From Emergency Remote Teaching to HyFlex Teaching: Are Openness and Flexibility the New Normal?

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Abstract:

With the decline in cases of Covid-19 in India, schools reopened in September 2021 in a staggered manner for grades 9 to 12. Teaching in physical mode with all Covid-19 protocols in place was quite challenging. Some schools adopted the HyFlex (Hybrid Flexible) mode, simultaneously teaching half the learners physically and half, online. A qualitative study was done to find out the experiences of post-secondary learners using the HyFlex mode in a Central government-run regular school in Delhi, India. An online questionnaire with five open-ended questions and one rating-type question was filled by 64 learners. Thematic content analysis of the data revealed that 67.2 percent of the learners in the sample found Hyflex to be extremely useful in the scenario immediately after the pandemic. Flexibility and accessibility in HyFlex mode emerged as the most valued feature in most of the responses indicating a preference of learners for openness in school education. The study presents significant findings which will help to improve the HyFlex experience of learners.

KEYWORDS: *Hyflex, Senior Secondary School, Flexibility, Learner Perception, Covid-19*

The Covid-19 pandemic disrupted traditional classroom learning and compelled schools to develop smarter and sustainable strategies for delivering education for all (Azevedo et al., 2021). The experimentation with alternate open and distance learning (ODL) tools by schools began with emergency remote teaching (ERT) during complete closure of schools amid the pandemic. Subsequently, a shift to HyFlex happened as schools started opening partially and in a staggered manner for senior secondary classes. Bozkurt and Sharma (2021) describe this transition of pedagogy amid the pandemic from face-to-face (F2F) to screen-to-screen (S2S) followed by mask-to-mask (M2M) to restore the preconceived gold standard of education which is thought to be achieved only within the four walls of the school. Hodges et al. (2020) define ERT as a temporary shift of

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the F2F instructional delivery to an alternate delivery mode using fully remote teaching solutions due to crisis circumstances.

The HyFlex model given by Dr. Brian Beatty in 2010 is a delivery mode where online and F2F components are synchronously integrated into a single course providing flexibility to learners to attend through any of the two modes (Abdelmalak & Parra, 2016). The study by Bhaumik (2020) to assess the existing state of digital infrastructure, digital access, and e-readiness of post-secondary school learners in India found use of online learning tools during the crisis to be unfeasible and inequitable for a vast section of learners. This indicates that learners and teachers had to experience disparate experiences because the online mode was not a familiar or popular mode of instruction before the pandemic in India, especially in school education.

Teachers, with little or no training in ERT and HyFlex, could not fully utilise them for teaching and hence found them challenging. Although both ERT and HyFlex were adopted as emergency measures in the Indian context, addressing the pandemic-spurred challenges, an interesting aspect of the crisis pedagogy that emerged was the openness and flexibility which these delivery modes had to offer. The education system has been slowly but conspicuously moving from being teacher-centered to becoming learner-centered, and the elements of openness and flexibility are a step forward towards enforcing the learner-centric paradigm. Therefore, it would be pertinent to study the experiences and responsiveness of learners toward HyFlex mode to explore a sustainable learning solution for normal as well as challenging times in an increasingly changing environment vulnerable to threats of pandemics, extreme weather conditions, air pollution, and other natural calamities. Even after the reopening of schools in September 2021, after approximately 18 months, schools in the National Capital Territory of Delhi had to switch back to ERT on 15 November 2021 for two weeks when they were shut due to dangerously high levels of pollutants and suspended particulate matter (SPM) in the air. This supports the argument to find alternate sustainable learning modes for learners to mitigate their learning losses.

REVIEW OF LITERATURE

(i) HyFlex and Covid-19: Beatty (2007), who pioneered the design of a HyFlex course, describes it as a flexible instructional method where learners may either choose to attend F2F synchronous class sessions or complete the course activities completely online without physically attending classes. Further, he describes four

essential elements of a HyFlex system—learners' choice, equivalency of learning activities in all modes, reusability of the learning objects created as a part of classroom activity by all the learners, and equal accessibility to all the learners of both the modes. Within the context of this study, most of these elements of the HyFlex mode were identified in the sample because learners had the choice to attend the classes in either mode, and the learning objects were shared with all learners on Google Classroom (GC), the learning management system (LMS) used by the school. The HyFlex system is a more flexible form of blended learning (Kyei-Blankson & Godwyll, 2010) which provides equal educational opportunity to all types of learners (Liu & Rodriguez, 2019). Covid-19 transitioned all F2F educational delivery into distance mode of delivery and, therefore, Keiper et al. (2021) stress the need for researchers to explore the effectiveness of multiple tools that can be integrated into the spectrum of delivery modalities.

(ii) **Previous Studies on HyFlex :** The study done by Miller et al. (2013) found that the majority (95 percent) of the learners agreed that the use of technology made the course material more interesting and easier to understand. Contrary to this, Passyn (2021) compared learning of in-person vs. Zoom learners using Kahoot quizzes and found that the learners on Zoom consistently performed worse on quizzes than in-person learners. Similar findings were obtained by Inglis et al. (2011) in their study where the online learners displayed lower attainments than those who attended the classes on-campus. To explain these findings, Inglis et al. (2011) pointed towards the need for guidance to learners to choose the best combination of study strategies for themselves while studying in a HyFlex mode. However, the findings are inconclusive as there is a need to further study the effectiveness of HyFlex mode in real settings due to the limited literature available (Miller et al., 2021; Leijon & Lundgren, 2019; Kyei-Blankson & Godwyll, 2010).

(iii) **Challenges of HyFlex:** Abdelmalak and Parra (2016) noted physical and technical difficulties with web conferencing tools as the most common challenge which affected the equivalency experience of the F2F and online mode for the learners. The adaptability of teachers to effectively respond to the changing landscape of education is crucial to bringing openness and flexibility in the classrooms (Alterator & Deed, 2013). Wright (2020) emphasises the need for strengthening ICT infrastructure and technical support for teachers in the school

for the successful implementation of HyFlex mode. The execution of HyFlex was found to be difficult for teachers because designing for online and live streaming conflicted with their physical space and pedagogical goals making it difficult for teachers to interact with the remote learners (Leijon & Lundgren, 2019; McNaughton et al., 2014).

OBJECTIVES OF THE STUDY

1. to find out the perception of senior secondary learners towards HyFlex mode of learning;
2. to list the difficulties encountered by the learners in the HyFlex mode and
3. to measure the readiness of learners to study by HyFlex mode in the post-Covid world.

METHODOLOGY

The study used the qualitative method with a phenomenological research design to investigate learners' experiences of the HyFlex mode of learning for two months (September and October). In a phenomenological design of inquiry, lived experiences of the same phenomenon by a group of individuals are described to understand the reality from the participants' perspective (Creswell & Creswell, 2018). According to Umanailo (2019), the phenomenological approach looks at human behavior as a product of their interpretation of their experiences. The researcher used a phenomenological approach in this study to understand how the participants interpreted their experience of HyFlex learning.

DATA COLLECTING TOOLS

For collecting data, a semi-structured, open-ended questionnaire was designed by the researcher. The questionnaire consisted of five questions about 1) the initial feeling of learners on joining the physical school after a long period of ERT 2) learner perception of usefulness of HyFlex in the current scenario 3) problems experienced in the HyFlex mode 4) perception of useful features and suggestions for improvement and 5) readiness to study in HyFlex mode in post-Covid. Besides, there was one question on the rating of HyFlex experience on a scale of 1 to 5 where 1 meant minimum score and 5 was for maximum score.

VALIDITY AND RELIABILITY

The content validity of the questionnaire was done with the help of experts in the

field of education. Their suggestions were incorporated in the final questionnaire. For reliability, pilot testing was done on a smaller sample of 10 learners which helped the researcher frame appropriate instructions for the participants to fill the written questionnaire.

SAMPLE OF THE STUDY

The sample under study was selected from a Central government-run school in Delhi where HyFlex mode was being used for teaching-learning transactions for grades 9 to 12 in response to the standard operating procedure (SOP) issued by the Delhi government on reopening of schools. Convenience sampling was adopted to select a sample of 80 learners of grades 11 and 12 who could provide insightful responses to the questions related to the HyFlex experiences of secondary school learners. From the sample (80), a total of 64 learners participated in the survey.

DATA COLLECTION

The participants were given appropriate instructions on filling out the written questionnaire in the school setting by the researcher. They were asked to write descriptive answers to the open-ended questions genuinely true to their thoughts. They were also assured about the confidentiality of their responses. Each of the five questions and the rating question was explained in detail, and all queries from the participants were satisfactorily resolved. The questionnaire was designed in Google Forms and sent online to 80 learners of one section each of grades 11 and 12. Out of 80, 64 completed forms were received.

DATA ANALYSIS

Data was analysed using the content analysis technique. Stemler (2000) concludes content analysis as a systematic and powerful technique for data reduction based on explicit rules of coding. The data obtained for each of the questions were listed down and coded to identify the emerging themes. These themes were then collated to interpret the responses of the participants.

FINDINGS AND DISCUSSIONS

Demographical Information

The participants were senior secondary learners of a regular school belonging to the age range of 15-18 years. Out of 80, a total of 64 (40 females and 24 males) responded to the questionnaire. A good response rate of 80 percent was obtained due to the convenience

sampling used by the researcher. There were 33 learners in grade 12 and 31 in grade 11. Data was collected for a month from 15 October 2021 to 15 November 2021. The following charts depict the distribution of participants in the sample.

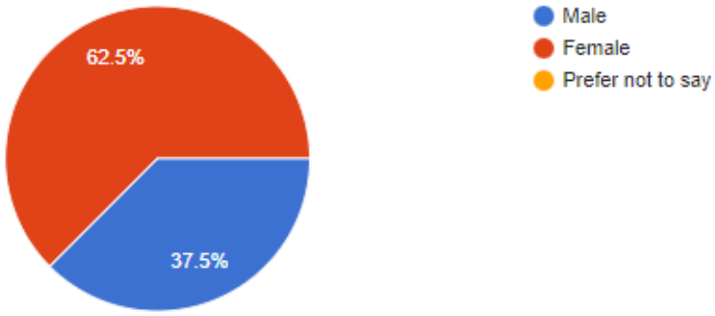

Figure 1. Sex-wise distribution of the sample

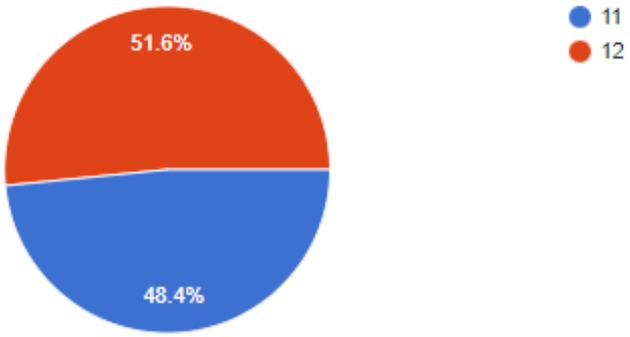

Figure 2. Grade-wise distribution of the sample

Objectives 1 - To find out the perception of senior secondary learners towards HyFlex mode of learning

(i) **The initial perception of learners on joining the physical school back after a long period of ERT:** The long period of social isolation and home schooling had an effect of fatigue on the learners and they eagerly looked forward to schools reopening. In the study, 54.7 percent of the participants said they were excited and happy about returning to school after Covid-19. But this feeling was not without the worry of getting infected with the Corona virus as 31.2 percent of the participants expressed mixed emotions of feeling happy and scared of Covid at the same time. Another 7.8 percent were hesitant of going to school due to fear of Covid and 6.3 percent of the learners said they were unsure.

Table 1. The feeling of returning to school after Covid

Primary Feeling Identified	Frequency (N=64)	%
Happy and excited	35	54.7 %
Mixed emotions (happy and scared of Covid-19)	20	31.2 %
Hesitant due to fear of Covid-19	05	7.8 %
Unsure	04	6.3 %

Some of the verbatim responses were:

"I felt very exicted as I was returning to school after a long period and was happy to meet my friends and teachers but also scared of Covid as it is not over till now."

"Confused about how classes and exams would be conducted and was apprehensive about interacting with people after a lot of days."

(ii) Learner perception on usefulness of HyFlex learning in current scenario: The school implemented the HyFlex model as a measure of maintaining social distancing by allowing only half of the total number of learners into the campus. For this, the learners were given the option of joining physical classes or online classes, depending upon their choice and parental consent. The learners were divided into two batches that could attend physical school on an alternate basis. The arrangement was such that the batch of learners who attended offline classes on a particular day would attend online classes the next day. Besides, some learners were allowed to join offline classes every day, and some chose to join only online classes for all the days. Thus, there were three categories of learners: 1) learners who attended online and offline on alternate days; 2) learners who attended only offline; and 3) learners who attended only online. All other precautionary measures like ample availability of sanitisers and handwashing facilities on the campus, temperature check and sanitisation of learners at the gate, and strict monitoring of physical distancing among the learners were diligently followed by the school.

Asked about their HyFlex experience, a majority (67.2 percent) of the learners found the model to be extremely useful, especially in the present circumstances where Covid cases have declined but not been eliminated. The participants recognised HyFlex as useful in keeping them safe from Covid and beneficial for those who had health issues or were outstation learners as they could join their classroom online without missing out on studies. They also liked HyFlex particularly because of being able to attend the

school and interact with teachers and peers F2F. These responses indicate learners' acceptance of flexibility of HyFlex and its accessibility and openness to distant learners when F2F mode cannot be fully realised. Some of the participants (28.1 percent) also said that they didn't find HyFlex useful and wished for fully offline classes primarily citing lack of practical and hands-on activities in online mode, disruption due to network disconnections, online experience not comparable to F2F, teachers finding difficult to pay attention to both online and offline learners, and their own inability to follow a systematic routine in HyFlex.

Table 2. Learner perception about usefulness of HyFlex

Primary Feeling Identified	Frequency (N = 64)	%
Positive perception	43	67.2 %
Negative perception	18	28.1 %
Neutral	03	4.7 %

Some of the verbatim responses were:

"HyFlex can be helpful for all learners because offline classes make us understand well and we can also ask doubts to teachers in person. Online classes are also very helpful as some learners can go to school and some can attend online which is very good for Covid-19."

"It is good for learners with deteriorating health conditions of themselves or of their families."

"I don't think that Hybrid Flexible classroom is good because if we go on alternate days, it is like on one day you have to go to school so you have to wake up early and on online day you will just wake up before the class starts."

Objective 2 - To list the difficulties encountered by the learners in the HyFlex mode

For the implementation of HyFlex mode, the school administration had taken definitive measures to support the teaching-learning process like installation of more wi-fi routers, LAN cable connection to laboratories, and some of the classes with smartboard and projector facility on every floor of the three storeyed-school building. Teachers usually used laptops, tablets, or smartphones with tripods to stream their physical classes to online learners on diffrent platform. The classrooms with smartboards and projectors were provided with an HDMI cable that could be directly connected with the laptops for easy projection of the learning resource being presented online to the F2F learners.

Additionally, all the learning resources or objects and assignments were posted on the used platform by teachers.

Though most of the participants found HyFlex useful, the participants could easily point out the inherent problems they experienced in this mode. After analysing the data, the responses could be categorised into six major headings—1) technical issues, 2) health issues, 3) teacher-related issues, 4) effectiveness aspect, 5) discipline- and consistency-related issues, and 6) related to learner attitude.

These problems expressed in various degrees by the respondents pose a serious bottleneck in realising universal flexibility and openness of HyFlex mode.

Table 3. Problems experienced in the HyFlex mode

Nature of the problem	Frequency (N = 64) (no. of times the theme emerged)	%
Technical issues	32	50.0 %
Health issues	20	31.3 %
Teacher-related issues	15	23.4 %
Effectiveness aspect	8	12.5 %
Discipline-related issues	7	10.9 %
Related to learner attitude	5	7.8 %

(*multiple themes emerged from individual responses)

(i) Technical issues: Technical issues in the form of unstable internet connectivity at the teacher's end and the lack of appropriate infrastructure for smooth conductance of HyFlex classes uniformly for all subjects came out explicitly in 32 responses out of 64. Some subjects' HyFlex classes rendered a better learner experience than others. The experience also differed from teachers conducting classes on laptops to those doing the same on smartphones or tablets. The speed of internet connection too varied from subject to subject. These factors affected the equivalency aspect of Beatty's HyFlex model as online learners faced much more difficulty than faced by F2F learners. The F2F learners also were not free from distractions as considerable time was taken by the teachers to put in place the entire set-up for HyFlex classes or to attend to technical glitches which happened intermittently with the online component of HyFlex most often. Still, F2F learners expressed more satisfaction as compared with the online learners as they could easily speak to the teachers after the class on the school campus or could discuss their academic queries with peers.

(ii) **Health issues:** Most of the participants felt that the online component drained their energies. Excessive screen time due to back-to-back classes affected their eyesight. Some expressed their inability to study in front of the screen or from digital objects, mainly because of familiarity and preference for physical books and notebooks. A few also said that they preferred studying in a group like in physical classes rather than studying alone in online classes at home. Contrary to this, those learners who had health problems or suffered from seasonal infections were happy that they could still join their classes online which they were unable to do in entirely F2F classes held before Covid.

(iii) **Teacher-related issues :**The second most frequent category which emerged from the participants' responses was teacher-related issues. Participants highlighted that it was challenging for teachers to manage both the F2F and online learners synchronously together in the HyFlex classroom. The proficiency of using technology in HyFlex classroom was something that most teachers were not adept at and this affected the learning experience of online learners. Many learners admitted to having a far better learning experience in the F2F mode in contrast to the online mode of the HyFlex model. Some of the explicit teacher-related issues were the inability of teachers to operate multiple devices for the HyFlex set-up; not able to attend to both groups of learners (online and offline) together, if online learners got disconnected, the F2F continuity would break as the same topic had to be repeated for online learners when they reconnected; wastage of time in resolving technical issues, sometimes the teacher would be on mute inadvertently. Learners' voices could not be heard by the teacher in some of the setups. If the teacher used the blackboard or whiteboard, it was not visible to online learners. Also, the movement of the teacher got restricted as moving away from the set-up meant online learners couldn't hear the teacher's voice clearly. However, some responses also indicated subsiding of many of the teacher-related issues with time. This shows that teachers were trying to adjust to the new model and succeeded to some extent in reducing the distractions which happened in the initial phase of the HyFlex implementation.

(iv) **Effectiveness aspect:** Many participants raised the issue of effectiveness in a HyFlex learning environment and said that HyFlex was not as effective as the complete F2F classroom. The reason they cited was that it was difficult for them to understand and grasp a concept fully in HyFlex because of frequent disruptions

and a feeling of disconnect due to the alternate arrangement of one day online and the next day offline. The effectiveness of learning is a function of many factors like the effectiveness of the teacher, active participation of the learners, a good learning environment free from distraction, availability of multiple learning resources, etc. The HyFlex mode being a novel concept for Indian schools, its effectiveness can rarely be compared with the centuries-old F2F traditional classroom highly familiar both to the teachers and the learners. However, a few learners also presented an opposing view regarding its efficacy, crediting HyFlex with enhancing the effectiveness of the F2F classroom using the technology. They said that the use of online learning resources by the teachers during the HyFlex class and the learning objects posted using the appropriate plateform helped in enhancing their understanding and hence made the class more effective.

(v) **Discipline and consistency-related issues:** This aspect was a result of self-reflection done by the participants on their ability to self-regulate their learning by staying motivated and consistent. The participants viewed HyFlex as ruining their consistency because the alternate arrangement of online-offline meant a change in their daily routine every alternate day. This they found to be intimidating and an obstacle in their effort to maintain a daily study schedule. A few participants gave differing views as they perceived the online days to be more relaxing and rejuvenating with plenty of time for self-study.

(vi) **Issues related to learner attitude:** In the responses, some learners expressed their boredom with the online mode for over one year and this made them resist the online component of HyFlex. The Covid-19 impinged a negative attitude for online among the learners. This pre-conceived negative attitude also magnified the perception of problems with the HyFlex mode for some of the learners. Technical and health issues expressed by 50 percent and 20 percent of learners, respectively, indicate a serious amplitude of difficulties in accepting HyFlex as absolutely flexible and universally open instructional mode worthy as an absolute substitute of F2F mode whenever possible. Seen from the perspective of universalisation of education, HyFlex mode may not be as open and flexible option as F2F unless the aforementioned issues are addressed cogently. However, the significant present flexibility and openness make HyFlex as a potent mode for instructional transactions in situations where the possibility of F2F is remote.

(vii) Perception of useful features and suggestions for improvement: The participants perceived the flexibility and freedom to choose online or offline mode of learning as the most useful feature of HyFlex as this emerged 20 times in the responses. The other benefits they perceived were an equal opportunity for everyone to learn, catering to the need of all kinds of learners, minimising learning loss of learners in the pandemic, saving of time and energy, accessibility to the vast number of online learning resources, and features of online platforms that enables them to systematically see their grades and receive feedback from teachers. To improve the HyFlex model being used in the school, the participants came up with several suggestions, the foremost being a good internet connection to be made available in the school. Besides, strengthening of digital infrastructure and resources for smooth conduction of HyFlex classes, technical support to teachers, training of teachers and learners in using technology for studies, improving the teaching pedagogy of HyFlex, sharing of recorded class lectures on online platforms, etc. were highlighted in the participants' responses. Most of the learners believed that HyFlex could improve with time and strengthen educational practices.

Table 4. Perception about useful features of HyFlex

Nature of the problem	Frequency (N=64) (no. Of times the theme emerged)	%
Flexibility	20	31.3 %
Equal opportunity	12	18.8 %
Meets needs of all learners	05	7.8 %
Minimise learning loss	10	15.6 %
Saves time and energy	7	10.9 %
Accessibility to online resources	15	23.4 %

(* multiple themes emerged from individual responses)

Some of the verbatim responses were:

"The biggest problem that I encounter is the network issues during online days. It can be either from the teacher's end or from the learner's end, but either way, there is disruption in classes and on the offline day due to the break in our previous online class we are not able to efficiently grasp the concept."

"Its effectiveness is still less than the full mode offline classes as some part of the syllabus is taught online and some offline. So, it becomes very difficult for us to maintain continuity in all the topics."

Objective 3 - To measure the readiness of learners to study by HyFlex mode in the post-Covid world.

It is interesting to note that despite the participants recognising HyFlex as a useful mode of learning, they didn't exhibit much readiness for studying in this mode after all Covid restrictions were gone. A maximum of 70.3 percent of the participants said they didn't wish to continue with HyFlex and would rather opt for fully F2F classes. This could mainly be because of the effect of fatigue of continuous online classes during Covid-19 which made them look forward to F2F interaction with teachers and peers. Other reasons they listed were the desire to get back to normal times, suitability of HyFlex only in special conditions like the present, better pedagogy of F2F, HyFlex considered as difficult and required a lot of rigor and self-discipline from learners, challenging for teachers, the schools' learning environment cannot be created at home. Some also cited lack of physical activities, work experience, music, library classes, and other co-curricular activities which they found missing in HyFlex and considered an important part of schooling for the personality development of learners. Preference for HyFlex was shown by 26.6 percent of the participants as they recognised it to be learner-friendly and a good method to learn if the current bottlenecks are overcome in the coming times. The rest of the participants (3.2 percent) were undecided on this.

Table 5. Readiness to study in HyFlex mode post-Covid

Whether willing to opt HyFlex	Frequency (N=64)	%
Yes	45	70.3 %
No	17	26.6 %
Undecided	02	3.1 %

Some of the verbatim responses were:

"No, because since our childhood we are in practice of the offline mode of classes and personally I observed that the percent of learning which we do in offline mode of classes is far far better than the online mode of classes and in online mode we need to make a strict schedule for us to follow and obey which many of us find difficult but in offline mode learning just goes with the flow and far better than online mode."

"Yes definitely, to be honest it is very hard for me to do time management but studying in HyFlex mode gives me 4-5 hours extra of my daily routine which is very big thing for me."

Overall Rating of HyFlex experience:

Only 5 learners rated their HyFlex experience the highest and only one rated as the lowest. An average rating of 3.4 out of 5 could be assigned to their experience based on responses. The figure below gives detail of how they rated their experience.

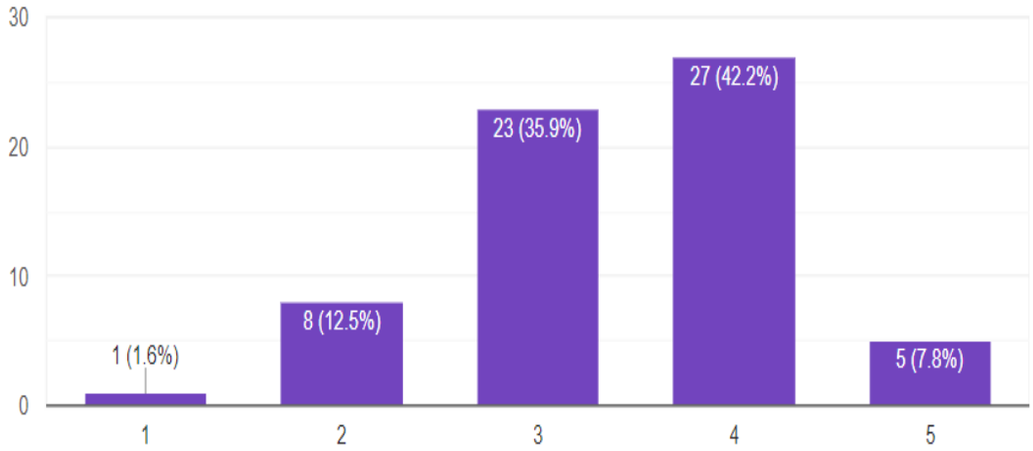

Figure 3. Rating of HyFlex experience by the participants

CONCLUSION AND SUGGESTIONS

The present study was a qualitative investigation of the HyFlex experience of senior secondary learners of a central government school in Delhi, India through an open-ended questionnaire. The findings suggest that the learners were happy to return to the school after a long period of Covid-led home schooling using Emergency Remote Teaching (ERT). Many of them were hesitant to join school due to fear of Covid but the introduction of HyFlex mode helped allay their fears to a great extent. In the HyFlex system, the learners got the opportunity to choose which mode they would like to learn and this was recognised as the most useful feature by the participants.

The HyFlex mode with its potential to bring flexibility, openness, and personalisation in the F2F classroom can be a great catalyst in moving towards a learner-centered approach which until now has been quite missing in the F2F schooling system in India. This mode is not free of challenges as the learners in the HyFlex mode encountered

six types of major problems related to technical issues, health issues, teacher issues, effectiveness, discipline, and learner attitude. For the improvement of learners' experience in HyFlex, it is strongly recommended that schools should be equipped with a robust infrastructure to meet the technological requirements for its successful implementation.

The teachers who are at the center stage of all educational processes must undergo an extensive continuous professional development program to learn new skills and pedagogy of new models of learning. At the same time, it is emphasised that the learner needs to be reoriented toward more flexible options of learning and trained in self-directed learning techniques to tune with the changing times. In this study, 70 percent of learners expressed their unwillingness to learn through HyFlex under normal circumstances despite their appreciation of its openness and flexibility. This further stresses the need to bring an attitudinal change in learners' psyche towards acceptance of HyFlex as a viable mode of learning.

In an unpredictably changing world, nothing should stop children from learning and hence it becomes important to develop more sustainable modes of learning like HyFlex which can integrate two different modes, allowing all learners to accommodate in a single class where physical distancing is a norm. The recent developments indicate that shift towards flexibility and openness in school education is not a choice but a necessity to combat future challenges. This study is not free from limitations as it is a small-scale study whose findings cannot be generalised. More studies on HyFlex in different settings in the Indian context are suggested to further assess its effectiveness.

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