CHAPTER II
LITERATURE REVIEW

2.1 Basic Theoretical

‘’ A broader definition of technology such as the one used in the present paper might help advance the discussion but is not without problems of its own. Technology here is defined as any systematically designed materials or devices to support, supplement or substitute the teacher. It refers both to old and new technologies, media, and non-media-based delivery systems. It refers to the content or substance, rather than the medium that carries the instruction. Technology-based instruction emphasizes learning processes and learning results, not the teacher per se. The essence of the definition consists of the systematic design and approach to learning. In attempting to improve education, particularly in developing countries, it is less

Relevant to reach a consensus on a refined definition than to examine what options are available and what contributions they can offer to diminish costs, improve efficiency and enhance the quality of the learning process. The costs and effectiveness of various educational technologies and interventions have been extensively reviewed elsewhere (Plomp and Ely, 1986). The present paper examines and illustrates several options to improve educational quality, efficiency or both. Such options are analyzed within specific educational contexts, namely:
(1) technologies to improve the quality of classroom instruction,
(2) technologies to improve access through distance learning and
(3) technologies to improve

The efficiency and flexibility of vocational-technical education. The paper contends that even though across-the-board, unequivocal evidence on the cost-effectiveness of mediabased projects is difficult to find, the existing experience with using technology in developing countries suggests that there are specific contexts in which some technologies can indeed provide significant improvements to

improve quality and access in education and training. Before dealing with specific technologies, the paper discusses what went wrong in the past, and the reasons for new, cautious optimism. ‘’. Technology can improve teaching efficacy, which is especially important amid a pandemic since it allows teachers and students to communicate more quickly and generate breakthroughs.

Internet technology has a huge impact on student learning in this pandemic era. Learning and teaching habits began to shift toward a digital approach. Due to shifts in student attitudes, teaching challenges are becoming more obvious. ‘’The use technology in teaching becomes more important in present times because teachers also have to be able to keep up with technological knowledge of their students’’(Ricards, 2014, p. 2)

Teachers are considered as active agents in the process of change and the adoption of new ideas since their views and attitudes can either assist or obstruct the achievement of any educational reform (Woodrow, 1991). Teachers' roles in promoting reforms such as the use of technology in the classroom have been the subject of recent studies. Some investigations looked into the connection between teachers' views of technology use and their actual use of technology in their classrooms. Eugene (2006) looked into how teachers' attitudes and beliefs might influence the use of technology in their classrooms. The questionnaire was completed by 32 teachers to assess their attitudes and views about teaching and technology integration. A classroom observation methodology was also employed to see how instructors' views and attitudes might be linked to their teaching techniques and technology implementation. It was discovered that there was a disconnect between teachers' ideas about technology integration and their actual instructional methods. Teachers “teaching methods and usage of technology were found to be inconsistent with their views.” (Sadiq Abdulwahed Ahmed Ismail Abdurrahman Ghaleb Almekhlafi Mohamed Hatem Al-Mekhlafy, 2010, P. 39). The challenge of using internet technology to teach during a pandemic is ensuring

that the teacher appropriately delivers their knowledge so that students understand and feel comfortable with the learning provided.

Simonsson (2004) used a questionnaire to assess 103 teachers' attitudes to use technology to integrate culture in the curriculum. The results of this study show that the opinions of teachers, their behavior towards the use of technology and how much other teachers use technology in their teaching are all linked to their use. Many bilingual teachers agree that technology can help cultural factors clarify key aspects, based on a small result.

Timucin, (2006) has closely examined how EFL innovation is implemented as CALL in a preparatory program for a Turkish State University. The study by Timucin examined the efficiency and impact of the use of multimedia (used in a manual) for teaching the EFL students to teach teachers. The project focused on promoting students' communication skills and autonomy through the implementation of technological instruments. The researcher employed two data collection tools: surveys and semi-structured interviews. One result was that teachers participated more in the preparation of additional materials through the use of new technological facilities for the use of the new project. Another finding revealed a growing interest in teachers and their involvement in meetings and discussions with colleagues and managers. Those meetings and discussion sessions brought teachers and administrators together to share ideas and reflect on their practices". In practice, the teacher will find it difficult to teach using technology some of those difficulties arose because certain teachers are new to technology and will require additional adaptation. direct or indirect use of technology in teaching during the pandemic changing new ways of teaching and also creating new habits.

Teachers provide the educational change process which constitutes an 'intuitive screen by which professional development and the reform of classroom teaching are interpreted with the established knowledge and beliefs on teaching and training (Buchanan, Burts, Bidner, White, & Charlesworth, 1998; Clark & Peterson, 1986; Fang, 1996; Johnson, 1992; Posner, Strike, Hewson, & Gertzog,

1982; Richardson et al., 1991; Zeichner et al., 1987). Previous research has shown that teachers tend to take new classroom practices based on whether the assumptions inherent in new programs comply with their personal epistemological beliefs (Richardson et al., 1991). In particular, teachers with more traditional convictions on education and learning were usually educational, whereas teachers with more constructivist beliefs used methods that were student-centered (DeFord, 1985; Dwyer et al., 1991; Johnson, 1992; Peterson, Fennema, Carpenter, & Loef, 1989; Yocum, 1996). In this case, the teacher is expected to be able to adapt to the new teaching system where in this pandemic the way of teaching has changed.

“Online learning indisputably provides convenience, flexibility, and economic advantages that make it a well-liked learning mode in the information era (Debela, 2008). Researchers investigating online learning examined the impact of technology on teacher's‟ teaching practices and students"‟ learning (Miner, 2004; Mansor, 2007; Prapinwong & Puthikanon, 2008). Miner‟s study (2004) focused on whether online teaching has the power to enhance motivation and assist language learning.

Journal entitled *‘’Online teaching placement during the COVID-19 pandemic in Chile: challenges and opportunities’’* explain that Information and communication technologies (ICT) can be beneficial as a source of fresh instructional resources in the classroom. It also enables instructors to network with one another and forms collaborative working groups with other schools (Silva, Usart, and Lázaro-Cantabrana 2019). (Compton 2009) have said As a result of the alterations in student learning techniques, new digital technologies in education necessitate the search for new teaching tactics and approaches. As a result, incorporating ICT into the teaching curriculum has become a critical pillar in the preparation of future teachers (Bahcivan et al. 2019).

In the instance of ICT use in Chile, the Ministry of Education's official requirements for ITE programs indicate that instructors must possess ICT skills that enable them to "access fresh material and employ productivity tools"

(Ministerio De Educación, 2014, 14). Teacher education programs and affiliated institutions enjoy complete autonomy over their curriculum and syllabuses, potentially leading to inequitable teacher training across the country. Despite the autonomy provided to each university, teacher education programs tend to focus more on establishing digital literacy than providing student-teachers with the means to use ICT in their future classrooms (Rodriguez and Silva 2006). Furthermore, teaching future teachers how to utilize technological tools is insufficient since they must be educated not only on how to include ICT into their curriculum but also how to use them in their classrooms (Silva 2012). If new teachers aren't taught how to utilize technology effectively, They may face additional challenges while attempting to use ICT in their work. classrooms. Even though Chilean teachers feel their ICT skills are adequate, Despite this, they believe they need further training in this area (Brun and Hinostroza 2014).

The utilization of cost-effective online tools to lower the total expenses of teacher education (Thompson 2012) This new form of distribution opens up new opportunities for ITE programs and higher education institutions. During these times, when the COVID-19 epidemic has prompted educational institutions to adapt to in-classroom learning as quickly as possible, the online method of teaching teacher candidates has triumphed. Several Chilean ITE institutions have opted to continue remote teaching assignments for final-year student teachers who cooperated with local schools through the internet. In this circumstance, the goal of this research is to learn more about the perspectives of student teachers on the problems and possibilities that occurred during their online teaching placement. Our research aims to address the following research question: ‘What obstacles and possibilities did student teachers experience during their online teaching placement?

2.2 Relevant Research Studies

The development of educational software builds on a range of teaching methods. A range of educational software packages has been developed with different theoretical orientations to teaching and learning (Stoddart & Niederhauser, 1993). Training software is based on both didactical and constructive concepts of teaching and learning, like other materials from the curriculum and instructional field.

The behavioral theory has played a major part in the development of education technology and computer software (Dick, 1991; Merrill, 1991). Behaviorism is based on the objective view that students must learn to master and replicate the knowledge and skills they receive in school (Duly and Jonassen, 1992; Lako!, 1987In traditional classrooms computer programs based on this paradigm are widely used (Maddux & Willis, 1992; OTA, 1988, 1995). The computer shows a student problem (stimulus), which in turn answers with a response (response). The computer then provides the student with feedback on the correct answer to this question (reinforcement). teachers can easily integrate such computer training and practice activities into their established educational routines (Bork, 1980; Cole & Grilen, 1987).

"The design of instructional software has also been influenced by constructivist theories (diSessa, 1986; Linn, 1998; Papert, 1980, 1993; Sandholtz et al., 1997; Savery & Duly, 1995; Scardamalia & Bereiter, 1996; Schwartz & Yerushalmy, 1987). Computer software programs based on constructivist principles provide students with the experiences that allow them to discover or re-invent concepts. Students are given access to a variety of open-ended applications that they use to help construct more complex understandings. For example, students may use a computer-generated virtual environment, known as a ''micro world'' to enhance their learning. Papert (1980) developed some of the original micro world software. He describes his LOGO 'Turtle as a computational 'object to think with. Children learn about geometry and logic by 'teaching *the* Turtle routines that create geometrical figures and perform various

functions. This involves planning and error detection and analysis as an ongoing process".

Another constructivist approach entails assisting students in using the computer as a tool to collect and organize data, then presenting what has been learned." The learner is an active seeker of the information who revises and updates his or her knowledge by gathering new information. The emphasis of programs designed to be used in a more constructivist manner is not on ensuring students get a single 'right answer,' but rather on assisting them in developing increasingly complex and thorough understandings." "Pedagogies based on behaviorist and constructivist theoretical orientations represent dramatically different views of teaching and learning and give rise to fundamentally different conceptions of the use of computers in instruction * as a didactic teaching machine or as constructivist thinking and reflecting tools. This study examines whether teachers' perspectives about educational uses of computers can be characterized in terms of didactic or constructivist orientations toward teaching and whether the instructional software they use is consistent with these perspectives.

In the *journal Teachers' perspective on school development at German vocational schools during the Covid-19 pandemic* there are some data related to this research.

In recent years, schools in Germany have been unable to incorporate Information and Communication Technology (ICT) into teaching, learning, and organizational growth in a systematic and widespread manner. The technological infrastructure supporting ICT in education is less developed than the European average (Fraillon et al., 2020). Although 50% of students have access to wireless LAN, only one-third of vocational schools have the requisite high-speed Internet through fiber-optic (European Commission, 2019; McCoy et al., 2016). According to the findings, one explanation for students' undeveloped ICT abilities is a lack of technological infrastructure (Fraillon et al., 2020). German teachers utilize technology less frequently than their counterparts in other

European nations, resulting in nearly 30% of German students having extremely poor or low ICT capabilities (Fraillon et al., 2020). Another reason why ICT isn't as prevalent in German schools as it is in other European nations is the lack of ICT in teacher education programs and K–12 curriculum (Eickelmann et al., 2020). As a result of the absence of formalization in teacher education programs and K–12 curriculum, school stakeholders frequently do not see the need to invest a portion of their budget in infrastructure or professional development of teachers' ICT capabilities. The condition in German schools contrasts sharply with Germany's economic and political status as one of the world's richest countries in terms of GDP.

In the 16 German federal states, the education system is the responsibility. The cultural sovereignty of the federal states has been very evident via the varied school systems, with distinct types of schools and rules in each state, for the different levels of the ISOC (ISCED). The ISCED framework has been created by UNESCO and may be utilized in two primary cross-classification variables to compare education systems between various nations. The first is the level of training, from early years (level 1) to physicians (level 9). The second component is education, such as science, medicine, and law (Organisation for Economic Co-operation and Development, 2015). Students get necessary courses and general information from vocational schools under the German vocational education system, while practical knowledge is passed through training firms and internships. The professional schools will be allocated to levels 3 and 4 in ISCED (secondary) and seek to provide students with the abilities essential for a job setting that does not need a university degree. This will allow them to receive the appropriate qualifications. In Baden-Württemberg, ISCED level 3 and ISCED level 4 summarizes up to 15 distinct types of vocational schools. The average age of the student is 20 They complete school between 20 and 22 years of age **(**Bundesinstitut für Berufsbildung, 2020)**.** The many types of schools are typically housed on a single campus known as a vocational school center. The many types of vocational schools focus on increasing students' existing education level as it relates to their chosen job. For

example, at the so-called 'Berufskolleg,' the programs provide the groundwork for future education by emphasizing general skills and workplace knowledge. Classes at the 'Berufsschule' are closely linked to students' actual vocational training, with a focus on subject-specific knowledge in fields like commerce, electronics, metallurgy, and health.

Teachers and students in vocational schools concentrate on subject-specific, job-related knowledge (Schelten, 2009). Teachers at vocational schools are more likely to have experience in the subjects they teach. Before becoming instructors, many of them worked in their respective areas for some time. In vocational-based school teachers are usually interns neither are the students who focus on a particular course according to their expertise.

Rolff (1995) was said School development is described as ongoing, purposeful, and planned transformation at all levels of a school, including all stakeholders. Teaching (e.g., systematic training, student learning, differentiation), staff development (e.g., supervision, team observation, mentoring), and organizational development are examples of related activities (e.g., school management, school concepts, cooperation). That’s why the decline in school is so important.

Oberländer et al., (2020) and Van Laar et al., (2019) propose the opinion that Digital abilities are becoming increasingly crucial in today's economy for all vocations. As a result, digitalization has begun to play a significant part in instructional teachers' education programs and school development processes. Eickelmann and Gerick (2018) presented a theoretical framework emphasizing the significance of digitalization in school development. According to their concept, school growth may be divided into five categories:

(1) Education Development (ED), which focuses on the development of classroom activities. In connection with digitalization, this contains teaching with tablets or creating new online learning situations.

(2) Personal Development (PD), which concentrates on the training and qualification of teachers and administrative personnel. This training consists of ongoing education that allows stakeholders to use data processing such as digital timetables to organize processes in the school context.
(3) Organisational Development (OD), which comprises school rules and agendas as well as organizational mindsets and beliefs which are present in the schools. Schools in Germany have started to formalize their digitalization efforts with the help of special media development plans (Ifenthaler, 2019).
(4) Technological Development (TD), which summarises the ongoing maintenance and enhancement of technological infrastructure. It includes investment in new digital devices, network administration, and data security.
(5) Cooperation Development (CD), which is especially important for vocational schools because they are in close contact with businesses and companies that take on trainees. In the model, CD should focus on stakeholders both outside and within the school. The school should be embedded in a strong network with other schools, the community it is located in and relevant policy decision makers.

Concerning this research, it is because of how teachers apply technology to learning with the relationship between previous research focused on computer technology. In this stage, there are so many variables related to the application of technology. In a pandemic such as this, internet technology is critical for educating. Despite its importance, the use of internet technology by teachers and pre-service teachers comes with its own set of challenges.