

The Enactment of Online Learning for Special Need Students during COVID 19 Pandemic: A Case Study

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ARTICLE INFO	ABSTRACT
<p>Article history Received 24, 6, 2022 Revised 9, 4, 2021 Accepted 3, 4, 2021</p> <p>Keywords Special Education Online Learning Covid 19 ICT</p>	<p>The present study focuses on the implement of online learning in special education and how Information and Telecommunications Technology being used to strengthen and support the achievement of learning and the learning goals at special needs junior high school students (SMPLB) Jambi. The research method used in this study is a case study where the researchers observe how the patterns and processes of online education in the learning of SMPLB students, distributing questionnaires on the use of ICT to the teachers, interviews with parents/guardians of the students, and interviews with special junior high school teacher Sri Soedewi Maschun Sofyan, S.H Jambi. The results of the research indicate that the students in special needs schools have difficulty in obtaining technology that suits with their needs in learning. The learning process cannot be carried out as expected because the teachers have difficulty in making technology-based learning materials for the students, especially for students with the deaf and the blind. Reading and writing skills are also very limited, and the student learning is very low because the online method greatly limits opportunities for direct interaction between the students and the teachers. The involvement of parental assistance is also very low because the parents do not understand how to aid with children in online learning.</p> <p style="text-align: right;">This is an open access article under the CC-BY license.</p> 

I. Introduction

The education for Children with Special Needs is an education that aims to provide educational services to students who are due to the limitations of one or more disabilities such as: Blind, Deaf, mentally retarded, delays in thinking, limitations in the ability to socialize and limitations to communicate abilities (Havercamp et al., 2021). In the last few decades, there have been various efforts made by the department of education and special needs schools to improve the quality of special needs education and optimize the achievement of students. For example, improving the infrastructure, improving the teachers' teaching skills, and promoting students' participation in academic and non-academic activities such as in sport, art, and subjects-based competitions. However, during the Covid 19 Pandemic, it is very few research were carried out to look at the impact of Covid 19 and the education for children with disability such as Arim et al (2020) who are looking at the impact of COVID-19 pandemic on Canadian families of children with disabilities. But this research only provides statistical figures of parenting during the Covid 19.

In fact, it is believed that educational services for children with special needs such as children with hearing impairment, blindness, mental retardation, autism, children with other types of disabilities, and teachers all of them experience double difficulties, especially in terms of the equipment needed to assist the process of learning implementation, especially learning at home that can meet their needs.

Although, many computer applications have been widely available, and educators positively convinced that ICT support student's formal education (Drigas & Ioannidou, 2013). In a very relevant issue proposed by Smith et al (2022) in their survey of 700 Children and Young People with Disability Australia (CYDA) revealed that most of these subjects felt forgotten in the transition to remote learning. Students with disability in special needs school are a "Vulnerable" group of learners within a pandemic context as this group of students are facing. Structural inequities and discrimination because of their impairments. In this research we report research that ought to examine (1) the obstacles faced by teachers, parents/guardians, and students with special needs in online learning

during the Covid 19 Pandemic at special needs schools Jambi (2) How do teachers, parents/guardians guide students at SMPSLB Jambi in online learning (3) How do teachers and parents/guardians of students overcome problems in online learning during the Covid 19 Pandemic at SMPLB Jambi

In the COVID-19 pandemic, The Special Needs School experienced difficulties that were felt by the students, the teachers, and the parents where at the time schools had to be closed and learning had to be done remotely. All administrative activities and the learning process are carried out from home with the terms "work from home" and "Study from Home". Number of education and learning programs must be changed in a very short and appropriate time as also stated by Daniel (2020) that government has ordered top cease face to face instruction and requiring them to switch to online instruction and virtual education in just overnight. The same case was also expressed by (Fagell, 2020; Laster-Pirtle, 2020). A number of children with special needs even go through their days without formal learning.

The 2019/2020 school academic year is a very complicated and uncertain learning year. The learning curriculum that has been designed to be implemented face-to-face must be immediately transferred to the online learning model. This situation is a situation that was never thought of and planned. The schools also do not have many devices to use in this situation. Another thing is the teachers are confronted and challenged to present meaningful learning experiences (De-DRIGG, 2020). If the device must be prepared, it will require new planning and it will take a long time with very large funds. Although hardware and software can be immediately procured, the ability and skills of teachers to carry out online learning is an obstacle. Likewise, the ability of students to participate in online learning is very limited.

The utilization of Information and Communication Technology (ICT) in learning in the 21st century is a new challenge for teachers and education personnel. The phenomenon of using ICT in the learning environment is believed to be able to strengthen and encourage learning because ICT can accommodate learning styles in obtaining information (Shepherd & Alpert, 2015). The presence of the Covid 19 pandemic encourages the maximization of the use of Information and Communication Technology in education along with the presence of software and hardware in more modern computer technology.

Children with Special Needs, also known as Diffable (Different Ability) as set forth in Article 54 of Law Number 39 of 1999 concerning Human Rights, namely: Citizens who have physical, emotional, mental, intellectual and/or physical disorders people have the right to special education. Article 5 paragraph (2) of Law Number 20 of 2003 concerning the National Education System mandates education for children with special needs, as well as Article 32 of the National Education System Law concerning

Special Education which is education for students who have difficulty in participating in the learning process due to physical disorders, emotional, mental, social, and/or have the potential for special intelligence and talent

The integration of ICT in education has drastically increased and becoming very important especially during the Covid 19 pandemic from the beginning of 2020 to the end of 2021. The rapid development of ICT has also changed people's living conditions (Drigas & Ioannidou, 2013; Lawrence & Tar, 2018). The increasing need for ICT is not only needed for the mobility needs of daily life but has long been directed to the interests of education as in the secondary school education curriculum, ICT has been established as one of the subjects that must be taught. This integration and implementation have been designated as one of the learning media in Indonesia Education through Technology, Pedagogy, and Content, Knowledge (TPACK) where Technology in 21st century learning is a must. Teachers are required to have knowledge and skills in using ICT for learning (Rahmadi, 2019).

The integration of ICT in education is defined by Melo et al. (2020) as knowledge for teachers to communicate the technological advances and how students acquire knowledge by using ICT in the classroom. During the Covid 19 Pandemic, which occurred at the beginning of February 2020, several restrictions were ordered to travel and carry out activities outside the home, including school closures at every level from kindergarten to university level. The peak impact of Covid 19 on education was when the lockdown and PPKM level 4 were enacted in August 2021. With PPKM level 4 all educational activities and community activities must be carried out from home except for several activities such as food shops and hospital activities. At this time, educational activities for children with special needs continue to be carried out from home. Although several schools carry out administrative activities at the office in rotation.

Learning during the COVID-19 pandemic, the Government and the Ministry of Education and Culture have instructed all schools and teachers to develop online learning content. Examples of what to do are; making online teaching materials using learning videos, power point presentations, and live presentations via zoom or google meet. This online learning activity has changed the form of learning interaction into the world of technology on a large scale. Akhigbe et al. (2021); Warburton, (2009) states this as a technological reform in the world of education on a massive scale with the evolution of the world into a virtual world. To compensate for the urgent need for technology, the government through the Ministry of Education and Culture provides free Internet quotas, repairs, and procures internet devices in schools, and encourages the use of electronic media such as Educational Television and Educational Radio programs. However, this does not mean that special needs school students apart from difficulties considering the large number of available

applications and technologies are not able to provide services according to the needs of special needs school students.

Sharing and conveying an idea by communicating is a natural condition that is done by every human being (Burlison, 2010). Sign language and Braille are the most used media in communication for deaf and blind children. However, for Deaf children using Oral language is not an inability to communicate but a natural condition of them caused by a limitation so they cannot communicate verbally (Tukimin et al., 2019). The sign language they use is a separate language that can be used by fellow Deaf people or for people who are able to sign. So far, the communication media used is sign language and finally a communication media emerged that allowed them to communicate widely using communication technology with the presence of cellular phones and computers that allowed them to send SMS, social media WhatsApp, Tweeter, Line, Instagram, Telegram, and various other communication media applications such as Email. For blind students, this is also the case. With limited vision, they must read using Braille. However, another difficulty is that they must write it into Latin letters which in fact in their reading activities use Braille. This phenomenon is a separate complication faced by blind students, where they must translate their ability to read Braille into Indonesian writing using Latin.

Referring to the definition proposed by Holcomb (2010) that deaf are students who have hearing loss, so they are categorized as students who need special services provided in Deaf education. Deaf students in Special needs Junior High School at Sri Soedewi Maschun Sofyan Jambi in their daily life use Home Sign Language and learn Indonesian Signs with the Indonesian Sign System (SIBI). In the process of teaching and learning interactions for teachers at the Sri Soedewi Maschun Sofyan Special School for the Deaf using Total Communication (TC), this method is considered good for use in providing education to Deaf children where teachers utilize all mean of communication media that are possible for students to maximize understanding and expression to acquire knowledge and skills in learning (Musselman & Kircaali-Iftar, 1996). For students with visual impairments, in their daily interactions, they use spoken Indonesian. However, they carry out formal learning by reading through Braille. Schools cannot provide textbooks according to a curriculum that uses Braille.

Special Junior high school students at Sri Soedewi Special School Maschun Sofyan, S.H Jambi, interact and socialize normally both at school and outside of school. In the daily life of the Deaf students at Special needs school, they also use telecommunication devices "cellular telephones" and so the case with blind students, but the use of these communication tools is limited to SMS, voice calls, and Voice Notes. During the Covid-19 pandemic, because Indonesia implements the policy of "work from home and study from home" where people are required to always

keep distance and the implementation of school education is required online, several old practices must be changed into a different educational process. During the pandemic, teaching is done by making more use of the internet, video, and software as well as online applications such as Zoom, WhatsApp Video Call Group. This also affects the possibility of using Android cellular phones as learning media. At this school, there were no students who used Assistive Technology. Assistive Technology for Deaf children is basically divided into 3 major groups, namely: 1. Hearing aids- including tools used to increase sound/voice such as hearing aids for children who still have residual hearing, 2. Readiness aids and warning is a light or low vibration or a combination of both which is made to notify a child with hearing impairment that something is going on or is happening, and 3. Communication technology is an augmentation and alternative communication with various tools aimed at communicating skills for children with disabilities. However, at the special school of Sri Soedewi Maschun Sofyan, S.H Jambi, all students only use communication technology such as cell phones and computers.

II. Method

This case study (Stake, 2006) focuses on the implementation of online learning at special needs secondary schools during the Covid 19 pandemic. It is understandable that the case study research model has several shortcomings. However, by utilizing several methods that allow researchers to further explore the views and experiences of teachers during teaching and the use of various data collection methods, case study research like this can be trusted as a strength. The use of various approaches and data triangulation can increase the validity and reliability of research results (Stake, 2006; Yin, 2012). Sources of data include direct observation and participation such as the workplace and the availability of computer and internet facilities, online learning activities, teacher interactions, semi-structured interviews, and discussions with teachers and parents such as perceptions and experiences of teachers and parents.

The subjects in this research were 19 teachers of SMPLB Sri Soedewi Maschun Sofyan Jambi including the head of SMPLB. The teachers who participated in this study were teachers who were willing to be involved in the research and had been registered as permanent teachers at SMPLB. The number of parents/guardians of SMPLB students who returned a list of questions was 17 people. The participants in this study were special school junior high school teachers with Bachelor and Master educational backgrounds in Mathematics, Educational Technology, Sports, Indonesian Language, Religious Education, Social Studies, English and Class Teachers. The ages of the teachers involved in the study were between the ages of 30 to 59 years. This school serves education with students' backgrounds such as the Deaf, Blind, Autistic, Physically Impaired, and Mentally Impaired. The school is in

Telanipura District, Jambi. Based on the number of students who are in one class is 8-10 people with the number of teachers teaching hours 10-25 hours/week.

A. Data Collection and Analysis

This research uses various data sources that provide descriptive data on teacher experiences, perspectives on school closures during the pandemic and changes from face-to-face learning models to computer-based and online learning models. A set of checklist instruments carried out by the teacher during the preparation and implementation of learning and interviews, a set of questions on the availability of hardware and software were also posed to the teacher. The purpose of this instrument is to obtain information about the learning tools owned by the schools and the teachers, the identity of the teaching experience, and the length of teaching. Parents/guardians of the students are also given a set of questions that aim to describe the availability of technology for parents in helping their children's learning process at home as well as the challenges and obstacles experienced by parents in aiding with educational services.

III. Results and Discussion

Based on research result that has been carried out with a series of data collection processes, it was found that during the Covid-19 pandemic, teachers conducted online learning with various obstacles and challenges in preparation and in implementation such as mentioned by teacher 15 "I am having problems in delivering my teaching material which must be in accordance with students' level of ability. While I am not certain whether the submitted work is originally answered by students because in many cases it was done by their parents or other people. I am also having problem with internet line" This issue mention by teacher 15, is also mention by (Daniel, 2020) as challenges of Education in Covid 19 pandemic where needs of students at different level and stages. This not only affects their level and course of study but also the point they have reached.

The ICT knowledge and skills at SMPLB are taught in an integrated manner and integrated into lessons according to the curriculum. It is acknowledged by the teacher that the use of ICT in new learning has taken place between the last 1-3 years. This means that teachers have only used computers and the internet for 1 year before the covid 19 pandemic. Furthermore, teachers use computers and the internet when preparing lessons and teaching online methods. However, in offline teaching in the classroom, the teachers admit that they did not use the internet with students, this is because the school only provides computers and internet for teachers and does not provide for students. Most of the students do not have any personal laptops or internet devices. This issue makes the condition even worst as Smith et al (2022) described as the school shut and remote learning continue to raise the negative repercussions for "Vulnerable" children such as students with

disability and low-income families. In terms of providing teacher support for the use of ICT, teachers have participated in several professional development training courses by participating in ICT training in schools which are also mandatory school activities. In more detail, the training activities referred to are introductory activities on the use of the internet and applications for virtual learning, training on the use of specific equipment, training on using ICT in learning, as well as multimedia and audio learning training. These training are taught by experienced teachers or experts from outside of the school.

Teacher activities carried out based on ICT and learning materials include browsing the internet to collect learning resources, preparing exercises and assignments as well as online communication media with parents. However, even though teachers had attended several training courses on ICT and use ICT for several purposes, teacher 3, 16, 9, and 12 for example admit that they never submit student homework on the school website. Several reasons were given by these teachers "that the number of computers was inadequate, computers connected to the internet were inadequate, and internet bandwidth was also inadequate. In addition, this is also influenced by outdated computer equipment, lack of teacher skills and inadequate support personnel such as technicians, and inadequate learning models on how to use ICT for learning" However, teachers feel very confident about being able to use ICT for purposes such as producing text using "word", capturing, and editing photos, videos, and images. In addition, teachers also feel confident that they can edit online texts that contain internet links, send files to others, organize folders and subfolders, make presentations with animations, making presentations with video or audio, and download/upload materials and websites for students to use. Teachers also feel confident that they can use e-mail to communicate, participate in online discussions and participate in social networks. However, teachers do not feel confident in creating a database, creating a blog or website, and downloading or installing software. Those are not the main issues in the Special needs school in Jambi but the utilization of ICT in the teaching and learning process of students with Disability. This clearly mention by Akhigbe (2021) that positive perception and usefulness of technology is important and critical as students are required to learn via online model in the covid 19 pandemic.

In terms of internet availability for school management purposes, teachers are given an email and use IT for the purposes of an electronic registration system and use an LMS. The communication medium used by teachers and parents; all teachers response "Yes, I use smart phone with the WhatsApp application "For this matter, teachers and students have their own groups. They also use learning videos, as well as google sites. In the COVID-19 pandemic, teachers stated "we communicated with students online through telephone using the WhatsApp application with the Video Call feature, Voice note, or written message". Regarding this communication model, admitted by

teachers as an easy way to deliver message but still very hard to convince them if their students learn and study. In relation to the important role of parents in helping students learn during the pandemic, it is acknowledged by the teacher that parents have a very important role, especially when children with special needs are faced with it. It was stated by the teacher that parents at home directly replaced the role of the teacher who had been teaching face-to-face. The role of parents is very important in helping and guiding children to study at home and directing students in understanding the material or assignments given by the teacher.

The following are the obstacles that expressed by the teachers in conducting online learning: 1) The Parents who don't respond when children are having tasks and assignment; 2) There are parents who have difficulties in conveying learning back to their children; 3) Lack of enthusiasm of students; 4) Not all parents have a mobile phone or WhatsApp application, sometimes they have to borrow a neighbor's smart phone or the child has to wait for his parents coming home from work so they can do the assignments given by the teacher; 5) Inadequate internet network in every home and limited quota during online learning, and 6) The time difficulties due to working parents, which cause the students only send assignments when their parents are at home.

From several difficulties faced by SMPLB teachers during the Covid 19 pandemic, teachers tried to overcome their problems by carrying intense communication with parents and giving tips on how to teach children at home as this mention by the school principal "Delivering material to students is a problem by all teachers. But the big problem is on the parent as they don't know how to teach their disabled child". Similar approached proposed by (Lambert & Schuck, 2021) in their research on teaching Mathematic to students with disability during covid 19 that "Coaching students and families in self-regulation strategies could support student engagement in mathematical problem-solving in online learning" In giving assignments to the students, the teacher also gives a time limit, so the students and the parents are orderly in collecting the assignments given. For students who live far from school and do not have any internet network, the teacher conducts learning by means of a "home visit" and immediately gives assignments to the house concerned, or students and their parents pick up assignments to school for one week and submit them within coming week. Regarding this routine, teachers admit it as a big challenge and obstacle as most of them stated "Problem like this is very complicated problem during the Covid 19 Pandemic because on the one hand parents and students also have to comply with the lockdown rules about learning from home".

From several learning process activities carried out during the Covid 19 Pandemic, it was acknowledged by the SMPLB teacher that in terms of cognitive abilities, children's achievements had greatly decreased due to lack

of learning activities. This is stated by teachers 2 and 4 And parents 8 and 9 that "yes, it is very bad. The students did not know anything. They didn't study". Likewise, in the affective aspect of the teaching and learning process most parents of disabled children said "the students are very difficult to ask to learn. They feel less responsible to the assignment given". Follow up this statement it is very closely relevant to (Smith et al., 2022) where social support is positively dominant aspect affecting the learning outcomes. The feeling of isolation and cut off being together led to reduced students' willingness and motivation to learn. This is clear that peer relationships among disabled students is very important and will benefit to their learning outcomes in terms of psychomotor, children are also much decreased where they do not do any learning activities, especially at the home where they do not have adequate facilities for learning.

Data collected through questionnaires and interviews with the parents and the guardians of the students, it was found that the device that is widely used by parents in helping their children study at home is a mobile phone with a quota purchased by themselves. Mobile phones are the main media used by parents because mobile phones are already owned and easier to operate. Although there are parents who use laptops, there are only a few, this is because laptops are more expensive and difficult to use.

Based on the explanation above, the findings in this research are the online learning process for SMPLB students and how to improve learning outcomes for Special Needs Junior High School Sri Soedewi Maschun Sofyan Jambi. The following is the contribution of the results of the Evaluation of the Implementation of Online learning: 1) Utilization of ICT in the learning of SMPLB students with the online learning model; 2) Providing benefits for improving the online learning process for SMPLB students during the pandemic and during normal times; 3) Improving teacher skills in preparing and implementing online learning processes which have an impact on increasing the learning outcomes of SMPLB students; 4) Strengthening multidisciplinary research roadmaps and collaboration between lecturers at universities and teachers in special schools; and 5) Published scientific journal articles on research results in national/international journals and presented in national / international conferences.

This research will provide a number of benefits for the process of implementing learning in Deaf Children in Special Schools, which include: 1) Evaluation of the implementation of online learning for special junior high school students so that later it can be formulated how the form of planning and implementation of education and learning for special junior high school students will be online; 2) Will provide an analysis of how to implement online learning for junior high school students in special schools; 3) Formulate an online learning plan for junior high school students; 4) The results of this research will also provide an impact and contribution of ideas about strategies and how

models should be used in learning for special junior high school students; and 5) Another benefit that can be obtained through this research is the broad dissemination of how to teach SMPLB students through the publication of accredited national/international journals.

IV. Conclusion

The analysis showcases that there were several obstacles both in terms of technology and learning methods, as well as difficulties in learning management. Although teachers already have knowledge in terms of how to carry out ICT-based learning, online learning has not been implemented optimally because it is not supported by adequate technology. On the other hand, parents who in this case have a role as a substitute teacher to carry out learning at home, do not have sufficient knowledge in carrying out their role as substitute teachers because, (a) Do not mastering technology, (b) Do not have sufficient technology, (c) do not understand the subject matter that will be delivered to the child. In addition, during learning carried out from home both teachers and parents assess that the achievement of children's learning outcomes decreases. This reduces the child's sense of responsibility in carrying out the tasks assigned by the teacher. If learning is carried out using ICT during learning from home, it becomes a big obstacle for the learning of student with special needs because many technological results have not been able to facilitate maximum learning. For future study on the use of ICT for special needs instruction, it is recommended to carry out a deep investigation on how English teacher implement the use of ICT on a specific subject such English in particular the productive skills.

References

- Akhigbe, B. I., Munir, K., Akinade, O., Akanbi, L., & Oyedele, L. O. (2021). IoT technologies for livestock management: a review of present status, opportunities, and future trends. *Big Data and Cognitive Computing*, 5(1), 10.
- Arim, R., Findlay, L., & Kohen, D. (2020). *The impact of the COVID-19 pandemic on Canadian families of children with disabilities*. Statistics Canada= Statistique Canada.
- Burleson, B. R. (2010). The nature of interpersonal communication. *The Handbook of Communication Science*, 145–163.
- Daniel, S. J. (2020). Education and the COVID-19 pandemic. *Prospects*, 49(1), 91–96. <https://doi.org/10.1007/s11125-020-09464-3>
- De-Witt, P. (2020). *Reasons students aren't showing up for virtual learning*. Education Week.
- Drigas, A. S., & Ioannidou, R. E. (2013). Special Education and ICTs. *International Journal of Emerging Technologies in Learning*, 8(2), 41–47. <https://doi.org/10.3991/ijet.v8i2.-2514>
- Fagell, P. L. (2020). Career confidential: Teacher wonders how to help students during coronavirus shutdown. *Phi Delta Kappan*, 101(8), 67–68.
- Havercamp, S. M., Barnhart, W. R., Robinson, A. C., & Smith, C. N. W. (2021). What should we teach about disability? National consensus on disability competencies for health care education. *Disability and Health Journal*, 14(2), 1–9. <https://doi.org/10.1016/j.dhjo.2020.100989>
- Holcomb, T. K. (2010). Deaf epistemology: The deaf way of knowing. *American Annals of the Deaf*, 154(5), 471–478.
- Lambert, R., & Schuck, R. (2021). “The wall now between us”: Teaching math to students with disabilities during the COVID spring of 2020. *The Asia-Pacific Education Researcher*, 30(3), 289–298.
- Laster-Pirtle, W. N. (2020). Racial capitalism: A fundamental cause of novel coronavirus (COVID-19) pandemic inequities in the United States. *Health Education & Behavior*, 47(4), 504–508.
- Lawrence, J. E., & Tar, U. A. (2018). Factors that influence teachers' adoption and integration of ICT in teaching / learning process. *Educational Media International*, 55(1), 79–105.
- Melo, E., Llopis, J., Gascó, J., & González, R. (2020). Integration of ICT into the higher education process: The case of Colombia. *Journal of Small Business Strategy*, 30(1), 58–67.
- Musselman, C., & Kircaali-Iftar, G. (1996). The development of spoken language in deaf children: Explaining the unexplained variance. *The Journal of Deaf Studies and Deaf Education*, 1(2), 108–121.
- Rahmadi, I. F. (2019). Technological Pedagogical Content Knowledge (TPACK): Kerangka pengetahuan guru abad 21. *Jurnal Pendidikan Kewarganegaraan*, 6(1).
- Shepherd, C. M., & Alpert, M. (2015). Using technology to provide differentiated instruction for deaf learners. *Journal of Instructional Pedagogies*, 16, 1–7.
- Smith, C., Tani, M., Yates, S., & Dickinson, H. (2022). Successful school interventions for students with disability during COVID-19: empirical evidence from Australia. *The Asia-Pacific Education Researcher*, 1–11.
- Stake, R. E. (2006). Multiple case study analysis: Guilford press. In *New York, NY*.
- Tukimin, S., Handayani, D., Alimin, Z., & Somad, P. (2019). Indonesia deaf and blind communication system (IDBC-system). *Education and Information Technologies*, 24(3), 2017–2033.
- Warburton, S. (2009). Second Life in higher education: Assessing the potential for and the barriers to deploying virtual worlds in learning and teaching. *British Journal of Educational Technology*, 40(3), 414–426.
- Yin, R. K. (2012). *Application of case study research 3rd edition*. SAGE Publication.Inc.