Exploring Student's Experiences and Problems in Online Teaching and Learning During Covid-19 and Improvement of Current LMS Through Human-Computer Interaction (HCI) Approaches

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Abstract—This study tried to explore students' experiences and problems with online teaching and learning during COVID-19 and the improvement of current LMS through Human-Computer Interaction (HCI) approaches. A mixed-method approach was used in this project. A triangulation design was used in this study. This study was held at the university level and from Baltistan University; researchers took 12 students through a purposive sampling method. After thematic analysis, a survey was conducted. There are 2000 students at Baltistan University. 200 university students were randomly selected as the sample of this study. Semi-structured interviews and self-developed questionnaires were used as research tools. Thematic analysis and descriptive statistics were used to analyse the data. This study concluded that self-learning, family and teacher issues, financial, internet and light issues, IT assistance, and training needs at the students, teachers, and parental level were collectively described as a human-computer interface in the online teaching-learning process during COVID-19. All the students believed that when their family and teachers' issues; financial, internet, and light issues, information technological assistance, and parents, students, and teachers' training are improved then improvement of current LMS through Human-Computer Interaction approaches has occurred in Baltistan university.

Keywords—experiences of online teaching and learning, human-computer interaction, mixed method approach, purposive sampling, LMS

1 Introduction

New trends and issues in education and the teaching-learning process have a great impact on students' learning and experiences. The need, expectations, and perceptions of students also change with the paradigm shift in the mode of teaching and learning. Accidental and emergent online classes and shifting modes of teaching and learning during COVID-19 have substantially modified the structure of teaching learning and student's attitude towards teaching and learning. Remote education that has been produced through the use of the internet, virtual reality, and multimedia is collectively known as E-learning (Lopes, 2016). In this type of education, it is not necessary to travel from one place to another because through this platform, students can acquire knowledge, improve familiarity, patterned evolvement in education and interconnect with other members of the teaching-learning process (Qureshi & Irfan, 2015). This mode of learning is more suitable for those students who belong to remote areas because students can follow it at a convenient time and pace (Saroha, Sharma & Bhatia, 2011). Additionally, for this purpose, the universities of Pakistan have introduced their Learning Management System (LMS) that is enabling to cope with computer-generated teaching (Zukouska & Sroczynski, 2019). Information about topics, sequences, and their applicants has been taken through LMS. It is the means to shape an understanding, information about the contributors, patterned the students' improvement, and figure out data for expanding certain building blocks (Tanveer, Bhaumik & Hassan, 2020). Its most advanced form is a Learning Content Management System (LCMS) and Intelligent Learning System that permits the conception, text, and accessible publication of electronic documents. It helps in constituting the knowledge base of explicit topics and accomplishes distinct statistics of the system users, provisions of resources usage, exam outcomes, faults, and commonly requested inquiries. This type of data can be recycled for the execution of a novel scheme of study, to make it customized to individual user needs (Hodges, Moore, Trust & Bond, 2020).

An anthropological dealing with a computer and its practice and learning of usability is known as human-computer interaction (HCI) (Tanveer, Bhaumik & Hassan, 2020). "It is about the relationship between a human and a computer, their mutual understanding, and creating a system which would ease the work of a human and people would love to use and would be able to use it. It may also be said that it is a study of how humans use computers to perform certain tasks and use it in such a way that the interaction is being enjoyed and effective" (Bansal & Khan, 2018). Inquiries in anthropological computer interfaces cover both technical and humanoid interactive apprehensions (Konstantinus & Hussain, 2017). Persistence in real-world exploration offerings is to disclose anonymous visions about anthropological conduct and its association with machinery like computers. This type of mechanical and technological association with computers and humans is a multidisciplinary ground that appeals from the arenas of computer science, consciousness, rational knowledge, and structural and communal disciplines in order to comprehend in what way individuals practice and experience collaborative technology (Zukouska & Sroczynski, 2019).

The University of Baltistan took a step to start online classes during COVID-19. It was a big challenge to facilitate the students living in remote areas. However, the University started its online classes because the University IT section had already developed a comprehensive Learning Management System (LMS) and SIS (Student Information System). Because of this digital system and software, the university managed its online classes. Being a new faculty in the University, it was also a big challenge for us as well. When we implemented and initiated online classes, we received unexpected and interesting queries from the student side. Students started to inquire share interesting questions and constrictive feedback regarding online classes. The university examination office has decided to give assignments, projects and online viva, and presentations to compensate Mid Term Marks. During Online Viva, we received very interesting and constructive feedback from students.

Gilgit-Baltistan is neither a province nor a state at the moment. It is considered to be semi-provincial. Although the abrupt transition to digital education was difficult for the kids, it seems like they rapidly adjusted to the new environment. The study gives students' perspectives on a particular time in higher education, even though the worries they expressed may merely be typical of the aftermath of a campus lockdown. Gilgit Baltistan's education has three main challenges: access, affordability, and quality. The quality and accessibility issues are made worse by the lack of digital and online platforms for teaching, learning, and assessment in the higher education sector, especially during natural disasters.

The difficulty increased during the recent pandemic when no schools or institutions in Gilgit-Baltistan could continue to educate their students for longer than eleven months. Hence, for several months, thousands of pupils were denied access to education due to the digital divide. Another significant issue, in addition to the lack of digital and online platforms, is the inability of teachers to effectively use ICT in the classroom. The University of Baltistan (UOB) has since installed cutting-edge learning management systems (LMS) and digital platforms at its Sakrdu main campus and its Sundas and Ghizer satellite campuses. So, the project's main goal is to deliver higher education that is both high-quality and easily accessible by offering online platforms and increasing the skills of the IT and teaching staff at these platforms. Another important goal is to comprehend the problems rural areas are having with digitalization so that solutions can be suggested for other places with comparable problems. Many studies have been conducted on the educational difficulties in Gilgit-Baltistan, but their issues have not been adequately addressed due to a lack of oversight and a lack of awareness of articles in journals with high impact factors. The University of Baltistan's affiliated schools and colleges will also quickly convert to digital learning by using this publication, owing to the lessons learnt during this initiative.

The main goal of this project is to explore students' experiences of using, LMS and ICT tools particularly computers and mobile. Investigation in anthropological dealing with a computer has been enormously positive and has profoundly altered figuring. Coronavirus Disease 2019 or Covid-19 is a global and deadly pandemic with a very rapid spread rate. There have been many online learning platforms or Learning Management Systems (LMS) offered. But unfortunately, the implementation of LMS, which is conceded under protest and constantly in the course of the Covid-19 epidemic,

so would surely have the potential to reduce pupil wisdom. This study tried to explore students' experiences and problems with online teaching and learning during COVID-19 and the improvement of current LMS through Human-Computer Interaction (HCI) approaches.

1.1 Objectives of the study

1. To explore student's experiences and problems of online teaching and learning during COVID-19.
2. To determine the perception of students about the improvement of current LMS through Human-Computer Interaction (HCI) approaches.
3. To determine the perception of teachers about the improvement of current LMS through Human-Computer Interaction (HCI) approaches.
4. To determine the relationship between the perception of students and teachers about the improvement of current LMS through Human-Computer Interaction (HCI) approaches.

2 Literature review

In user planning, a human factor is one of the most crucial components and develops a human-computer interaction (Sipon, Arsana, Warju & Ariyento, 2020). Diverse subjects and inquiries were growing their partaking in the field of HCI community like supercomputer discipline, synthetic brainpower, thinking, sculpture, policy, consciousness, and manufacturing field of study (Ehrhart, 1990). It had a commanding part in the planning and enlargement of electronic facilities and submissions. Its main areas of work like boundary forecasting, conniving, usability taxing, and an appraisal are a main concern in the designing and development of the electronic community. This type of interaction faced various encounters in designing and communicating message to users, providing a good user experience and ensuring the user returns (O´Connor, 2004). An appearance of IT uprising perceived a broadcasting of mobile devices and committed mobile solicitations and particularly organized web sites and applications along with them within electronic interactions of human (Khalil, Mansair, Fadda, Almisnid, Aldamgh, Al-Nafeesah, Alkhalifag & Al-Watayd, 2020). Various applications have been introduced by the designers of this class of software because they were considered an explicit necessity of the beneficiaries (Bansal & Khan, 2018). "Anthropological computer dealings are basically a practice and a training of usability of electronic mode of communication because it is about the relationship between a human and a computer, their mutual understandings and by creating a system which would ease the work of a human and people would love to use, and would be able to use it" (Sipon et al., 2020). It can also be defined as "a study of how humans use computers to perform certain tasks and use it in such a way that the interaction is being enjoyed and effective" (Raza, Qazi, Khan & Salam, 2020). It consists of three fragments that is a manipulator, a computer and their collaboration as it similar with its name of HCI and it is basically encompasses the drafting of low and high dependability, for example, "the degree of exactness a

thing is being reproduced". A first step for a smart HCI is partaking with the capabilities to retort and sense properly according to operator's sentimental response and notice, understand the moving situations revealed by the manipulator instinctually (Khalil et al., 2020).

The information processing system of human is properly progressed by using her/his natural skills and attributes like reminiscence, consideration, problem resolving skills, wisdom, enthusiasm, motor skills, theoretical simulations and assortment, language, collaboration and communication and these characteristics of the human/user are collectively act as a processor of information (Myers, 1996). "The computers are used for interaction with the users as they have special components that can interact with the users" (Ehrhart, 1990). A processor also offers a stage to human to articulate and interrelate with its constituents that afford an operative education. It is good at calculating and quantifying a detailed storage and evokes quick and reliable answers, information dispensation or design, makings, repetitive activities, and enactment over time like "simple and sharply defined things" (Hodges, Moore, Trust & Bond, 2020). It can be said as that "it is the interaction between a computer and a human to produce an effective output and it is a two- way process between a user and a computer" (Saroha, Sharma & Bhatia, 2011). This concept had extended promptly and gradually for more than four decades. From its backgrounds in which human factors has involved in the form of industrial and perceptive discipline into a commended field of study, appealing researchers and engineering specialists into a multidiscipline discourse that helps in assimilating various approaches, philosophies and practices of computer (Mayers,1996). However, from the beginning of human computer interaction and its prominence on usability, it had been persistently represented as the field of study in which diverse epistemologies and models can be reunited and assimilated in a ground-breaking, vibrant and a rational development (Zukouska & Sroczynski, 2019). This type of development may contain communal and structural figuring, synthetic aptitude, and computer idea, face acknowledgment and signal pursuing. "It's approachability has been reached to the elderly as well as the cognitively and physically impaired, and for all people, and for the widest thinkable spectrum of human interactions" (Tanveer et al., 2020). So, it can be say that, "HCI is cross-disciplinary in its conduct and multidisciplinary in its roots" (Ehrhart, 1990).

Various approaches in which human are relating to computers, have moved towards an extensive way of communication and this journey still endures towards an innovative strategies of technologies and systems that seem to be more and more complex in every-day. An investigation in this field of study has been rising very fast in the preceding few years (Sipon et al., 2020). A development in anthropological processor contact had not only been in excellence of dealings, it had also practiced altered splitting in its past (Lopes, 2016). "In its place of scheming consistent edges, diverse inquiries and outlets have had different focus on the concepts of multimodality rather than unimodality, intelligent adaptive interfaces rather than command/action based ones, and finally active rather than passive interfaces" (Fong et al., 2003). Occasionally, it is entitled as man-machine collaboration or interfacing (Raza et al., 2020). The purpose, in fact, is strong because utmost refined machineries are useless if they cannot be castoff appropriately by human.

2.1 COVID-19 and online teaching learning

From the year of 2019, the COVID-19 had arisen in the Wuhan, China, and it was quickly professed as an epidemic. It was blow-out globally due to its enormously high infective proportion (Hodges et al., 2020). In the mid of March 2020, it was confirmed by the World Health Organization (2020) report, the cases of coronavirus has present over 130 countries. People were afraid from it and it is natural feeling of fear about this disease because this is highly-infectious disease that has a relatively high mortality rate (Mayers, 1996). The main problem was its spread because the spread of COVID-19 was based on contact with individuals who might be infected with the disease (Tanveer et al., 2020). In the reaction of COVID-19 emergency, governments around the world had dispensed civic strategies that consist of collective isolation, self-quarantine and segregation and consuming extraordinary financial and psychosocial moments globally. Even though, a lot of individuals from all over the world stay in their family unit to avoid the Coronavirus (Khalil et al., 2020). Their source of revenues has been congested, and, in the learners' circumstance, their contact to schooling had been obstructed. On the other hand, as nations were into lockdown, the progression in information technology bounces light to probable another course of action. These intense deviations triggered by the progress of information technology in all phases of life, particularly seeing its contribution in the field of advanced learning that is critical to deliberate in the course of the COVID-19 epidemic. Scientific advancement in technology has constantly facilitated to human and to boost up the simplest tasks, such as the progression of the outmoded education (Qureshi & Irfan, 2015). "A technology that is under the umbrella of e-learning has made it possible to continue the learning process during the lockdown and this technology is referred to as the Learning Management System (LMS)" (Zukouska & Sroczynski, 2019). LMS is defined by Konstantinus and Hussain (2017), "as a web-based technology developed to improve the learning process through its proper planning, application, and evaluation in educational institutions". "Using LMS in the learning process helps facilitate e-learning as it provides educational material without the constraint of time or place", (Hodges et al., 2020), "enabling students and teachers to interact via the internet and facilitates sharing of course-related information and resources" (Saroha, Sharma & Bhatia, 2011). It specifies that the practice of this expertise in the course of the COVID-19 epidemic was a prerequisite of the hour to retain the educational progression sustained. "LMS used in educational institutions include Moodle, WebCT, Blackboard, and Desire2Learn" (Lopes, 2016).

According to Ehrhart (1990), Willingness of a person regarding technology acceptance was directly associated with the completion and facilitation of any learning task. Any type of acceptance of technology is based on various type of models and criteria of scientific inventions (Raza et al., 2020). In the present situation of epidemic, a huge infrastructure and resources are required for running e-learning environment for students, teachers and staff of any higher educational institutes (Sipon et al., 2020). It is very clear that if learners of any organization do not admit the novel structure of education, the return on investment of universities would be reduced (Zukouska & Sroczynski, 2019). "The existing literature revealed that the acceptance of LMS among students in higher education varies from country to country, as Arab universities in the

Middle Eastern region registered level of e-learning acceptance was low while a high-acceptance rate of the e-learning system was registered in western countries" (Myers, 2011; Qureshi & Irfan, 2015). There have been many online learning platforms or Learning Management Systems (LMS) offered. Some of them are Rumah Belajar, Google Classroom, Vinesa, Canvas Moodle, Schoology, Edmodo, and others. From the numerous LMS designs that have been offered in many universities, "Google Classroom" is consider as the one of the most extensively used and accustomed platforms. Of the several LMS platforms offered, Google Classroom is one of the most commonly used platforms. Tanveer et al., (2019) had suggested that "Google Classroom" was noteworthy because its structures offered a relatively inclusive and comprehensive interaction of students and teachers and it can be accessed freely for both users. This view was also strengthened by Khalil et al., (2020) who stated that "Google Classroom can simplify communication between students and teachers". Students can submit assignments according to the specified deadline. Meanwhile, teachers can also make assessments and provide personal comments so that students can revise their assignments. But unfortunately, the implementation of LMS is not impressive because it was conceded through forcibly and constantly at this time and it would definitely have a possible drawback that is to decrease learners' educational outcomes that are directly associated with sentimental, intellectual, and psychomotor spheres of learning (Lopes, 2020).

Globally, due to COVID-19 outbreak universities closed and lockdown, an unexpected shift from face-to-face learning to online had created few difficulties that were faced by students and lecturers. Moreover, most of the countries significant issues with technological infrastructure in rural areas; thus, the standard of online education may be a critical issue that needs essential focus (Qureshi & Irfan, 2015). Toward the end of February, as alerts sounded on the increasing spread of the COVID19 infection, the World Bank built up a multi-sectoral worldwide task force team to help nation reaction and adapting measures. At that point, just China and some other influenced nations were upholding social distance through the closure of schools. In the meantime, following fourteen days after the fact, 120 countries have closed schools impacting almost a billion students across the world that have experience closures of their schools for the period (Saroha, Sharma & Bhatia, 2011). "In this light, the COVID-19 pandemic has forced the universities to close face-to-face education and send students home. This forces the universities to introduce courses through online portals. Also, education industries are adopting the technologies available such as digital video conferencing platforms like Zoom, Microsoft platform, and Webex Blackboard and Google Classroom" (Lopes, 2020). Therefore, this will be enhancing E-learning globally (Tanveer et al., 2020).

In the 21st century, the E-learning creates a more significant impact on all types of the student, much as the part-time and full-time or distance learning student in the higher education institution (Konstantinus & Hussain, 2017). Nowadays, the majority of the postgraduate students are registered as a part-time student, because they are working in the companies. E-learning helps them a lot because of their time constrain. "The advancement in E-learning has been started through Massive Open Online Courses (MOOCs) for students, society, and the industry as well since 2012" (Fong et

al., 2003). "MOOCs are recognized as a significant development in higher education million of the peoples and student are taking the benefits and uplifting the existing skill" (Qureshi & Irfan, 2015). Moreover, in recent decades, several universities have adopted the E-learning portals (Bansal & Khan, 2018). "Based on the research of Saroha, Sharma and Bhatia (2011) highlighted several issues related to the Learning Management System (LMS) of the universities such as the lack of trained lectures, slowdown of the internet speed, WIFI coverage, infrastructure, the interface of design, quality of content, system use and students' adoption". The urgent imperative to "move online", caused by the recent Covid-19 pandemic has added to the stresses and workloads experienced by university faculty and staff who were already struggling to balance teaching, research and service obligations, not to mention the work-life balance (Ehrhart, 1990; Qureshi & Irfan, 2015). Teaching staff of all backgrounds and ages have had to prepare and deliver their classes from home, with all the practical and technical challenges this entails, and often without proper technical support (Hodges et al. 2020). "On top of that, a significant challenge for university teachers has been their lack of the pedagogical content knowledge (PCK) needed for teaching online and such PCK includes technical and administrative aspects of teaching online (e.g. respectively, using platforms and tools and organizing workflows); more significantly, it includes the pedagogical foundations and knowledge of principles needed to design for, and facilitate, meaningful online learning experiences" (Raza et al., 2020).

The term "online learning" is widely used but with a variety of meanings. For the purposes of this article, online learning refers to learning that is mediated by the Internet. It is wider than "networked learning"; while networked learning focuses on human-human connections (Fong et al. 2003), online learning lacks such specificity. It is narrower than "eLearning" and "digital education" which include the full range of digital tools and resources, not just the Internet and a focus on digital competences development. In addition, online learning does not have the in-built claim to improvement that makes "technology-enhanced learning" (TEL) (Sipon et al., 2020) a problematic phrase (Lopes, 2016). In our post-digital reality, one can argue that "online" is ceasing to be a helpful descriptor for students' actual experiences (Zukouska & Sroczynski, 2019), especially in the rich parts of the world, where Internet-connected devices are in such regular use, and the boundaries between learning and other strands of activity in everyday life have become so soft. However, the same cannot yet be said for "online teaching" which comprises intentional support for other people's learning, mediated by the Internet. The rapid closing-off of face-to-face educational work, in response to the Covid-19 pandemic, gave teachers a strong sense of the difference between online teaching and their other modes of operation. Experientially, online teaching is a recognisable category of working practices for many teachers (Konstantinus & Hussain, 2017).

Within present situation of Covid-19 crisis, learners are working in almost instantaneous and present situation demanded from them to develop an attitude of inventors and initiators by using technical tools, however from them few have confidently learned new technologies. This project was a try to highlight barriers and challenges of teachers and students about online educational information that an innovative online pupils need, in order to plan valuable learning actions and flourish in present situation. The main

objective was "to sort out clear and main characteristics of an online teaching know-how, akin to be transferred in the pedagogical practice of any educators, with or without experience in teaching remotely". Similarly, this change in learning process also creates problems to our students as well. Eventually, it is concluding that the prominence of scheming an operative educational atmosphere that reposes not merely upon the shoulders of teachers but correspondingly upon organizations for advanced instruction more usually in the form of provision for faculty professional expansion. This concept was investigated by understanding the experiences and problems of students and teachers during COVID-19 through the implementation of human computer interaction approaches in Baltistan Universities.

3 Research methodology

3.1 Research design

Mixed method approach was used. It is a strategy that categorized as the blending of qualitative and quantitative design. A triangulation design was used in this study. It acts as manifold investigation. In this investigation, the outcomes from each level were combined and organized into one inclusive explanation. A phenomenological approach was used in the form of qualitative design in this study. Therefore, experiences and problems of students about online teaching and learning process during COVID-19 was investigated by phenomenological design. The improvement of current LMS through human interaction approaches was measured by descriptive design.

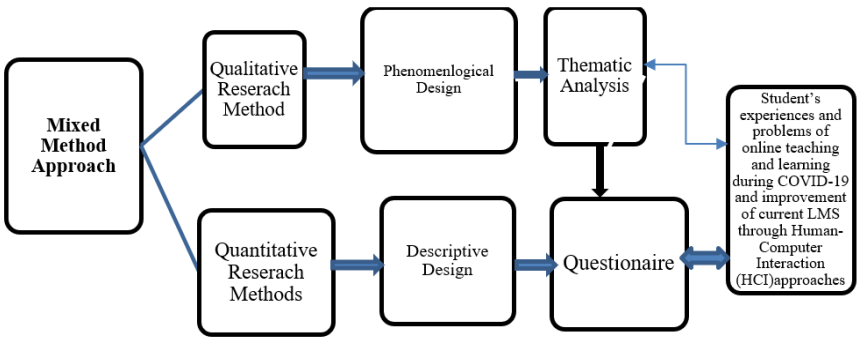

Fig. 1. Conceptual Framework

3.2 Population and sample

This study was held at university level and from Baltistan University; researchers took 12 students through purposive sampling method. The students were selected because of their real experiences of online learning during COVID-19. They had organized meetings with 12 students to confirm an acceptable sample size. Cresswell (2007)

suggested only interrogating 10 defendants in order to gather wide facts about any phenomena are enough for analysis. After the meetings, only ten university students were nominated as the sample. Meeting with selected students were held over two months throughout online semester. The sample involved five male and five female students. After thematic analysis, a survey was conducted. There are 2000 students in Baltistan University. 200 university students were randomly selected as the sample of this study.

3.3 Instrumentation

Semi-structured interview was made out of four key inquiries and it likewise enabled the analysts or the candidate to meander to pursue a thought in progressively extensive manner. Five social science experts of Baltistan University and National University of Medical Sciences, Rawalpindi, Pakistan checked the facet validity of interview. A questionnaire was developed based on emerged themes after thematic analysis. Pilot testing checked the validity and reliability of self-developed questionnaire.

Interviews were zoom-recorded for later record. The meetings were diverse in durations, with shortest interview lasted for 15 minutes and the longest interview's time duration was 30 minutes. The whole process of data collection was sequential. Google form was generated for survey and through email, it was shared with students. Researchers continuously keep in touch with sample for any query. Data analysis consisted on three steps. In step-1, once the data collection was finished, researchers used a connecting technique that was complicated with their footage, personal intuition and views. This method allowed them to stay self-reflective during the study when seeing their role in the study relation to the defendants. Their diary also consists of the exploration terms and catalog that were referred to gain information from the literature review. Defendants' body language was also noted. This method of examination termed as thematic inspection. Thematic analysis contained both inductive and deductive approach. Cluster additional information around the themes were analysed by deductive approach while themes were derived through inductive reasoning. Horizontalization used to reread the records. All the removed parts were credited as equal values. The statements or horizons were then gathered into wider groups as sense units or theme. At last, the closing stage of the fact exploration involved the instinctive addition of the important written and physical explanation into united reports that told the mutual essentials of students' experiences and problem about online teaching and learning during COVID-19. Thematic investigation produced 14 noteworthy articulations which researchers further analysed to decide the basic subject. They had sorted six themes in this work. In step-2, researchers developed a questionnaire. In step-3, descriptive statistics (Means, % & Frequency) was used to measure the improvement of current LMS through Human-Computer Interaction (HCI) approaches.

Table 1. Reliability Table

Sr. No	Dimensions of Questionnaire	Cronbach Alpha
1	Self-Learning	.786
2	Family and Teacher Issues	.986
3	Finanical, Internet and Light Issues	.764
4	IT Assistance	.732
5	Parents, Students and Teachers Training	.789
Students' Perception about the improvement of LMS and Human Computer Interactions		.755

All items related to questionnaire's dimension were reliable for final administration.

3.4 Thematic analysis

Thematic examination was a process of investigating qualitative information and it was typically useful to a set of manuscripts such as interview transcripts. In-Step 1, researchers used a semi-structure interview as tool of research that consists of three key questions, which were following;

1. What is your experiences of online learning during COVID-19?
2. What type of problems you have faced during online learning?
3. How LMS of your university helps you in your online learning?
4. What are your suggestion about the improvement current LMS?

After chunking, memo and coding of transcribed interviews, following themes had emerged from data;

1. Self-Learning
2. Family and Teacher Issues
3. Financial, Internet and Light Issue
4. Information technological Assistances
5. Parents, Students and Teachers' training

All these themes were collectively used as human computer interaction because it was clearly understood by this thematic analysis, teaching and learning in any organization during COVID-19 is directly associated with this type of interaction.

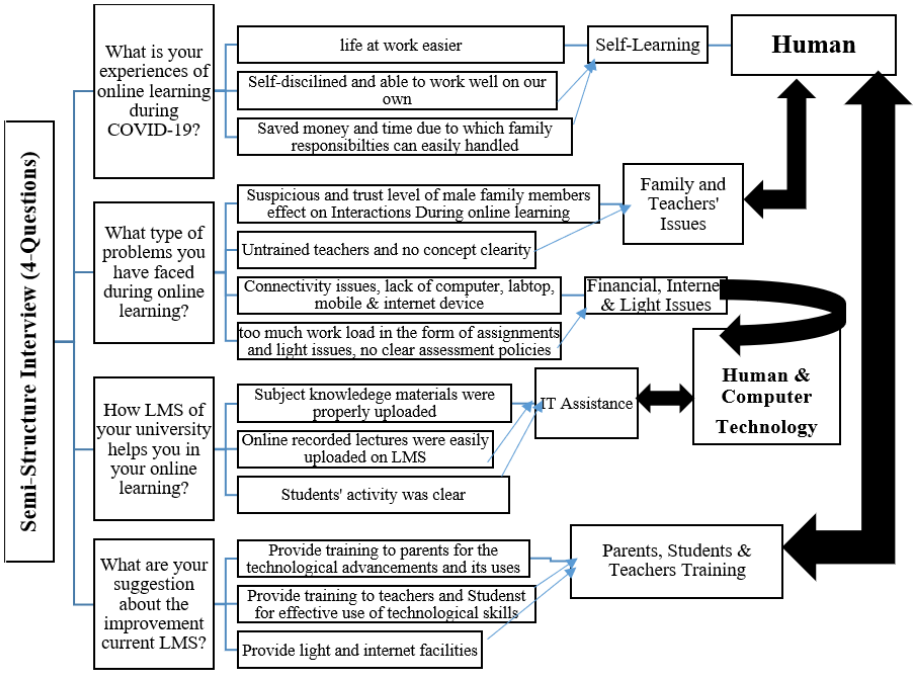

Fig. 2. Thematic Analysis

Self-learning. Most of the students said that "Online sessions provided me with a great time to study and I experienced better time management" and also said that "they would like to continue online classes if system is fool-proof and well prepared before we start using it again. I mean the technical part". Teachers discoursed that operational education was facilitated through certify distant knowledge, it is practicable, and learners can expediently contact instructors and instruction resources. This type of learning can also decrease traveling possessions and additional expenditures. This can also relieved managerial responsibilities such as footage of discourses and marking attendance. Pupils and instructors both had same view about the online learning modalities that had stimulated student centred learning during this lockdown situation. During this situation, learner had developed self-directed attitude and they were educated themselves through asynchronous mode of education at any time in a day.

Family and teachers' issues. Female students mostly faced over checking attitude from the male members of their family as most of the female students said that *"we have not allow to take mobile due to family restriction, but due to Covid-19, now it is compulsory for learning, so whenever we took online class, our brother or father mostly take a round of our place that make us uncomfortable and we mostly did not actively participate in online classes."* Some other students said that *"our teachers are untrained and during online classes, he/she was not able to handle class interaction. Due to which, male harassments issues towards female students were increased."* Some of the students said that *"Second* big issue was, most of our instructors have no experience

in delivering online lecture. There was a wastage of time every day because of technical problems" The electronic posting of mean-spirited messages about a person (such as a student) often done anonymously due to which parents shows over protective attitude towards their children. While victims usually know who their bully is, online bullies may be able to hide their identities online. The anonymity of the internet can lead to crueller or harsher abuses from the bully, all while the victim has no means of discovering who his or her harasser is. The overprotective parent wants to protect their children from harm, hurt and pain, unhappiness, bad experiences and rejection, hurt feelings, failure and disappointments. When the parent is fearful of many things, the child becomes overly scared as well.

Financial, internet and light issues. Problems had raised because of technological hindrances of internet connectivity and poor utility of online tools effect online teaching and learning process in Baltistan university because most of the students said that "Slow internet connectivity and communication software failure were among frequent technical issues ...." Similarly, most of students said that *"I used to face very frequent internet disconnection during online lectures daily and it was very hard for me to follow lectures with instructors."* And *"Sometimes instructor's voice was not clear and they didn't use appropriate explanatory tools given in the online software. It led to wastage of time which could be otherwise avoided."* Another major issue was shortage of electricity because this area had been without electricity for several days as the machinery and water channels for hydropower stations had become outdated. Another major issue is the poor connectivity. Students quoted that at the day of their online class, they had to travel up on the mountain, attend the class, download the lectures, submit their assignment and mark themselves present. If they failed to do so, the professors mark them absent without taking reasons in consideration. So, whenever is their online class, they stayed at their friend's home so that they won't miss another lecture. It was more difficult for female students. The whole process is so tiring and stressful that they had no time left to study. Since the mountains aren't easy to reach so sometimes they also steps out of their home a couple of hours before.

Information technological assistance. University of Baltistan provides various learning options and opportunities are made as flexible and multiple in the form of LMS, social media, google classroom and video/audio lectures uploaded on YouTube, sharing on WhatsApp or FB, Twitter, simple voice call/message etc.

It is instructed that all the subjects must have its course outline with clearly stated learning objectives/ expected outcomes. But then again, learners in these zones were finding it problematic to reload their SIMs, acquire internet correspondences, or recharging their balance because of the current restrictions. It was also said by students that many of them were not capable to understand online lectures because of poor streaming. Teachers had also spoken about their apprehensions and were unenthusiastic to stay their relevant university grounds for supplying online lectures. Most of the students said that *"university don't have any reliable connectivity system between student and teacher and no one knows whether all students and teachers have gadgets like laptop and internet."*

Parents, students and teachers' training. Most of the students said that "Some instructors were not in a habit of checking their microphones before starting their lectures, so there was interrupted voice which led to unnecessary inconvenience and botheration." And "Sometimes instructor's voice was not clear and they didn't use appropriate explanatory tools given in the online software. It led to wastage of time which could be otherwise avoided." Similarly, parents also need training regarding the importance of online learning because most of the students said that "Most of the times, I did not find a suitable place at home for taking my online classes and I felt like environment is not suitable at home for attending online lectures." And "My family did not realize that I am seriously busy in learning through online system and that put a lot of pressure on me." It was confirmed that teachers should understand this change that online teaching is different from face to face teaching and their role is very critical in the development of students. So, a proper training is required for teachers regarding technological advancement in teaching learning environment.

3.5 Human computer interactions

All the five extracted themes such as self-learning, family and teacher issues, financial, internet and light issues, IT assistance and training needs at students, teachers and parental level were collective describe human computer interaction in the course of COVID-19. Both technical and anthropological behavioural apprehensions are handled by this type of interaction because when a human operator and a computer system get together then they are capable to accomplish something. Effective, efficient and satisfied usability of HCI devoted to ensure excellent human computer interaction among other things.

3.6 Descriptive statistics for the improvement of current LMS

Table 2 shows that majority of students agree that online learning make them self-disciplined (75%) and independent (70%) while they cannot maintain their time (70%). Similarly, students believe that their parents do over cross checking (87%); teachers are untrained (83%); female faces more problem at home than male (74%); parents do not know about technology (76%); have load shedding issue (86%); have no enough money for labtop (78%); have connectivity issue (69%) while they agree that their LMS of university provide them all technical assistance (70%). All the students agree that their parents and teachers need training for online teaching learning (88%).

Table 2. Percentage Responses of Students towards the improvement of Current LMS

No	Items	SDA	DA	N	A	SA	M
A	Self-Learning						
1	Online learning develops self-disciplined attitude among students.	05	05	05	75	05	4.3
2	Students can maintain their time through online learning.	10	70	10	05	05	2.1
3	Through online learning, students will become independent in learning.	05	05	10	70	10	4.0

No	Items	SDA	DA	N	A	SA	M
B	Family and Teachers' Issues						
4	Parents continuously check our online sessions of learning.	01	02	00	87	10	4.4
5	Teachers are untrained, due which mostly class-fellows attacks the privacy of others students that effect on the family system.	02	03	05	07	83	4.7
6	Female students mostly faces problems at their home, when their male class-fellows access their contacts through online apps of learning.	03	03	05	05	74	4.6
7.	Parents do not understands the technology of learning.	05	05	04	10	76	4.6
C	Financial, Internet and Light Issues						
7	Due to cold weather, there is a lot of load shedding issue in our city.	04	03	03	04	86	4.8
8	We have no enough money to take labtop, mobile or personal computer individually.	05	05	02	78	10	4.3
9	Internet connection has signal issue in our city.	01	10	10	69	10	4.0
D	IT Assistance						
10	Our university provides us all technical assistance.	10	05	05	10	70	4.0
11	LMS of university is good.	10	04	05	76	05	4.2
12	All materials and assistance received timely to use	05	10	65	10	10	3.3
E	Parents, Students and Teachers' Training						
13	If University management provide a training to parents about the use of different learning apps then, students can learn more through LMS.	01	02	00	10	87	4.9
14	If teachers are technological, advanced then they can easily handle their students problems of online learning.	08	00	00	10	82	4.4
15	When a proper training/workshop about the use of Learning management system for students held, then students can easily handle their learning issues of LMS.	02	00	00	10	88	4.7

Table 3 shows that all the emerged themes were directly related with human computer interaction (M=4.3). All the students believed that when their family and teachers issues (M=5); financial, internet and light issues, information technological assistance (M=3.8) and parents, students and teachers' training (M=4.6) are improved then improvement of current LMS through Human-Computer Interaction (M=4.3) approaches has been occurred in Baltistan university.

Table 3. Means of Extracted Theme

No	Dimension of Improvement of Current LMS	Mean
1	Self-Learning	3.4
2	Family and Teachers' Issues	5.0
3	Financial, Internet and Light Issues	4.7
4	Information Technological Assistance	3.8
5	Parents, Students and Teachers' Training	4.6
6	Human Computer Interaction	4.3

4 Discussion

Percentage responses of leaners found that, operational knowledge was a bendable and an operative foundation for their education and most of them agreed upon the fact that helps in distant learning. They thought that through informal direction and approachability laterally with a lesser amount of supply and time. Irrespective of time duration, learners were simply attained their educational resources. E-learning strategies were helping in encouraging student-centred education and they were easily managed it for the duration of their lockdown. It was valuable seeing at a nascent phase in Pakistan. It had started as a substitute distant education and through additional reserves, universities can overwhelm their boundaries. Students were also talked about a need a training that train teachers and university staff about the use of online strategies and emerging lesson disposition with compact reasoning capacity and amplified interactivities. On the other hand, various learners had stated negative aspects that were related to handling their time. Learners had faced some encounters and acknowledged obstacles in the attainment of information during operational progressions. Amendment and commitment in this innovative structure was apparently acted as an obstacle in the improvement and employment of online learning. Procedural encounters confronted by partakers were also deliberated through the dimension of financial, internet and light issues. It comprises mechanical features like internet connectivity and the use of online tools. Behavioural and acceptability challenges from parents and teachers side for students are also discussed under the dimensions of extracted themes that comprehend a destructive approach in the direction of embracing an innovative style of education. All the five extracted themes such as self-learning, family and teacher issues, financial, internet and light issues, IT assistance and training needs at students, teachers and parental level were collective describe human computer collaboration in operational instruction and educational development during the course of COVID-19. It means that anthropological computer dealing shields both technical and humanoid communicative apprehensions.

Similarly, survey analysis shows that all the emerged themes were directly related with human computer interaction. All the students believed that when their family and teachers issues; financial, internet and light issues, information technological assistance and parents, students and teachers' training are improved then improvement of current LMS through Human Computer Interaction approaches has been occurred in Baltistan university. This research finding is quite similar with the researches of Khalil et al., (2020); Mukhtar, Javed, Arooj and Sethi (2020); Lopes (2016) and Sipon et al., (2020). It was found that when learner's efficacy in education had improved then they would be enthused to realize their educational aims by the practice of their university LMS, particularly when they were communally inaccessible due to lockdown situation. Furthermore, refining strategies are required in the e-learning arrangement in using LMS because our learners were highly motivated in the direction of adopting the technology when they professed it as stress-free and valuable to practice. Fronting a difficult setup, it is deliberated to redefine the part and accountability of hypothetical instruction and required appropriate gears to hold the existing trials professionally.

5 Conclusions

1. Self-learning, family and teacher issues, financial, internet and light issues, IT assistance and training needs at students, teachers and parental level were collective describe human computer collaboration in operational instruction and educational development during the course of COVID-19. It means that anthropological computer dealing shields both technical and humanoid communicative apprehensions.
2. All the students believed that when their family and teachers issues; financial, internet and light issues, information technological assistance and parents, students and teachers' training are improved then improvement of current LMS through Human-Computer Interaction approaches has been occurred in Baltistan university.

6 Recommendation

1. Academia, commercial, and government supported explorations endure to improve the science and technology manipulator edges in future that may enhance teaching learning process during pandemic situation in Pakistan.
2. Additionally, didactic organizations may start operational courses along with regular classes in terms of earnings and high revenue.
3. It is suggested to slog on endorsing the practice of LMS by an effective approach of execution that will help to learners in analysing the welfares of equipment relatively. Moreover, the acceptance of LMS in learning is the sign that instructive accomplishments can be done through an operational boards. Therefore, it is recommended to blowout the origins of online atmosphere and start working supplementary undertakings as well because world is quickly flowing in the direction of artificial intelligence, so it's great period to accept this accessible setting in teaching organization.

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