and Electronics, Mechanical, Computer Sciences, and Information and Chemical Engineering in Engineering and Technology Category, respectively, in World University Rankings by Subject 2022 by QS. Additionally, in 2018, IIT Delhi has also been recognized as an Institution of Eminence by the government of India[1]. These rankings and recognition show that the quality of education is quite good. The learning environment provided to students here is one of the best equipped with resources, infrastructure, and challenges in terms of academic pressure.

Through purposive sampling, the researcher collected data. A questionnaire, semi-structured interviews, and observation were most appropriate for answering the research questions.

The questionnaire consisted of questions related to the profile of respondents, a five-point Likert scale. And open-ended questions to get to know perceptions and opinions about the positive experience of peer learning. Sixty-three technical undergraduates responded to the questionnaire who are enrolled in IIT Delhi in fully residential courses in Bachelor of Technology.

Semi-structured interviews helped the researcher understand students' meaning of learning as beneficial for career growth, how students form informal peer learning groups, and how these groups function. The data collected from interviews were analyzed using conventional content analysis on the student version of ATLAS.ti. Three stages of

---

[1] Information is available at official website of Indian Institute of Technology, Delhi

List of the courses of under graduation at IIT, Delhi: Chemical Engineering, Biochemical Engineering and Biotechnology, Mathematics and Computing, Civil Engineering, Computer Science and Engineering, Electrical Engineering, Electrical Engineering (Power), Engineering Physics, Mechanical Engineering, Production and Industrial Engineering, Textile Technology (source: iitd.ac.in website)

analysis were involved; firstly, the constitution of parts, then transforming implicit meaning in data into explicit meaning, and lastly, articulating the structure of experience and interpretations.

The researcher observed the technical undergraduates of IIT, Delhi as non-participant observer. Mainly observed open spaces such as common sitting areas of academic buildings and outside libraries, tea-points, hostel's common rooms, cafeteria, garden, and parks. The reason for observing these areas is that students mostly sit and talk, do group study, and do some of their experiments for their projects that need open space. The researcher took extensive field diary notes of inscriptive and descriptive nature.

Findings:
1. Student's Meaning of Learning
Interviews with technical undergraduates provide a comprehensive meaning of learning which is helpful for their career growth. It came out in three crucial dimensions of considering learning. Any new thing that fulfils curiosity and does not remain as information but knowledge is the first dimension of considering something as learning. Another important dimension is that if they can use learned skills and knowledge to solve any problem, those skills get embodied in them. For instance, a high cumulative grade point average does not mean great learning always because there is a possibility that the student has memorized the information for the exam, has touched the prescribed topics of the syllabus at surface level, and reproduced that in exams but do not have knowledge of using it in real life to solve problems or create new things. The third and last dimension is about the skills beneficial for psychological well-being and gaining social support from people. Additionally, learning that helps them understand life. For example, when students participate in extracurricular activities such as dance, sports, and other stage performances, it helps them learn social skills to support each other in teams at challenging times. It helps release their stress and keep them happy. When a student joins a club to help people in slums, it makes them aware about life and grateful for their privileged life which sometimes seems highly problematic to them. Another example, one student is learning Zen Buddhism including meditation and is discussing his experience with peers. It open whole interesting and new dimension for other student.

2. Students' Experience of Peer Interactions

While investigating higher education students' perception of peer learning and its influence on them, findings show that students find peer interaction one of the critical factors for their learning and valuable for their career. The student reported that the influence of peer interaction could be negative, which discourages students from being open and comfortable and positive, which encourages students to grow towards long-term goals with the support of peers.
 Positive peer interaction is also crucial for their professional and social skills growth, other than just academic learning. Students found that perspective richness and efficiency of learning increase due to peer interaction. They experienced that their peers become saviours when educational objectives seem impossible to complete. Their seniors guide them to become members of different clubs and societies that enhance their communication skills and performance in extracurricular activities, which contributes to increasing their confidence and sense of belongingness. Additionally, seniors guide to study smartly so that academically students can score high and helps in making effective strategies for placements.
The positive influence of peer interaction on students' learning experiences helps students explore new things, enhance learning, and experiment with effective ways of learning. Positive influence resulted in one category called social and psychological support to students and another as support for professional learning and career to students. Refer to table 1 to see what students perceive about different variables related to peer influence.

Table 1: Perception of Influence of Peers on Students			
Category I: Social and Psychological Support to Students	Agree	Disagree	Neutral
1. Increased Confidence	87.30%	3.17%	9.52%
2 Sense of Belongingness	80.95%	4.76%	12.69%
3 Helped to work in collaboration with peers	80.95%	1.58%	15.87%
4 Good Understanding of Different Cultures	84.12%	1.58%	14.28%
5 Enhanced belief on the ability to learn	71.42%	3.17%	25.39%

Category II: Support for Professional Learning and Career	Agree	Disagree	Neutral
1. Improved Verbal Communication Skills	92.06	3.17%	4.76%
2. Improved Written Skills	39.68%	12.69%	44.44%
3. Helped to work productively	69.84%	3.17%	25.39%
4. Felt Supportive for Learning	73.01%	25.39%	1.58%
5. Learned about career goals and opportunities	82.53%	1.58%	15.87%
6. Identified the self-interest in career	61.90%	4.76%	33.33%
7. Found classroom lecturers interesting after peer interaction	65.07%	11.11%	20.63%
8. Become more active in learning	80.95%	4.76%	12.69%
9. Learned about new ways of learning	75.19%	0%	23.80%
10. Enhanced critical thinking	84.12%	0%	15.87%

Negative peer interactions can hinder growth and learning among students. Students' unpleasant interactions consist of a judgemental attitude, superiority complex, not being receptive to each other's discussion, not being serious about the objective decided as a group, each member does not contribute to work, and pretending to have knowledge about some topic. Also, sometimes students have to participate in some activities unwillingly, like going out or discussing the topic, which is not helpful due to peer pressure. Sometimes when the learning pace does not match the group, students feel demotivated to study with those peers.

3. Process of Self-organised Peer Learning in Informal Settings among undergraduates

While studying the process of self-organized peer learning in informal settings, which was the third objective of the study, the researcher found that the process of self-organizing peer learning in higher education leads students to form their peer learning group, which is connected (where every group member is connected to each other). The group has the same view and goal for the future. This kind of self-organized peer learning group emerges when there is freedom for students to interact with any peer without any restrictions, we can call it a 'minimally invasive environment'.
Students studying in the best higher educational institutions have a sense of achievement and see themselves as achievers.
These students are open to exploring new areas and want to achieve big. In the best higher educational institutions, the two central factors that facilitate the self-organizing process among students are challenges and freedom. These challenges intensively create situations for students to strategize learning which results into self- organisation peer learning systems. Figure 2 below illustrates the process of self-organization peer learning in informal settings.

Immediate Short-Term Goals of Students

Push Students to Learn

Common Spaces for students to Interact

Students in Higher Education Institutions

Freedom

Challenges

Peer Interaction and Bonding with peers

Formation of Connected Peer learning groups

Positive Influence of Peer Interaction on Students in Higher Education

Internet and Laptops

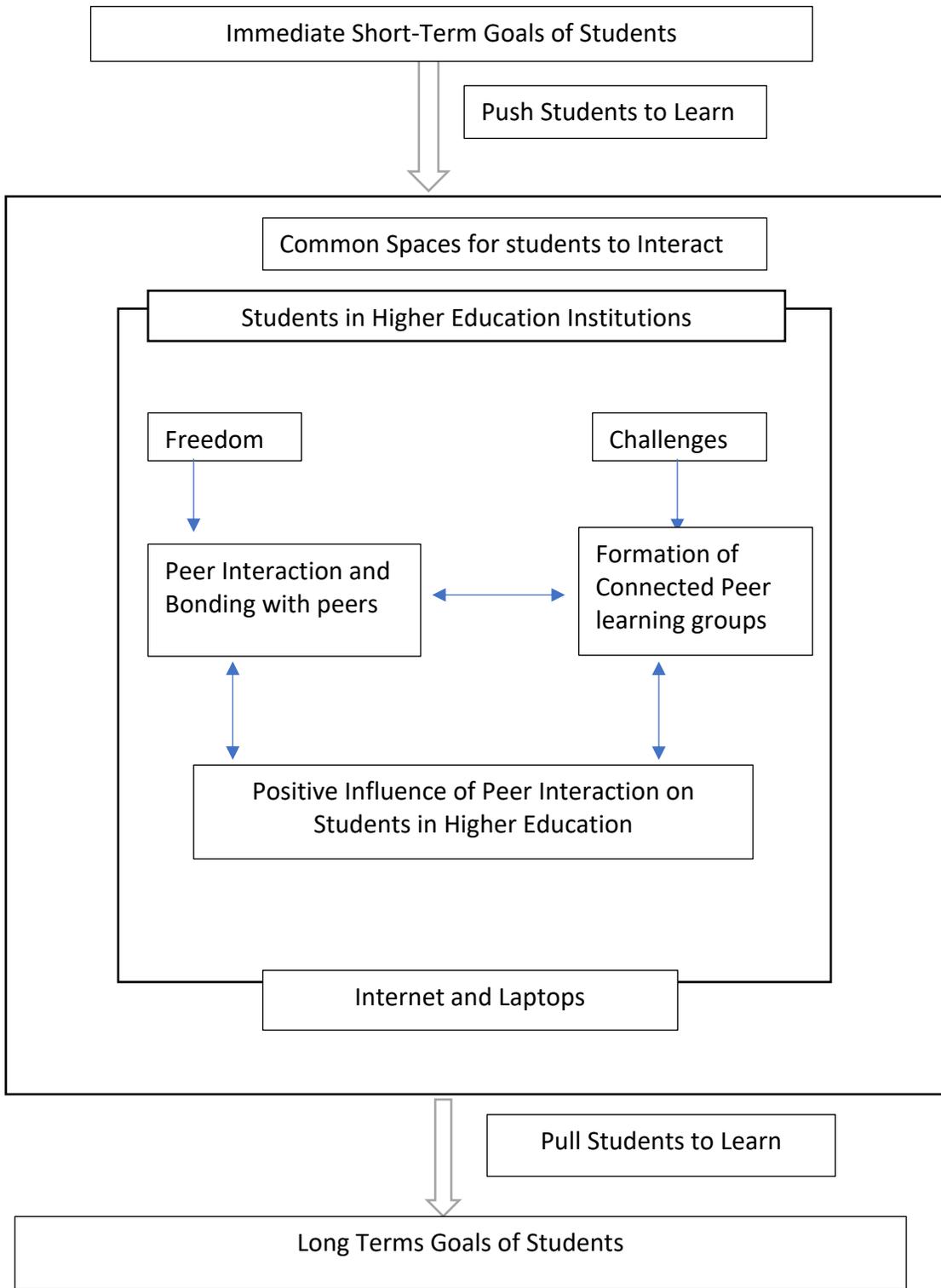Pull Students to Learn

Long Terms Goals of Students

Fig.2 Process of Self-organised Peer Learning in Informal Settings among undergraduates

When students take admission and start staying in the residential hostels of IIT Delhi, they need to adjust and fit into the institute's system; they find it challenging. In the case of learning, they also need to change their learning style to survive in the challenging environment of IIT Delhi. One such change is from individualistic learning to collaborative learning with peers. Earlier, students primarily studied individualistically in their hometown to prepare for the highly competitive Joint Entrance Examination(JEE[2]).

They had more competitiveness in their attitude toward admission to IITs. Nevertheless, when they came to IIT, they realized that this approach was not working through the first and second semesters. Course level rises, the system is entirely new, and competition is also very high. Academic exams and project works that are given are much more challenging and competitive than anticipated. They need to take help from each other to survive because exams and projects cannot be dealt with and completed individually.

On another side, freedom encourages students and even provides opportunities to choose their peers on their terms. Students choose peers with whom they want to study, with whom they want to share their challenges, and with whom they want to spend time and learn. This process starts from day one of their entry to higher educational institutions, i.e., the first day of graduation when they start to adapt and adjust to the new environment. For students, there is a possibility that they can choose different peers for different purposes or work, such as for academic purposes, sharing feelings, discussing future and future goals, and extracurricular activities. Students make learning groups with peers with whom they are positively influenced.

In interviews, students repeatedly reported that when they study with their peer group, which gets more or less fixed and closed from the second year onwards. It is a process of filtering out and rearranging peer learning groups. These groups consist of from three to five group members mostly. With the experience of studying and staying with peers for one year, they get to know with whom they can seriously learn without any distraction.

While studying with these groups before exams, placements, or any other deadline, students experience losing the sense of time and are very focused and immersed in learning. Additionally, these students get immediate feedback from their group members on what is right or wrong; they feel they can learn everything quickly. It gives the feeling of contentment and a sense of happiness. These experiences match with the existing literature on 'flow' in the domain of positive psychology.

Applying self-organized learning in the higher education system can provide us with a method to create a feasible environment for fast and effective learning. While exploring self-organizing peer learning systems among students of IIT, Delhi, the researcher found and understood the nature of the learning process and how students learn and implement the best ways of learning where students who are the learner enjoy the learning process well as can learn efficiently. Some of the conditions were observed and found out are crucial to facilitating self-organizing learning as follows:

· Students lives on the campus of the higher education institute, which is safe and full of facilities such as different sports ground, and different public places to hang out, all need to be fulfilled to live comfortably.

· Students should have the freedom to live as they want to, fewer restrictions, and can meet and discuss with students from diverse backgrounds. In this way, students learn about different languages and cultures; this creates a sense of an increase in the horizons of knowledge and understanding and makes students think after considering these differences.

· The exposure to further education and job opportunities helps and motivates students to think, explore and find out their interests in their careers.

· Different clubs and societies that give the option to perform students on stage and learn updated technologies help students develop different skills for their lifetime.

· The formal opportunities to work on the different applications and projects not done in typical class conditions help students work on problems and find solutions. These are the things that are new to students and challenging; this makes students work in a group. It helps enables them to learn. Also, students feel free to work as they want.

· Students should have easy access to the internet and online resources to study along with the semi-formal and informal common spaces.

---

[2] For admission to IITs, students need to clear the two-staged Joined Entrance Exam (JEE mains and JEE advance), which happens at the national level in India. According to ranking, students can choose their specific field in engineering, and it decides in among 23 IITs which one they will get to study. There is hierarchy of quality within IITs according to specialisation of engineering.

Conclusion and Recommendations:

Findings indicate that students perceive learning not limited to academics and professional but beyond. Students find the learning process with peers interesting and helpful . Additionally, positive peer interaction is essential for creating a feasible environment for self-organized learning among higher education students. The emergence of the informal peer group for learning with a minimally invasive environment happens on campus, providing good infrastructure, freedom, and a challenging learning environment.

Limited literature is available and there was a lack of prior studies in this area. There are some limitations of the study, such as it had a small sample size and only takes into account the perspective of students, and relies on self-reported data by students as it cannot be verified independently; therefore, biases may be apparent. The study does not explore the consequences of negative peer interaction on self-organized learning.

In this fast-changing world, we need to provide an enabling environment to higher education students where they can freely learn with each other and with professionals. Knowledge is available on finger tips and we need to adapt new pedagogical methods so that our teaching can trigger curiosity and interest in their mind. The opportunity to learn from peers needs to be provided and encouragement to make the interaction with peers as a component of learning as great importance is needed.

We need to adapt new learning methods and bring change in traditional classroom teaching and learning methods. We could update our assessment methods, which may examine the ability of students to solve problems and think critically rather than testing how much information students remember. While designing the pedagogical method for higher education students, we should focus on interest and curiosity of higher education students. Self-organised learning has the potential to increase effective learning among higher education students and students seem to experience a mental state known as 'flow'. An essential question is arising: can we measure how much learning can be fastened and to what extent time taken to learn can be reduced in self-organizing learning, which sometimes induces 'flow' among higher education students.

References:

Axelson D. & Arend F. (2011). *Defining student engagement,* Change, Vol. 43, No. 1 (January/February 2011), pp. 38-43 Published by: Taylor & Francis, Ltd. Stable URL: https://www.jstor.org/stable/23568219

Bonaiuto, M., Mao, Y., Roberts, S., Psalti, A., Ariccio, S., Ganucci Cancellieri, U., & Csikszentmihalyi, M. (2016). Optimal Experience and Personal Growth: Flow and the Consolidation of Place Identity. *Frontiers in Psychology*, *7*.

Cabrera, Alberto F.; Nora, Amaury; Bernal, Elena M.; Terenzini, Patrick T.; Pascarella, Ernest T.(2018) 'Collaborative Learning: Preferences, Gains in Cognitive & Affective Outcomes, and Openness to Diversity among College Students'

Carver, T. (2011). Peer Assisted Learning, Skills Development and Generation Y: A Case Study of a First Year Undergraduate Law Unit. *Monash University Law Review*, *Issue 3*, 203.

Cllaco C. (2017). *Increasing Student Engagement in Higher Education* ,University of San Francisco by 40 Journal of Higher Education Theory and Practice Vol. 17(4) 2017

Costaa C, Cardosob A., Limac M., Ferreirad M., Abrantese J. (2014) 'Pedagogical interaction and learning performance as determinants of academic achievement' ICEEPSY

Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*.

Csikszentmihalyi, M., & Asakawa, K. (2016a). Universal and Cultural Dimensions of Optimal Experiences. *Japanese Psychological Research*, *58*(1), 4–13. https://doi.org/10.1111/jpr.12104

Dangwal, R., & Kapur, P. (2009b). Social networking effect at "HiWEL" kiosks amongst children. Multicultural Education & Technology Journal, 3 , 290–305.

DeBoer, J. (2009). Th e relationship between environmental factors and usage behaviors at "hole-in-the-wall" computers. International Journal of Educational Development, 29 (1), 91–98.

Fook & Sidhu(2014) *Learning challenges faced by higher edu students.pdf*
Framing student engagement in higher education: Studies in Higher Education: Vol 38, No 5. (n.d.). Retrieved October 7, 2019,

Fook C., Sidhu G.(2014) 'Investigating Learning Challenges faced by Students in Higher Education' 5th World Conference on Learning, *Teaching and Educational Leadership*, WCLTA

Hole in the wallALTC_2010_keynote_Sugata_Mitra_transcript.pdf. (n.d.).

Keeling, R.P., & Hersh, R.H. (2012). We're losing our mind: Rethinking American Higher Education.New York, NY: *Palgrave Macmillan*

Inamdar, P. (2004). Computer skills development by children using "hole in the wall" facilities in rural India. Australasian Journal of Educational Technology, 20 , 337–350.

Inamdar, P. (2004). Computer skills development by children using "hole in the wall" facilities in rural India. Australasian Journal of Educational Technology, 20 , 337–350.
http://wyomentalhealth.org/poc/view_doc.php?type=doc&id=41164&cn=1310

Mitra,S.(2003).Minimally invasive education: a progress report on the 'Hole-in-the-wall' experiments. The British Journal of Educational Technology, 34, 3, 367–371.

Mitra,S.(2009).Remotepresence:'beaming'teacherswheretheycannotgo.Journalof Emerging Technology and Web Intelligence, 1, 1, 55–59.

Mitra, S. & Kumar, S. (2006). Fractal replication in time manipulated one-dimensional cellular automata. Complex Systems, 16, 3, 191–208.

Mitra, Kulkarni & Stanfield (2016). 'Learning at edge of chaos'. *Th e Palgrave International Handbook of Alternative Education*, DOI 10.1057/978-1-137-41291-1_15

Mitra, S. & Rana, V. (2001). Children and the Internet: experiments with minimally invasive education in India. *The British Journal of Educational Technology*, 32, 2, 221–232.

Mitra, S., Tooley, J., Inamdar, P. & Dixon, P. (2003). Improving English pronunciation: an automated instructional approach. *Information Technologies & International Development*., 1, 1, 75–84.

Mitra, S., Dangwal, R., Chatterjee, S., Jha, S., Bisht, R. S. & Kapur, P. (2005). Acquisition of computer literacy on shared public computers: children and the 'Hole in the wall' .*Australasian Journal of Educational Technology*, 21, 3, 407–426.

Mitra,S., Dangwal, R.& Thadani, L.(2008).Effects of remoteness on the quality of education: a case study from North Indian schools. *Australasian Journal of Educational Technology*, 24, 2, 168–180.

Nortvig A., Peterson A. , Balle S. (2018) ' A Literature Review of the Factors Influencing E-Learning and Blended Learning in Relation to Learning Outcome, Student Satisfaction and Engagement' *University College Absalon*, Denmark

Roksaa J., Kilgob C., Trolianc T., Pascarellad E., Blaiche C., Wisee K. (2017) 'Engaging with Diversity: How Positive and Negative Diversity Interactions Influence Students' Cognitive Outcomes'

Yil Y.(2014). *The relationships between student engagement and their academic achievement*, International Journal on New Trends in Education and Their Implications October 2014 Volume: 5 Issue: 4 Article: 19 ISSN 1309-6249