Impact Analysis of Education in Emergency (EiE): A Case of Wangduechhoeling Lower Secondary School, Bhutan

Jamtsho [a*]

[a] *Wangduechhoeling LSS, Chokor Bumthnag, Bhutan.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Original Research Article

ABSTRACT

This paper closely examines the impact of Education in Emergency (EiE) amid the pandemic in Wangduechhoeling Lower Secondary School (WLSS), under Bumthang district, Bhutan. The study also tries to look into how each pupil can exercise a right to learn during the pandemic despite their family background. It touches upon several aspects such as learning progress of the students, learning gaps, and its contingency programs. It further highlights how students' parents would play a parental role in providing spontaneous learning space and time. And this case study assesses the effectiveness of the implementing EiE programs in the school.

Using the central limit theorem (CLT), we analyzed the data from 30 percent of the population (180 students and 90 parents). The findings of the study revealed that most students had responded that online learning was effective. 94.4 percent of the students responded that learning through EiE was effective, and 88.8 percent of the students enjoy EiE lessons. However, 36.6 percent of the students responded that they faced difficulty in using different learning forums. 96.6 percent of the students had textbooks with them, 81.1 percent of teachers assessed tasks given through Television, Radio, Self-Instructional Materials (SIM) lessons. The findings also indicated that 81.6 percent of the parents had been supportive in their children's learning. Due to emergence of COVID-19 pandemic and the consequent closure of the school, 57.7 percent of students' interest towards learning was affected. On other hand, the study depicted that 97.7 percent of students were excited to return to school as and when reopens. In addition, the study revealed that while 64 percent of the students had availed 60 percent special data packages discount, 55.7 percent of them had not availed it.

_____

Corresponding author: E-mail: jamtsho69@gmail.com;

1. BACKGROUND AND SIGNIFICANCE OF THE STUDY

The COVID-19 pandemic has not only affected on economy and lifestyles of the people across the world, but also has a greater impact on education system. Consequently, the use of technology to deliver online learning appeared drastically [1,2]. The education system has intensely affected due to closure of schools in many countries across the world [3]. Similarly, due to frequent nationwide lockdowns and executing stringent health protocols, all the universities, colleges, and schools across Bhutan was forced to adopt various online learning devises.

To navigate the education through the COVID-19 virus, the Ministry of Education has taken sweeping measures to make education accessible for continuity and lesser disparities among the learners. On the other hand, this crisis has been blessing in disguise as it stimulated innovation within the education sector to come up with innovative approaches in support of education and training continuity. The education sector introduced various learning modalities such as TV and Radio lessons for children who were accessible to these facilities. Self-Instructional Materials (SIM) were developed for those children who did not have access to TV and radio lessons. As an interim measure, the Dzongkhag Education Office had instantly started implementing the Education in Emergency (EiE) directives and decided to shift teaching, learning and assessment to online. According to Nicolai [4], EiE is a set of programmed activities which are prepared to enable and continue structured learning platforms during the times of acute crisis or prolonged instability in a community or country. He added that educations activities in emergencies vary from one system to another according to the nature of crises or pandemic. The schools had looked into various means to connect with students and oriented students on installation of Google Classroom App and how to use them for online teaching and learning process.

Wangduechhoeling Lower Secondary School (WLSS) is located on a vast plain with 9.44 acres in the heart of the Chhoekhor valley. To its south is the great Wangduechoeling palace, once the seat of the royal family and to its north lies the majestic Jakar *Dzong* perched on a hillock. Every one passing to the interior of the valley can catch the glimpse of the school. The school was first established in 1991 near Wangduechoeling *Dzong* in rented buildings to ease the admission pressure of Jakar Junior High School. It was shifted to the present site on 8th March 1995 as Jakar Primary School. The school was upgraded to a Junior high school in 1998 on the Royal command of His Majesty the King.

At present the school has classes from Pre-primary-VIII with 920 students (465 boys and 455 girls) and 50 staff (40 teachers and 10 support staff). The school turned 25 years in 2020 after shifting to this present site and could celebrate Silver Jubilee 2020 by developing Silver Jubilee Memorial Park consisting of *Mani Dungkhor* (prayer wheel), Canopies, Photo gallery of Monarchs of Bhutan, and a flower garden established by a group of the school's alumni. On the other hand, the school could establish a wonderful Silver Jubilee Memorial Park successfully amid the closure of the school during the pandemic.

Teaching learning modalities practiced in schools during the pandemic, were Google Classrooms for upper primary (classes IV to VIII) and WeChat for lower primary (PP to III) mainly. The SIM lesson initiated by the Ministry of Education was widely used by the students who did not have access to online classes. Going by the children engagement in learning during closed school, it is impressive to find out that about 99 percent of the children were active in learning addressing the concerns of higher rate of dropouts and repetition. Mobile teaching conducted by the teachers found out to be more effective in teaching learning and timely assessment of the students.

Furthermore, the initiative of the Ministry of Education on the impact study of EiE would place the school at better avenue to assess the effectiveness of its activities during the pandemic. It will also prepare the school to identify the learning gaps and intervene accordingly in future. This study is conducted to find out the impact of the EiE teaching learning process, escalated roles of teachers, parents, government and other key partners for the future preparedness.

1.1 Research Objectives

1. To examine learning progress of the students amid COVID-19 situation.
2. To identify the gaps in the learning modalities, coverage, and reach.
3. To suggest appropriate interventions and programs to bridge the gaps.
4. To collect views and recommendations for further improvement of online teachings from the teachers, parents and students.
5. To gather information on household factors such as parental support, guidance for learning, access to electricity, television, data packages, and other devices.
6. To meet the mandates and other requirements for the successful implementation of EiE program in the near future.

The rest of the paper is arranged as follows; section 2 discusses related literature. Section presents methodology and data employed whereas section 4 discusses findings and discussions. Lastly, section 5 concludes with a short summary.

2. LITERATURE REVIEW

Although the pandemic hit the entire world with major destruction on human lives, Bhutan remained with very minimal consequences under the benevolent His Majesty and the Royal Government of Bhutan. Like most of the countries had to adopt various new online learning modalities, Bhutan had experienced Education in Emergency (EiE) for the first time in its history. COVID-19 has put our country to take up Education in Emergency for the continuity and narrow down the disparities in making education accessible to all the children. Stephenson [5] states that education systems can be affected by four types of emergencies: political, environmental, health and economic crises. Violent conflicts cause political crisis, natural disasters cause environmental crisis, which can be both sudden and slow onset. Increased rates of sickness and death resulting from widespread disease and epidemics cause health crisis.

With the first case of COVID-19 in Bhutan on 5th March 2020, the schools in affected *Dzongkhags* were closed. Following that on 18th March 2020, all the schools were closed as per the government's directive. Bhutan was not fully prepared for such pandemic and teaching learning process was withheld for some time.

Later the Ministry of Education came up with the Education in Emergency approach, mobilizing varied means. Stephenson [5] states that the "role of education in emergencies" can refer to both the objectives to be achieved through education and the objectives to be achieved by supporting education during a humanitarian emergency". Foreseeing the future implication of children, the Royal Government of Bhutan unfolded various platforms to have spontaneous teaching learning during this pandemic time. Stephenson [5] also asserted that the role of education in emergencies refers to both the fulfilment of the right of access to education during emergencies, and enabling the fulfilment of that right through humanitarian relief activities in sustenance of education implemented through the Consolidated Appeals Process (CAP).

However, Bhutanese Education System staggered in the beginning with commotions amongst the public, students and education sector. The Kuensel, a national newspaper, dated 28th March 2020, covered that after the closure of schools due to the pandemic since March 5 there had been hues and cries among teachers and parents on e-learning in different schools [6]. And it was obvious that Bhutan was not prepared for Education in Emergency as it did not happen earlier. The Covid-19 response plan of ministry stated that the Education Emergency Operation Centre (EEOC) was activated in line with Education Disaster Response Coordination Mechanism (EDRCM), to respond to Education in Emergencies (EiE) only on 6th March 2020 and the Guidelines for curriculum implementation plan for Education in Emergency was launched only on 26th March 2020 [7].

Similarly, teachers were not prepared for the Education in Emergency teaching methods. The Ministry of Education had to provide trainings to the teachers to teach online. However, it was found to have discrepancies in teaching among different levels of the students. Ministry of Education [8] stated that many primary school children found Google Classroom unfriendly due to lack of competency and skills to handle. To address the above issue, Ministry of Education along with the Royal Education Council and Department of Information Technology had rolled out nationwide teacher preparation on Google Classroom to support students learning and interaction.

It is evidenced that Bhutan did not have curriculum for EiE as the Royal Education

Council came up with means to deliver the lessons at the time of pandemic [8]. There was a shift from the classroom teachings to online. Ministry of Education [8] elucidated that during emergency, lessons were being delivered through television, radio and other social media in key stages and theme-based approach. Lessons were delivered through Bhutan Broadcasting Service channel 1 and Bhutan Broadcasting Service channel 2 supplemented with Google Classroom, YouTube, WeChat and other social media to make accessible to the children. However, many students in the remote parts of the country lacked access to internet. As some parents were unable to afford gadgets, students did not own smartphone or television set for e-learning. This disparity among the learners and continuity of education declined. It became a concern for the Ministry of Education to reach the unreached. Stephenson [5] elucidated that humanitarian assistance to the education sector had been highly prioritized, not only from human rights and humanitarian perspectives, but also with regard to the future social and economic development of the crisis-affected country.

Studying the world scenarios on the Education in Emergency, many countries have been affected by disasters, health issues and wars. As cited an example by Burde, et al. [9] the children in genocide-affected areas had lesser chance to complete their fourth grade and attained a year and a half compared to those in other parts of the country. The impact was heavy on the children who were younger at the time of the genocide [10]. In the same vein, Sinclair (n.d) elucidated that following on Freetown attack in early 1999, people were killed, amputated, raped and abducted. They came up with a joint initiative for rapid education response over the period April to July 1999 and initiated in August 1999 by UNESCO's Gonzalo Retamal, working with the NGO Plan International, the Education Ministry, UNICEF and the Federation of African Women Educators (FAWE). Furthermore, Burde, Kapit, Wahl, Guven, & Skarpeteig [9] state that millions are affected each year by climate-related disasters and earthquakes. It destroys homes, neighborhoods, and schools. In the year 2011 and 2012 alone, more than 450 million individuals faced environmental crises [11].

3. METHODOLOGY

The study focuses on analysing the survey questionnaires developed and circulated by the Ministry of Education, Bhutan. The survey questionnaires were distributed to the teachers, and further to the students and teachers. Survey was used its research tool as it was helpful and convenient to collect responses from focused group of both students and teachers. Interview was also conducted to collect perceptions from the parents and the students. The samples were selected randomly. 20 percent of the students and the 10 percent of parents for the interview For data interpretation, Central Limit Theorem (CLT) was adopted. the CLT states that the distribution of the sample means approximates a normal distribution as the sample size gets larger, regardless of the population's size [12]. A 30 percent of respondents was considered as sample size had to be either equal or greater than 30 as it is often considered sufficient for the CLT to hold.

3.1 Bucket Approach

Then the team started to carry out random survey for both students and parents. The random selection included diverse group of students such as those students who responded all the time to online classes, who responded sometimes and those who have never responded at all. The respondents were also from those students who reside in the remote areas that have network connectivity issues and other related problems that are likely to be encountered by both parents and students. The study has focused on diverse group primarily to eliminate sampling bias and to offer equal chance of selection with lesser risk of carrying an error while performing data analysis.

3.2 Data

This study uses cross-sectional survey data collected from all nine classes covering all the 28 sections fairly under the school's catchment area. The details of the participants i.e., parents and students who were identified for the survey are given as follows.

The support staff in pairs were divided into different catchment areas to distribute the questionnaires and carry out the survey for a few days from both the parents and students in their community. The surveyors (support staff) also interviewed a total of 180 students and 90 parents from different areas under school catchment area. Then all data collected were compiled and did analysis.

Table 1. Basic statistics of the respondents

Class	Sections	Total no. of Students	Total no. of respondents (students) (20%)	Total no. of respondents (Parents) (10%)
PP	4	128	25	12
I	3	91	18	9
II	3	98	20	10
III	3	97	20	10
IV	4	118	24	12
V	3	92	18	9
VI	3	79	16	8
VII	2	73	16	8
VIII	3	89	19	10
Total	28	865	180	90

As the survey questionnaires mostly comprised of categorical variables (also known as nominal variable) [1] , analyzing data using multifaceted statistical packages such as Statistical Package for Social Sciences (SPSS), EViews, Statistical Software for Data Science (STATA), and R-Statistics were not appropriate tools. Therefore, based on the nature of variables presented in the questionnaire, we decided to focus on descriptive statistics rather than inferential statistics. The details of compiled raw data, findings, and consolidated reports of the study are discussed in the following pages.

4. RESULTS AND DISCUSSION

Education is deemed important in every aspect of life and is a key tool to for any country to take forward. Access to education has been a basic human right and the level of educational attainment has been positively correlated with better lives around the globe. Education in Emergencies may offer immediate physical and psychosocial protection, life-long knowledge and skills to individuals. Children who have access to a better-quality education during and after an emergency would keep themselves to avoid being indulged themselves in undesirable activities. Education in Emergency would also ensure children to develop their level of resilience against unexpected changes.

The key objective of this study is basically to examine the impact of Education in Emergency

(EIE) in Wangduechoeling Lower Secondary School. As per the directives of Ministry of Education, we have used a survey questionnaire developed by Ministry. We have constructed categorical scales (rating scales) and dimensions on given survey questionnaires separately for both parents and students as follows:

Based on the categorical scales and dimensions constructed in Table 2 and 3, the response under each item by both parents and students of different schools have been compiled for further exploration. To check whether or not the surveys are partially or entirely completed, the response rate (completion rate) for each item has been calculated as follows;

The overall response rate for both parents and students were calculated and the finding shows that the response rate for all items in the survey questionnaire (as depicted in the Table 4 and 5) are higher than 95%. The higher response rate for each item evidently confirms the reliability of the data for in-depth statistical analysis and scope of producing unbiased population estimates.

4.1 Analysis of Students' Responses

4.1.1 Inferences of categorical data

This study consists of twenty items. Out of twenty items in the survey questionnaire, nine (See Appendix A.1) has been identified as categorical variables (nominal variables). The data for all nine items collected from different sections were tabulated and the detail statistical analysis has been carried out as follows.

---

[1] *Most of the items presented in the survey questionnaire is of categorical variable rather than ordinal and numerical variable. The categorical variables lack intrinsic ordering to the categories thus the scope of performing inferential statistics is minimum.*

Table 2. Categorical scales and dimensions for students

Sl. No.	Questions	Response	Categorical scales & dimensions (%)
1	I enjoy EiE online lessons	Yes/No	Yes/No
2	I am learning	Yes/No	Yes/No
3	Average hours I spend on online lessons & assignments per day	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
4	My parents can help me in learning	Yes/No	Yes /No
5	I access lessons on (TV, Phone, SIM, Radio, Video, etc.). You can mention more than one medium.	Types	TV; Phone; SIM; Radio; video; Others
6	If you are using phone, which App do you use the most?	Types	WeChat; Messenger; Telegram; Google Classroom; None
7	Do you face challenges in using different Apps?	Yes/No	Yes/No
8	How frequently do you contact your teachers in a week?	Quantitative	Once; Twice; Thrice; More than 3; Never
9	I have all the textbooks with me	Yes/No	Yes/No
10	Do teachers assess tasks given in TV, Radio, SIM lessons?	Yes/No	Yes/No
11	How do you clarify your learning doubts?	Qualitative	Expressive
12	What type of support do you receive from teachers?	Qualitative	Expressive
13	What support do you receive from your parents?	Qualitative	Expressive
14	How many hours do you spend reading books/newspapers/magazines/etc. in a week.	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
15	How many hours do you spend on video games and other online games?	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
16	Has your interest in studies affected by school closure?	Yes/No	Yes/No
17	Will you be excited to return to school when it reopens? (Closed schools)	Yes/No	Yes/No
18	Did you avail 60% discount data service?	Yes/No	Yes/No
19	No. of hours you spend supporting your parents in a day	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
20	Your overall views on online learning and suggestions	Qualitative	Expressive

Table 3. Categorical scales and dimensions for Parents

Sl. No.	Questions	Response	Categorical scales and dimensions (%)
1	Do you see your child interacting with teachers frequently?	Yes/No	Yes/No
2	How long does your child spend time on learning subjects in a day on average?	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
3	How many hours does he/she spend on reading books/newspapers/ magazines, etc. in a day?	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
4	On average, how long does he/she engage on video games & other online games in a day?	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never

SI. No.	Questions	Response	Categorical scales and dimensions (%)
5	How long does he/she engage in helping the family?	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
6	How long does he/she engage in physical games and activities?	Minutes/Hours	1min-2hrs; 2-3hrs; 3-4hrs; More than 4hrs; Never
7	How do you support your child's learning?	Qualitative	Expressive
8	How does your child interact with teachers?	Qualitative	Expressive
9	Do you find online learning effective for your child? Justify.	Yes/No	Yes/No
10	How much money do you spend on child's learning in a month?	Amount in Nu	An average amount of money spent by parents
11	Your overall views on online teaching and learning & recommendations	Qualitative	Expressive

Table 4. Response rate (completion rate) of the students (RR$_S$)

SI. No.	Questions	Response Rate (RRS) (RRS = No. of Students who answered the survey / No. of students in the sample) * 100
1	I enjoy EiE online lessons	88.8%
2	I am learning	94.4%
3	Average hours I spend on online lessons & assignments per day	99.7%
4	My parents can help me in learning	81.6%
5	I access lessons on (TV, Phone, SIM, Radio, Video, etc.). You can mention more than one medium.	99.8%
6	If you are using phone, which App do you use the most?	100%
7	Do you face challenges in using different Apps?	36.6%
8	How frequently do you contact your teachers in a week?	95.7%
9	I have all the textbooks with me	96.6%
10	Do teachers assess tasks given in TV, Radio, SIM lessons?	81.8%
11	How do you clarify your learning doubts?	100%
12	What type of support do you receive from teachers?	100%
13	What support do you receive from your parents?	100%
14	How many hours do you spend reading books/newspapers/magazines/etc. in a week.	100%
15	How many hours do you spend on video games and other online games?	99.8%
16	Has your interest in studies affected by school closure?	99.8%
17	Will you be excited to return to school when it reopens? (Closed schools)	99.3%
18	Did you avail 60% discount data service?	35.5%
19	No. of hours you spend supporting your parents in a day	99.4%
20	Your overall views on online learning and suggestions	100%

Table 5. Response rate (completion rate) of the parents (RR$_P$)

| Sl. No.	Questions	Response Rate (RR$_p$) (RR$_p$ = No. of parents who answered the survey / No. of parents in the sample) *100
1	Do you see your child interacting with teachers frequently?	100%
2	How long does your child spend time on learning subjects in a day on average?	100%
3	How many hours does he/she spend on reading books/newspapers/ magazines, etc. in a day?	97.6%
4	On average, how long does he/she engage on video games & other online games in a day?	99.1%
5	How long does he/she engage in helping the family?	98.6%
6	How long does he/she engage in physical games and activities?	99.3%
7	How do you support your child's learning?	100%
8	How does your child interact with teachers?	100%
9	Do you find online learning effective for your child? Justify.	100%
10	How much money do you spend on child's learning in a month?	100%
11	Your overall views on online teaching and learning & recommendations	100%
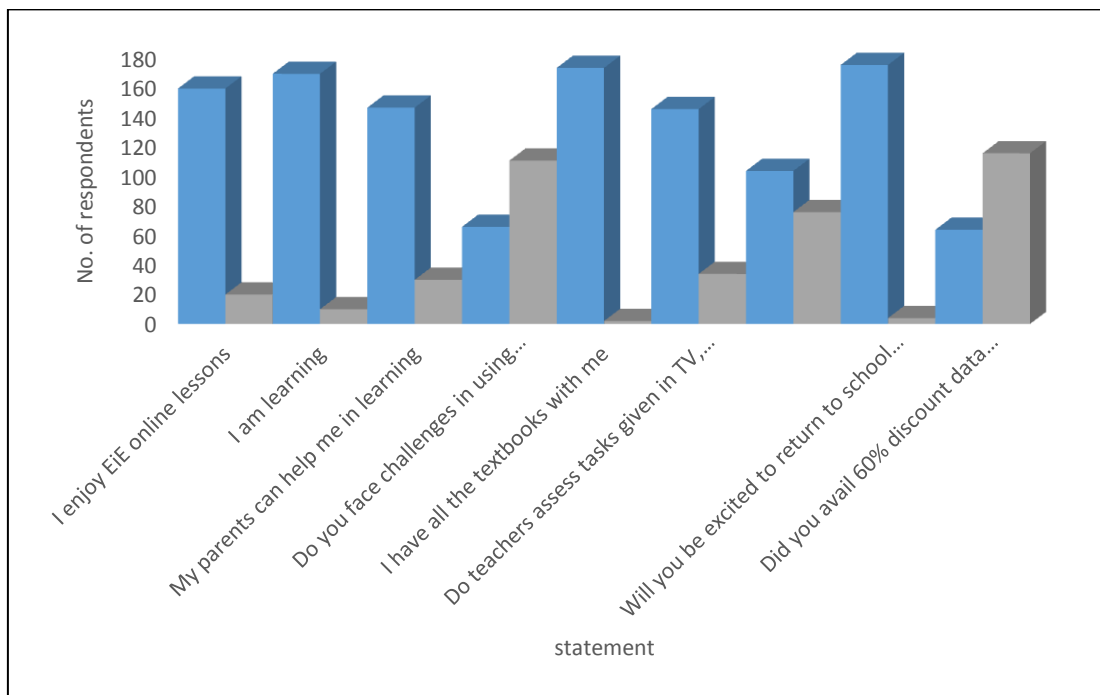
Fig. 1. Categorical Variables

In Wangduechoeling LSS a sample of 180 students were surveyed and 88.8% of them enjoy EiE online lessons as opposed to 11.1% who do not prefer online lessons. Following are some of the reasons stated as to why students say they enjoy online lessons or not.

Table 6. Scenario of online lessons

Yes	No
Interesting and fun	Difficult to understand
Get more knowledge	No smartphone
Easy to get answers from internet and siblings	No clear explanation
New experience (self-exploration)	Network problem
Modern Teaching-learning style	Data consumption
Full support from parents	Difficult to adapt to new style of learning
More attention from the teachers	
More opportunity to clarify doubts	

The study suggests that students of WLSS enjoy EiE online lessons. It is also worthwhile to note that 11.1 percent of the students who do not prefer online lessons are due to 'Difficult to understand' and 'No smartphone'. 94.4 percent of students responded they are learning and 81.6 percent of the parents support them in learning. 95 percent of the students have all the textbooks and 81.1 percent of their works were assessed. There is no significant difference between those students who face challenges and the ones who do not face challenges in using such Apps.

The finding reveals that 96.6 percent of students' interests in studies have been affected by the closure of the schools. The students have a sense of excitement to return to schools. The data shows that 64.4 percent of students have not availed 60 percent special data package. The primary reasons stated as to why students have not availed this service are; no idea/do not know how to register, parent's number has been registered, no proper network and no smartphone. All the items in this category have positive response from the students except for availing 60 percent special data package.

4.1.2 Inferences of numerical data

The remaining seven items have been categorized as the numerical data (constructed rating scales and dimensions). The data for all seven items collected from different schools were charted and the statistical analysis has been carried out as follows.

a) Average hours spent on online lessons and assignments per day

The Fig. 2 clearly illustrates a trend. There is drastic decrease in number of students as the number of hours' increase. 68 percent of the students spent only within two hours on average on online lessons and assignments per day. Whereas only 7.7 percent of students spent three to four hours per day on online lessons. 1.1 percent of the students appear to spend no time at all on a daily basis for the online learning. This requires further study as to ascertain whether they do online lessons on a weekly or monthly basis, or other time intervals.

b) Medium of lessons accessible

The data suggests that 96.1 percent of the students in WLSS use phone to access lessons. The next preferred means to access lessons is through television that accounts to 36.1 percent followed by SIM, Video and Other means. The least popular is through Radio with 0.5 percent.

c) Type of apps mostly used

The Fig. 4 depicts that the most used App by the students is Google Classroom (61%) followed by WeChat (31%) and Messenger (5.5%). A majority of the students have stated that WeChat is more user friendly for them.

d) Frequency of students interacting with their teachers in a week

More than 22 percent of the students contact their teachers only once in a week and only 16.6 percent of the students contact their teachers more than thrice in a week. The study shows that 9.4 percent of students do not contact their teachers in a weekly basis. The study showing large number (9.4%) of students never contacting their teachers in a week is of concern for both parents and teachers. The result also suggests for building strong cooperation

and equal responsibility of teachers and parents in educating children.

e) Number of hours spent reading in a week

There is a clear trend, as the number of hours increase the number of student decrease. 64.4 percent of the students read about only two hours in a week which is a huge variance from 12 percent of students spending more than four hours a week. 4.4 percent did not even read on a weekly basis. The data clearly indicates that there was a poor reading habit amongst students of WLSS during closure of the school.

f) Number of hours spent on video games or other online games

Around four percent of students did not play video games or other online games. 14 percent of students spent about two hours on video games and there was sharp decline in number of students spending three hours or more. The habit of spending long hours playing video games or other online games was not very prevalent.

g) Number of hours spent supporting parents in a day

Primary hours spent by students in helping their parents in a day was about two hours. Closely followed by 31 percent of them spending more than four hours daily rendering support to the parents. The data suggests that significant number of students support their parents at home, as opposed to four percent of them not rendering any form of support to their parents.

4.2 Analysis of Parents' Responses

4.2.1 Inferences of categorical data

This study consists of eleven items. Out of eleven items in the survey questionnaire, two have been identified as Categorical Variables. The data for both items collected from different schools were tabulated and the detailed statistical analysis has been carried out as follows.

As shown in the Fig. 9, out of 90 respondents collected, the study revealed that 85.1 percent of the parents responded that their children interact with their teachers even when schools were closed. Some of the popular medium that students used were WeChat and Phone call. Although learning was initiated using innovative ways to ensure that their child continue to learn yet 14.9 percent of parents revealed that their children are still facing serious problem interacting with their teachers due to poor financial background and high data package consumption. Some parents share their concern about having only one mobile phone which needs to be shared among four children.
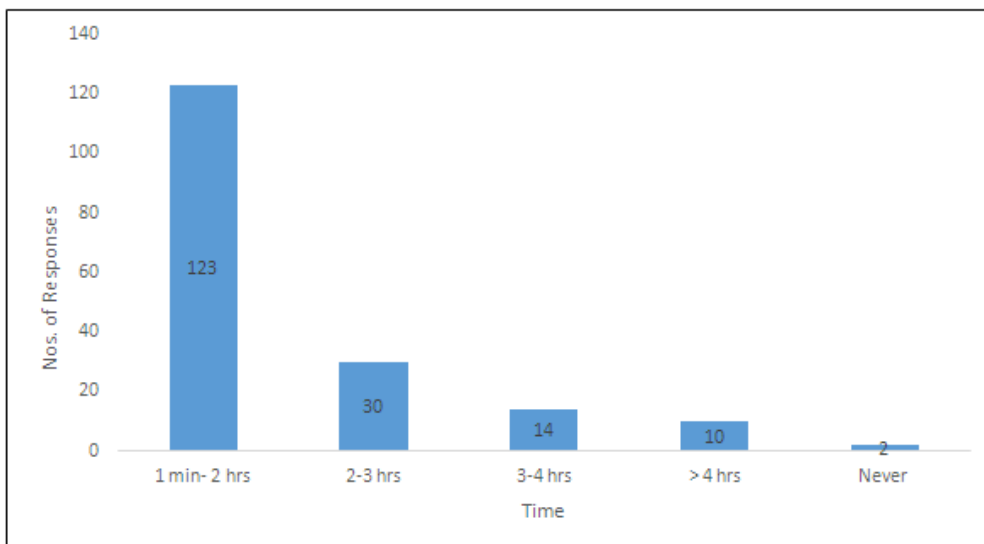

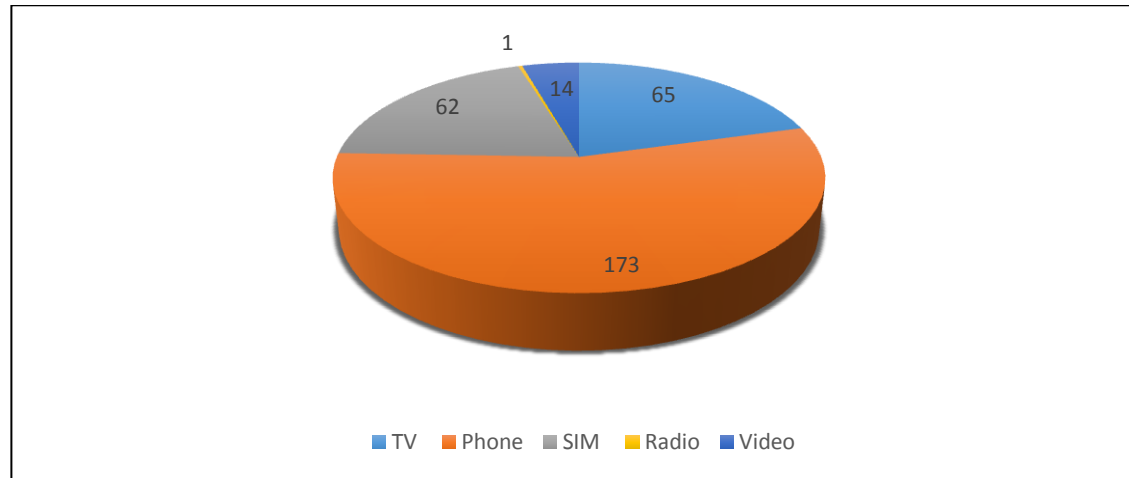**Fig. 2. Average hours spent on online lessons per day**

48

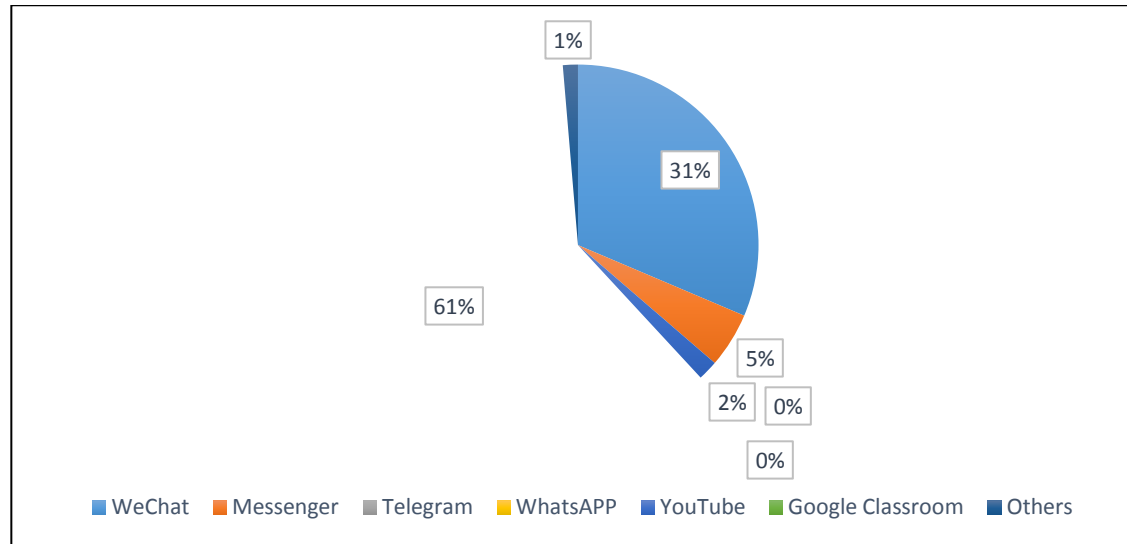**Fig. 3. Medium of Lessons accessed**
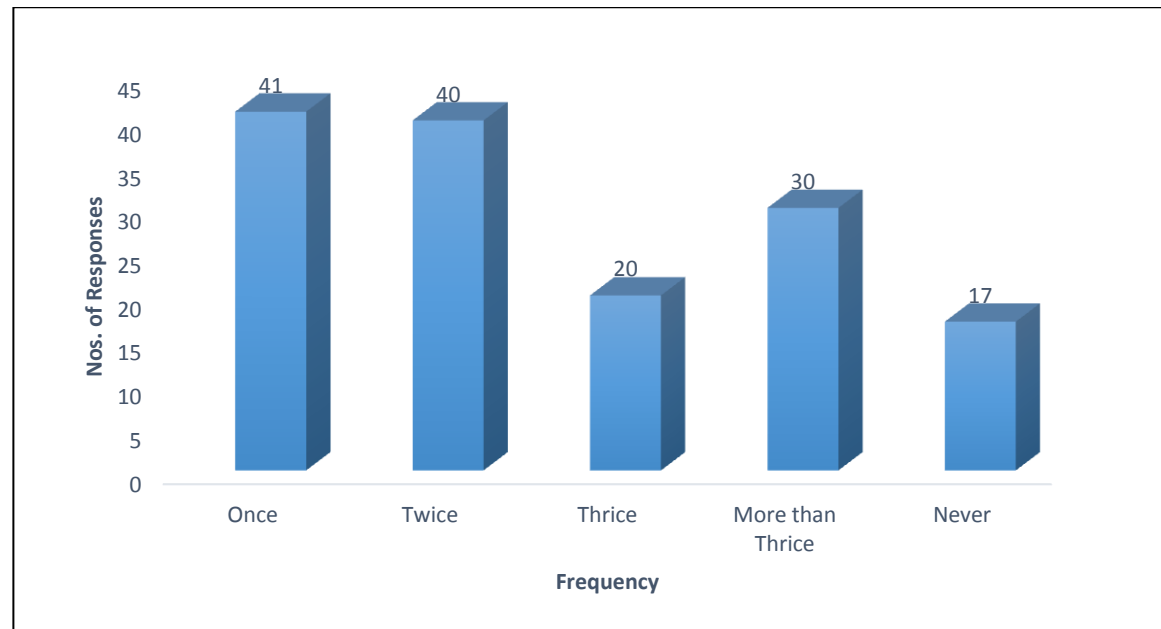
Fig. 4. Type of apps used

Fig. 5. Frequency of students interacting with their teachers per week
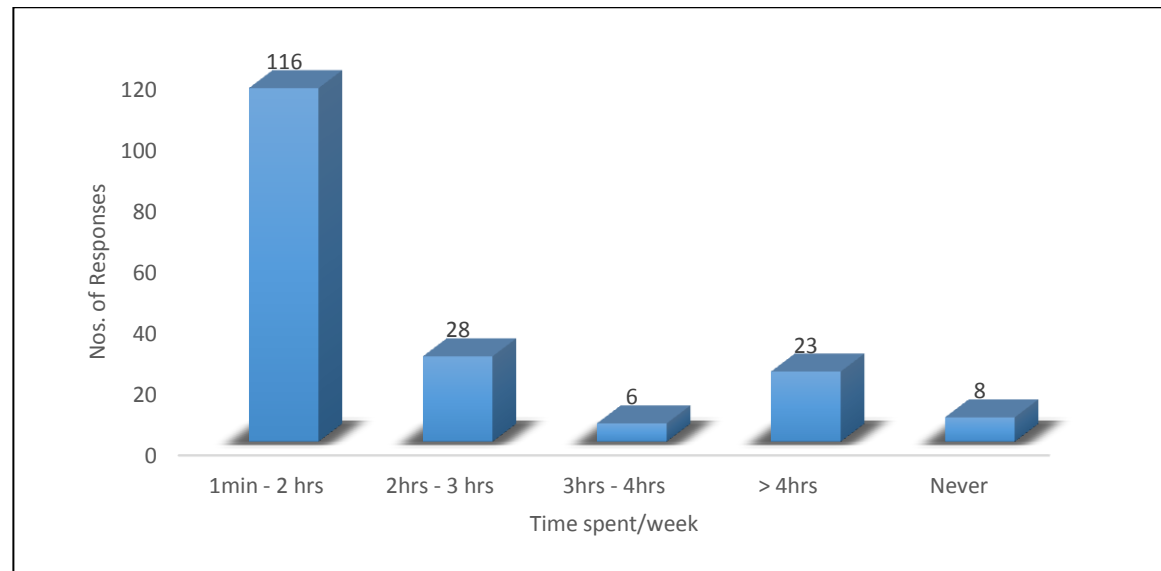
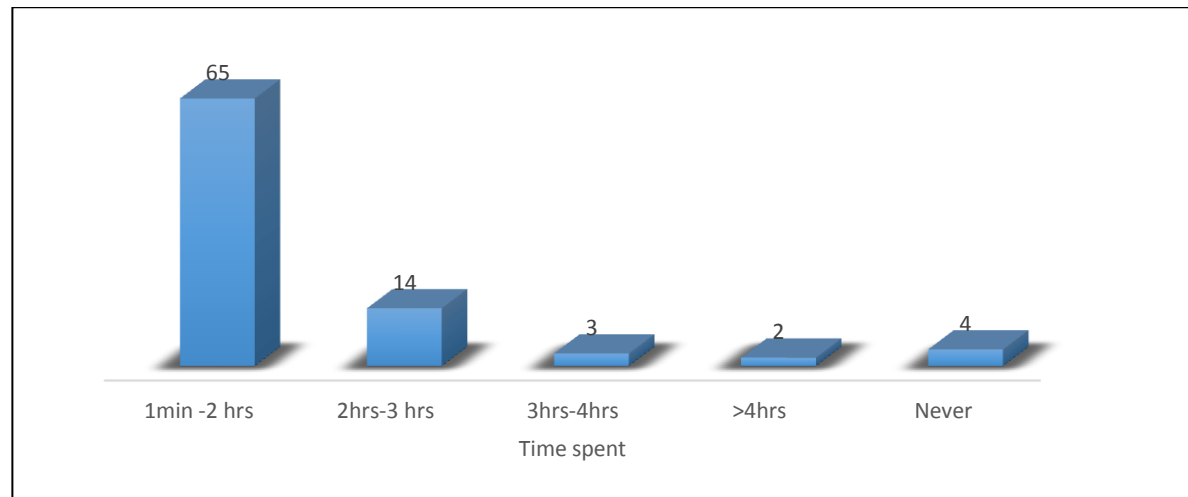**Fig. 6. Number of hours spent reading in a week**

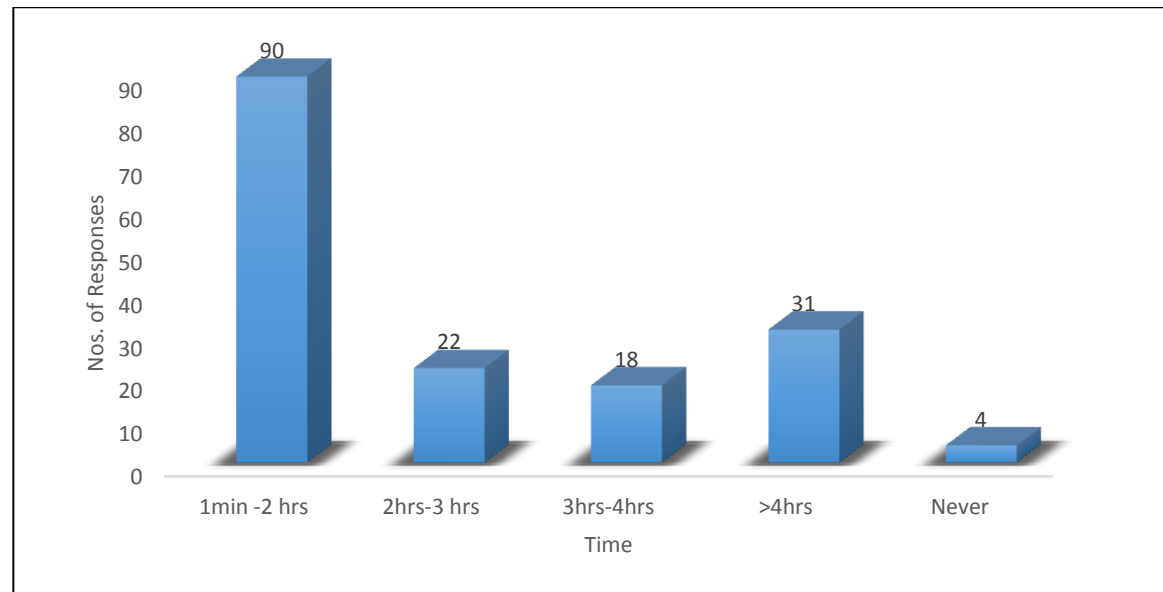**Fig. 7. Number of hours spent on video games per day**

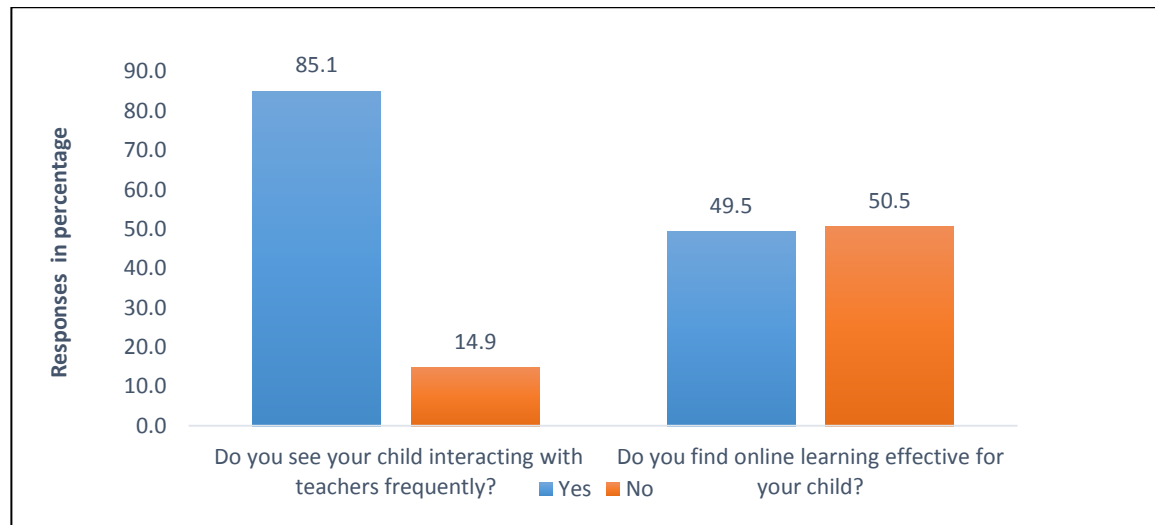**Fig. 8. Number of hours spent supporting parents per day**

Fig. 9. Views of parents on their children

50.5 percent of the parents were not happy with the online teaching. The reasons shared by them are: 1) Not having devices, 2) Expensive data packages, 3) Child not able to understand as they were not used to it, 4) Poor network connectivity, 5) Household chores, 6) Parents being uneducated, 7) Child becomes addicted to games and 8) Parents not prepared for home learning. However, 49.5 percent of the parents were of the view that online teaching was effective as their children got opportunity to explore information with more innovative method.

4.2.2 Inferences of numerical data

The remaining six items have been identified as the numerical variables. The data for all six items collected from different schools were charted and the statistical analysis has been carried out as follows.

a) Average hours spent on learning subject

38 percent of the students studied the particular subject at least one to two hours, 34 percent studied the subject two to three hours, 14 percent studied three to four hours and four percent studied the subject more than four hours. It is very impressive to discover that there was none who had never studied.

b) Hours spent on reading in a day

As indicated in the Fig. 11, 64.4 percent of the students read one to two hours in a day, 7.9 percent read two to three hours, 3.7 percent read three to four hours and 8.8 percent read more than four hours. 10.8 percent of the students did not read at all. The study shows that large number (10.8%) of students did not read any of the materials listed in the survey questionnaire and this finding may have high correlation with number of hours' that students help their parents in carrying out household works. The finding of the study suggests for further in-depth analysis of parent's support for their child's learning using more logical statistical tools.

c) Average hours engaged on video games and other online games in a day

59.9 percent of the students spent one to two hours in video and other online games in a day. 15.4 percent spent two to three hours and 7.9 percent spent three to four hours. The Fig. 12 vividly indicates that 5.7 percent of the students spent more than four hours and 7.9 percent of the students never play online games.

d) Hours engaged in helping family in a day

The Fig. 13 shows that the preferable hours spent helping parents was one to two hours which comprised of 56 percent. 15 percent of the students helped two to three hours closely followed by nine percent helping three to four hours and 16 percent helped more than four hours. Significantly a small number of the students (4%) did not help their parents in a day.

e) Average hours engaged in games and physical activities in week

The Fig. 14 clearly shows that as hours increase, number of students engaging in games and physical activities decreases drastically. 56.9 percent of the students spent only within one to two hours on games and physical activities in a week. Whereas only 15.4 percent of students spent two to three hours, 7.9 percent of the students spent three to four hours and 5.7 percent more than four hours. The findings of this study show that 7.9 percent of the students have never engaged in games and other physical activities. Thus, it is concern for both parents and responsible authorities to explore further.

f) Money spent on child's learning in a month

The data were collected on the money spent by parents on their child's online learning in a month. On average Nu. 458.5 had been spent on their child's online lessons, which amounts to Nu. 5,502 in a year.

4.3 Perceptions on Online Teaching Learning of Parents and Students

The survey questionnaire also encompasses some open-ended questions for both parents and

students. As qualitative responses are richer and more in-depth than those of its quantitative counterparts, there is high chances of generalizing the findings. Thus, to avoid generalization and to ensure objective (not subjective) interpretation of the findings, the study has employed bucketing method to analyze the qualitative responses. The basic Bucketing approach involves following steps; 1. Reviewing data, 2. Information categorization (buckets), 3. Sub-categorization of buckets, and 4. Summarizing major trends and patterns.
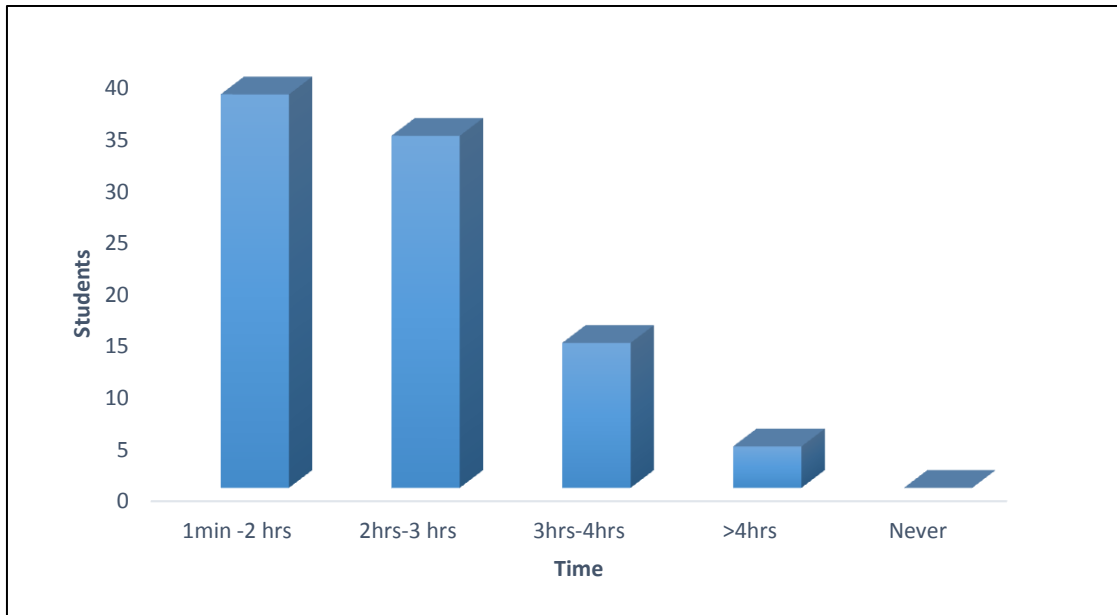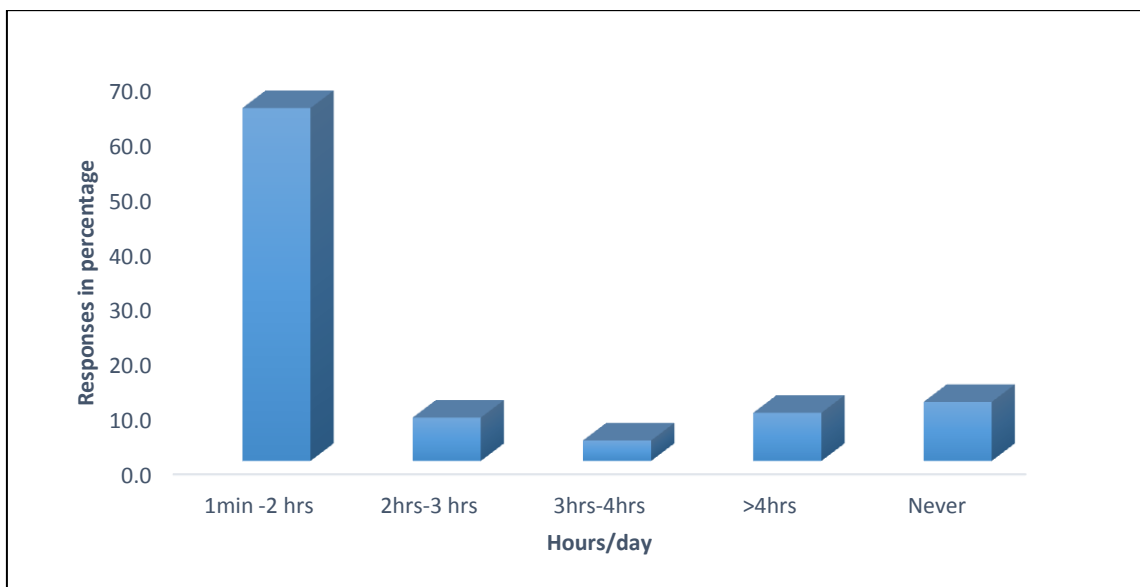

Fig. 10. Hours (average) spent on learning subject
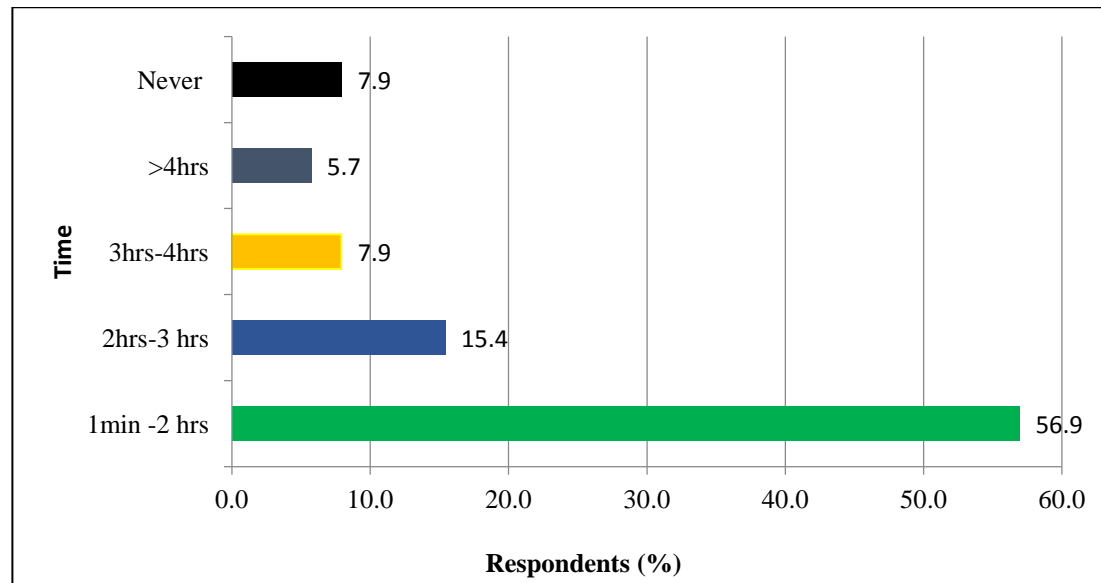

Fig. 11. Hours spent on reading books/others in a day

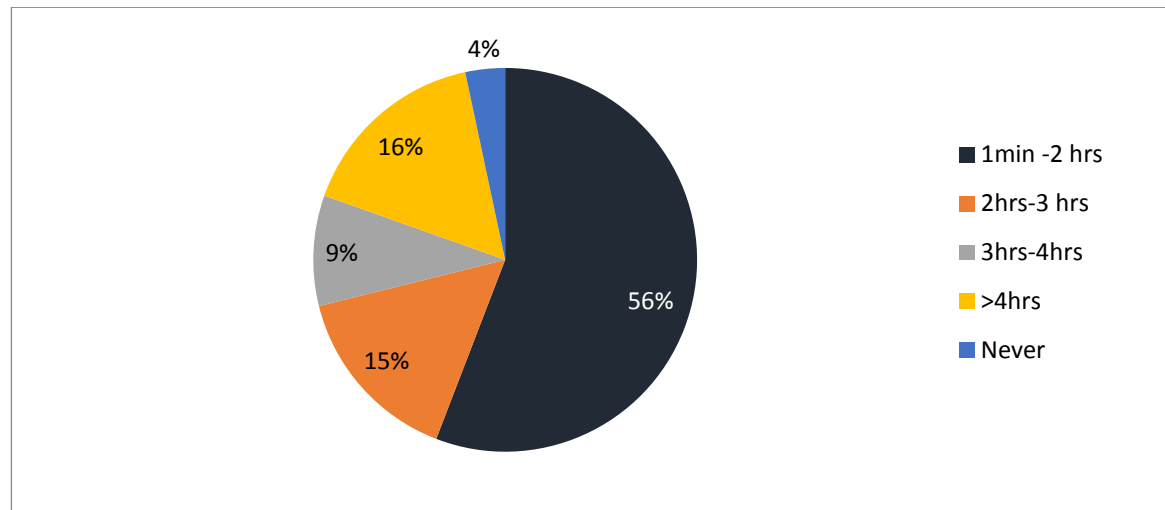**Fig. 12. Hours (average) engaged in video games and other online games per day**
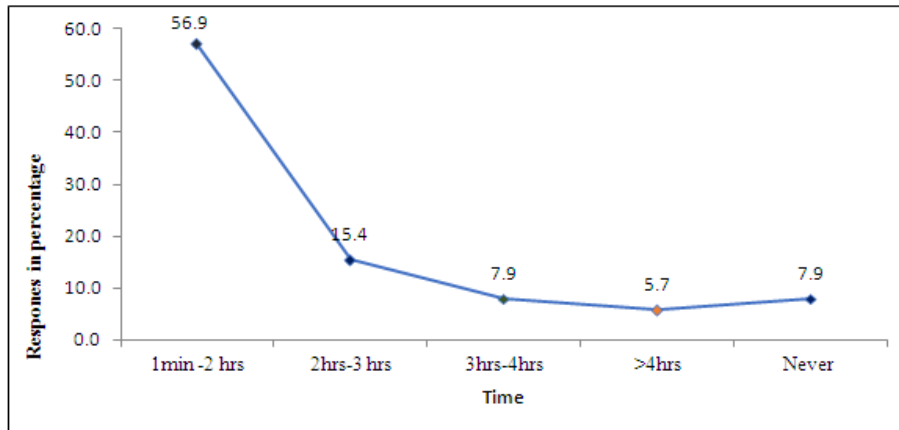
Fig. 13. Hours engaged in helping family in a day

Fig. 14. Average hours engage in games and physical activities per week

4.4 Perceptions of the Parents

4.4.1 Support in a child's learning

Step 1: Reviewing data – all responses of this question has been thoroughly read and appraised to get general understanding of the response.

Step 2: Information categorization (buckets) – after going through all responses of parents, the responses were categorized into major buckets based on reoccurring trends and repeating patterns as follows;

Major Buckets (most repeated information); a. Providing phones/recharging data, b. Giving advice/encouraging/reminding/guiding EIE lessons, and c. Providing time.

Step 3: Sub-categorization of buckets – the responses were also categorized into minor buckets based on lesser repeating patterns. Minor buckets (less repeated information); a. Collaboration with teachers, b. Exemption from household works, c. Providing meals on time, d. Seeking help from educated ones, and e. Helping home works.

Step 4: Summarizing major trends and patterns – after the responses were reviewed, examined, and assessed comprehensively into different buckets, the study revealed that providing phones, recharging data, giving advice and guidance on EIE lessons as the most preferred means opted by parents to support their children's learning. Apart from key findings mentioned above, some parents also support their child's learning by collaborating with teachers, exempting from household chores, seeking helps from educated ones and by guiding to do homework on time.

4.4.2 Interact between a child and teachers

Step 1: Reviewing data – all responses of the question has been carefully read to understand the nature of response.

Step 2: Information categorization (buckets) – after going through all responses of parents, the responses were categorized into major buckets based on reoccurring trends and repeating patterns. Major Buckets (most repeated information); a. Phone (WeChat/Google Classroom), and b. Cluster teaching/mobile teaching.

Step 3: Sub-categorization of buckets – the responses were also categorized into minor buckets based on repeating patterns as follow;

Minor buckets (less repeated information); a. Home visit by teachers, b. Going to schools, and c. Personal call.

Step 4: Summarizing major trends and patterns – after examining all responses and categorizing into different buckets, the study depicted that the children used mobile Apps such as WeChat, Google Classroom, and cluster teaching (or mobile teaching) most frequently as the modes of interaction. The study also revealed that home visit by teachers, going to schools, and making personal calls to teachers as supplementary modes of interaction by their children.

4.4.3 Online teaching learning and recommendations

Step 1: Reviewing data – all responses of this question has been carefully read to comprehend the concept and the nature of the response.

Step 2: Information categorization (buckets)- after going through all responses of parents, the responses were categorized into major buckets based on reoccurring trends and repeating patterns. Major Buckets (most repeated information); a. Teachers visiting learners, b. Learning is not effective, c. Major issues with data package, and d. Challenging for illiterate parents to guide their child.

Step 3: Sub-categorization of buckets – the responses were further categorized into minor buckets based on repeating patterns as follow;

Minor buckets (less repeated information); a. Affects child's eyes, b. Makes children lazy, c. Network problem, d. Engaged in online games and e. Helpful during such situations (Covid-19 pandemic and lock down).

Step 4: Summarizing major trends and patterns – Upon examining and assessing the major repeating trends, the study shows teaching through visiting learners' place as very encouraging and positive practice. However, the results also suggest that online teaching and learning is not effective as face to face classroom teaching and learning. The lack of financial supports for data package and illiterate parents (to guide) are found to be other major challenges of online teaching and learning. Some parents are also worried about the effects of online classes on children's health and wellbeing.

4.4.4 Perceptions of the students

This study consists four open-ended questions (qualitative data) and each item was categorized and analyzed using bucketing method as follows;

Step 1: Reviewing data – all responses under each question was thoroughly read, reviewed, and examined comprehensively to get general concept of the responses.

Step 2 & 3: Information categorization (buckets) and sub-categorization of buckets.

Step 4: Summarizing major trends and patterns – after assessing all responses comprehensively, the study revealed that most of the students clarify their doubts by seeking help from their parents, siblings, friends, relatives, and through mobile/cluster teaching. There are also some students who choose/opt google (internet) and teachers to clarify their doubts. SIM, guidance, and notes on each topic are some of the main supports that majority of students have received from their teachers besides allowing them to clear their doubts through calls, Google Classroom, and extending due date of their assignments and homework. The study has also revealed that providing mobile phones, data packages, and encouraging to attend classes on television as three top most support that they have received from their parents during Education in Emergency.

Questions	Major Buckets (Most repeated information)	Minor Buckets (less repeated information)
How do you clarify your doubts?	Parental help. Help from relatives/friends/brothers/sisters. Through mobile and cluster teaching.	Internet (google) Through call/contact with teachers.
What support do you receive from your teachers?	SIM Guidance during mobile teaching/cluster teaching. Providing notes.	Allow to clear doubts through call. Extension of assignment/ homework due date. Clearing doubts in google classroom.
What support do you receive from your parents?	Mobile phones Data package Encourage to attend classes in TV.	Advice/guide in learning. Reminds about google classes. Allow to visit friends place for discussion.
Your overall views on online learning and suggestions	Not effective like classroom teaching. Difficult in learning. Mobile phones and data package problem.	Easy to access from internet/google. Network problem.

Furthermore, most of the students have faced difficulty in learning online and inaccessibility to mobile phone and data package have been other major challenges for them. Few responses have mentioned poor network connectivity as supplementary challenges of online classes.

5. CONCLUSION

Bhutan is blessed to have visionary leaders to give distinct identity to our country mainly in pursuit of peace and happiness. Over the decades, education has been the panacea to move our country forward politically, culturally, intellectually, socially and environmentally. The Royal Government of Bhutan continues to magnify education as an engine of growth in the nation building process. However, of recent, Bhutan has been affected by the pandemic and the education system has been impacted as well.

The findings of this study have augmented our understanding of the impact of Education in Emergency in Wangduechoeling LSS, Bumthang. The core group has taken the required time and efforts to bring out a vivid picture of the overall impact of the Education in Emergency. The study shows that 88.8 percent of students enjoy EiE lessons, 94.4 percent learn through EiE, 81.6 percent of parents support their child's learning, 36.6 percent of students face difficulty in using different Apps, 96.6 percent of students have text books with them, 81.1 percent of teachers assess tasks given in TV, Radio, SIM lessons, 57.7 percent of students' interest was affected by closure of schools, and 97.7 percent of students are excited to return to school. Additionally, study revealed that only 64 percent of the students had availed 60 percent special data packages discount opposed to 36 percent who had not availed.

The finding of the study also shows that an average hour spent on online lessons and assignment by the students in a day was two hours and majority of the students (88.7%) used mobile phones to access lessons. The most used App was Google Classroom (61%) and most of the students interact once (22.7%) in a week with their teachers. The study also shows that 64.4 percent of students spent one to two hours reading books/magazines/newspaper, etc. against 4.4 percent of students never read. Unexpectedly, the study depicts that 17.2 percent of students support their parents for more than four hours in a day opposed to 2.2 percent never support their parents. On the

whole, parents (50%) have concluded that the online teaching learning was ineffective for their children.

The Recommendations listed below are the actual realities that has found out from the data compiled and analyzed.

1. Questions need to be very specific to generate clear-cut findings. For example, our findings would have been robust if questions have been prepared using some Likert scale with values such as strongly agree, agree, neutral, disagree, and strongly disagree, etc. If questions have been constructed using dimensions, then we would have been also able to find the central tendency for our analysis. Some questions have not been specified whether it is in a day or in a week.
2. Need uniform and user-friendly medium of instructions for online classes.
3. Teachers must be well trained and students well oriented in the application of the online Apps.
4. Teach and educate students on positive and constructive use of electronic gadgets.
5. Impart parenting skills to engage students more productively.
6. All levels must have separate curriculum unlike clubbed curriculum so far to ease the learning.
7. Government to supply electronic gadgets to needy students.
8. Impart time management skills to children.
9. Timely assistance and provision of needful directives and instruction to ensure 100% learning happens for all the students.
10. Incorporation of visual aids and audio files to enhance better learning.
11. The schools must ensure proper documentation and record filing of students so that tracing them would never be a problem to contact them in near future.
12. Adequate learning materials must be in place for the students.

CONSENT

The respondents were randomly selected for the survey and interview. While selecting the students for survey and interview, their parents'

consent was sought and given room for denial if there were willing. Similarly, the respondents from parents were also given their choice if they can participate in the survey and interview. Before conducting survey and interview, they were made aware of the research that their responses will be completely kept confidential and use only for this research purpose. In addition, it was ensured that those respondents' identities will be not revealed anywhere anytime.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Adarkwah MA. I'm not against online teaching, but what about us?: ICT in Ghanapost COVID-19. Education and Information Technologies. 2020;1-21.
Available:https://doi.org/10.1007/s10639=020-10331-z

2. Bergdahl N, Nouris J. COVID -19and Crisis-Promoted Distance Education in Sweden. Technology, Knowledge and Learning. 2017;1-7.
Available:https://doi.org/10.100/s10758-020-09470-6

3. Kerres M. Against All Odds: Education in Germany Coping with COVID-19. Postdigital Science and Education; 2020.
Available:https://doi.org/10.1007/s4238-020-00130-7

4. Nicolai S. Education in Emergencies: A tool kit for starting and managing education in emergencies. Save the Children. London.UK; 2017.
Available:https://reliefweb.int/sites/reliefweb.int/files/resources/038DDBECDCAB5708c1256E24004F3B28-SaveTheChidren_EducationEmergencies.pdf

5. Stephensen M. The Role of Education in Emergencies. Oslo: Reprosentralen, Universitetet i Oslo. Akresh, de Walque. Sinclair (n.d); 2010.

6. Rinzin YC. Learning should continue, e-learning is optional: PM. Kuensel corporation, Bhutan. Sinclair, M. (n.d.). Learning for a future: Refugee Education in developing Countries. Education in Emergencies; 2020.

7. Ministry of Education. Guidelines for Curriculum Implementation Plan for Education in Emergency (EiE). COVID-19 Response Plan, Royal Government of Bhutan; 2020.

8. Ministry of Education. COVID-19 response plan: Guidelines for Curriculum Implementation Plan for Education in Emergency (EiE). Ministry of Education; 2020a.

9. Burde D, Kapit A, Wahl RL, Guven O, Skarpeteig MI. Education in Emergencies: A Review of Theory and Research. Review of Educational Research. 2016;10.

10. Akresh, de Walque. Sinclair (n.d); 2010.

11. Blankespoor, Dasgupta, Laplante, & Wheeler. Laframboise & Loko; 2012.

12. Kwak SG, Kim JH. Central Limit Theorem: The cornerstone of modern statisitcs. Korean Journal of Anesthesiology; 2017.
Available:https://www.researchgate.net/publication/315764152

APPENDIX A

Categorical variable (students)

Q. No.	Items	Shortened
1	I enjoy EiE online lessons	Lessons
2	I am learning	Learning
4	My parents can help me in learning	Parents support
7	Do you face challenges in using different Apps?	Apps
9	I have all the textbooks with me	Textbooks
10	Do teachers assess tasks given in TV, Radio, SIM lessons?	Assessment
16	Has your interest in studies affected by school closure?	School closure
17	Will you be excited to return to school when it reopens? (Closed schools)	School reopen
18	Did you avail 60% discount data service?	60% data service

APPENDIX B

Sl. No	Items	Yes			No			Remarks
1	I enjoy EiE online lessons	160			20			180
2	I am learning	170			10			
Items		1 min- 2 hrs	2-3 hrs	3-4 hrs	> 4 hrs	Never		Invalid
3	Average hours I spend on online lessons & assignments per day	123	30	14	10	2		2
Items		Yes			No			
4	My parents can help me in learning	147			30			
Items		TV	Phone	SIM	Radio	Video	Other	
5	I access lessons on (TV, Phone, SIM, Radio, Video, etc.).	65	173	62	1	14	0	
Items		WeChat	Messenger	Telegram	WhatsApp	YouTube	Google Classroom	Others
6	If you are using phone, which App do you use the most?	70	11	0	0	4	135	3
Items		Yes			No			Invalid
7	Do you face challenges in using different Apps?	66			111			3
Items		Once	Twice	Thrice	More than Thrice		Never	Invalid
8	How frequently do you contact your teachers in a week?	41	40	20	30		17	32
Items		Yes			No			Invalid
9	I have all the textbooks with me	174			2			2
10	Do teachers assess tasks given in TV, Radio, SIM lessons?	146			34			
Items		Qualitative						
11	How do you clarify your learning doubts?							
12	What type of support do you receive from teachers?							

Sl. No	Items	Yes			No			Remarks
13	What support do you receive from your parents?							
ITems		1min - 2 hrs	2hrs - 3 hrs	3hrs - 4hrs	> 4hrs	Never	Invalid	
14	How many hours do you spend reading books/newspapers/megazines/etc. in a week.	116	28	6	23	8	1	
15	How many hours do you spend on video games and other online games?	124	12	8	9	37	0	
ITems		Yes			No			
16	Has your interest in studies affected by school closure?	104			76			
17	Will you be excited to return to school when it reopens?	176			4			
18	Did you avail 60% discount data service?	64			116			
ITems		1min -2 hrs	2hrs-3 hrs	3hrs-4hrs	>4hrs	Never	Invalid	
19	No. of hours you spend supporting your parents in a day	90	22	18	31	4	15	
Items		Qualitative						
20	Your overall views on online learning and suggestions							

Impact Analysis of Education in Emergency (Questionnaire to Students)

APPENDIX C

Impact Analysis of Education in Emergency (Questionnaire to Parents)

Sl. No.	Items	Wangduechoeling LSS							Remarks
		Yes			No				
1	Do you see your child interacting with teachers frequently?	76			14				
Items		1min -2 hrs	2hrs-3 hrs	3hrs-4hrs	>4hrs	Never	Invalid		
2	How long does your child spend time on learning subjects in a day on average?	38	34	14	4	0	0		
3	How many hours does he/she spend on reading books/newspapers/ magazines, etc. in a day?	69	4	3	2	4	8		
4	On average, how long does he/she engage on video games & other online games in a day?	65	14	3	2	4	2		
5	How long does he/she engage in helping the family?	58	9	9	2	9	3		
6	How long does he/she engage in physical games and activities?	59	15	8	2	4	2		
Items		Qualitative							
7	How do you support your child's learning?								
8	How does your child interact with teachers?								
Items		Yes			No				
9	Do you find online learning effective for your child?	45			45				
Items		An average amount of money spend by parents							
10	How much money do you spend on child's learning in a month?	2300	2500	549	1500	2500	6500	2000	
		4999	1799	3849	1200	3699	699	299	
		1300	3100	2100	3000	1200	1300	699	

		2400	1699	3400	1050	1500	1400	3699	
		3099	4549	1500	2849	1999	1000	5500	
		Average:					919		
Items		Qualitative							
11	Your overall views on online teaching and learning & recommendations								