CHAPTER 3

RESEARCH METHODOLOGY

To archive the research objectives, the researcher used a qualitative method to conduct the study and adjusted a dialectic of the research spiral from a guide for the teacher researcher (Mills. 2018 : 25–27) and the action plan development of a private vocational school using a balanced scorecard approach with soar analysis (ChansongAeng. 2018 : 120), which consists of 5 steps: 1. Identifying an area of focus, 2. Collect data, 3. Analyze and interpret data, 4. A Guideline for Developing Administrators' Digital Competence (ADC), and 5. Offering a Guideline for this research study. Figure 3 below indicates the dialectic of the research spiral.

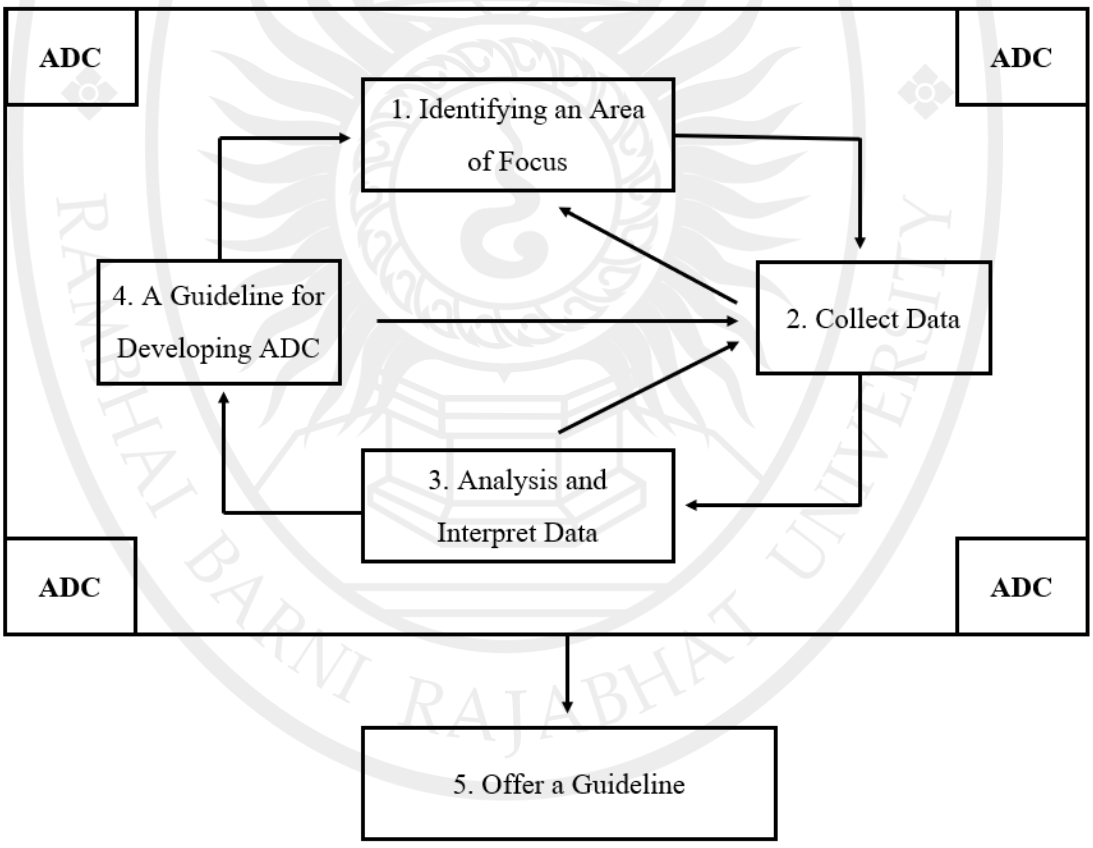

Figure 3 The Dialectic of the Research Spiral adjusted from Chansongsaeng (2018 : 120) and Mills (2018 : 25–27).

1. Identify an Area of Focus
2. Collect Data

3. Analyze and Interpret Data
4. A Guideline for Developing ADC (Administrators' Digital Competence)
5. Offer a Guideline

Identify an Area of Focus

Population Determination

The scope of the research was to study administrators' digital competence in the Next Normal Era in a teacher training center, not as a whole educational systematic intervention. The study was conducted at Kampong Chhnang Provincial Teacher Training Center (PTTC), Cambodia, and its purpose was to study, analyze, and offer a guideline for administrators' digital competence in the Next Normal Era. The population of the study consists of administrators, teacher trainers, and teacher trainees who are currently working and studying at the training center.

Key Informants

The key informants were selected by using judgmental sampling, also known as the purposive method. This method is one such skill that needs to be applied and used so as to be effective for a qualitative research study (Tongco. 2007 : 155). It occurs when a researcher adds instances or people to sample because the researcher believes such participants are significant enough to include (Taherdoost. 2016 : 23). The key informants were chosen based on the researcher's assessment of who can provide the best information for the research study's objectives. As a result, the researcher selected administrators, with at least five years of experience and currently working at Kampong Chhnang Provincial Teacher Training Center (PTTC), technical supervisors, who are also currently employed there, and the teacher trainees, whose roles as course and class presidents from the second years and who are enrolled in a computer course at the training facility, as the key informants. So, in total, there were 15 key informants selected: 7 administrators, 4 technical supervisors, and 4 teacher trainees.

Study and Analyze Previous Researches

1. ICT Use in Kampong Chhnang Teacher Training Center (PTTC)

According to the previous study, before the COVID-19 disruption era, there was a dearth of Information and Communication Technology (ICT) organization development. UNESCO noted difficulties with the project, such as a lack of Khmer language resources, inadequate English

proficiency of the trainers and trainees, inadequate infrastructure, a lack of hardware, and a lack of action by the Ministry of Education, Youth and Sport (MoEYS) to put the current Information and Communication Technology (ICT) in education policy into practice (Richardson. 2008 : 72).

Consequently, the educational institution administrators in Cambodia, including those in Kampong Chhnang Provincial Teacher Training Center (PTTC) lack digital competence and were unprepared to adjust to the COVID-19 crisis. To illustrate, the whole institute just shut down on March 16, 2020, according to the announcement from Ministry of Education, Youth and Sport (MoEYS), and all the trainees were sent home and did not get to have proper training during the pandemic (MoEYS. 2020 : 3). The social media platforms used for accessing the documents and communicating were Telegram, Messenger, and Facebook. During the crisis, the Ministry of Education, Youth and Sport (MoEYS) also put efforts into developing other platforms, such as Google Meet and Zoom, and encouraged all the administrators, educators, and trainers to use them.

However, the performance was still low due to a lack of training, digital tools, and internet access. In Kampong Chhnang Provincial Teacher Training Center (PTTC), administrative management is still carried out using conventional methods with little support from Information and Communication Technology (ICT) facilities.

2. Administrators' Digital Competence

Administrators must be the driving force and role models that initiate or promote change inside their institutions (Lindley. 2009 : 4). Administrators are those who plan the activities and arrange the administrative management process (Surya. 2011). Therefore, we must comprehend what the administration is. According to this researcher many individuals have interpreted the term "administration" to refer to management. In addition, they have also defined "administration" as a generalized type of human behavior found in an organization and a process by which decisions are made as well as the process of administering and directing life in any social organization, such as a school or various companies. While digital competence is defined as the capacity to confidently utilize electronic media for work, entertainment, and communication, in addition to logical and critical thinking, managing information, and high-level communication skills (T Bashkireva and et al. 2020 : 4). Another study suggested that digital competence is an emerging concept that is linked to technological advancements as well as the political goals and expectations of individuals in a knowledge society. It is made up of a range of skills and competencies, and its scope is broad:

literacy and information science, media and communication, technology and computing (Ilomäki and et al. 2011 : 8). They also stated that "digital competence" includes 1) technical skills for using digital technologies, 2) abilities to use digital technologies in a meaningful way for working, studying, and everyday life in general in various activities, 3) abilities to critically evaluate digital technologies, and 4) motivation to participate in the digital culture. Techataweewan and Prasertsin (2017 : 217) has also defined the term digital competence similarly, suggesting that it is a set of skills for using and being aware of digital information, technology, and media for finding, assessing, producing, and communicating as needed. In light of the studies above, it can be concluded that the term “administrators' digital competence” refers to leaders or groups of individuals who arrange the management process and can utilize electronic media to gain high-level and crucial abilities.

The European Commission established the Digital Competence Framework for Citizens, commonly known as DigComp, to assist the growth of digital competence among Europeans. It outlines what competencies are required to become digitally competent. The skills agenda consists of five areas, 1) Information and Data Literacy, 2) Communication and Collaboration, 3) Digital Creation, 4) Safety, and 5) Problem Solving. They were created for Europe with the goal of improving the quality and relevance of training and other methods of acquiring skills, making skills more visible and comparable, and improving information and understanding of skill intelligence to help people make better career choices, find quality jobs, and improve their life chances (Centeno and et al. 2019 : 3).

The digital competence of pedagogical specialists is essential for the implementation of the new professional roles of the educator in response to the ever-increasing requirements for it in the context of a 21st-century school and in the context of the global digital transformation of the economy and education. By outlining the key abilities that ensure instructors have the entire range of practical experience (Tsankov and Damyanov. 2019 : 4). This researcher used European digital competence framework to investigate the structure of educators' digital competency by identifying the key abilities that ensure their complete practical experience. The empirical study shows a self-assessment of prospective pedagogical experts trained in the professional area of pedagogy, as well as highlights from their actual capabilities of handling certain practical tasks using information and communication technologies. Another research in Spain also adapted this European framework to

conduct their study. Melilla, a Spanish autonomous city in northwest Africa, has one of Europe's worst rates of academic failure and desertion. Improving pupils' digital competency would be an excellent strategy to address this problem. To accomplish so, instructors must possess sufficient digital abilities as well as the ability to teach them. The Spanish adaption of the European Framework for Digital Competence of Educators was used to examine the self-assessment responses of teachers in training at the Faculty of Education and Sport Sciences in Melilla, Spain, to estimate teachers' level of digital competence. Several quantitative approaches were employed to assess data gathered from a questionnaire based on the framework's items García and et al (online.2023).

DigComp, the European digital competence framework, offers a complete and extensive framework for citizens; it has the capacity to be tailored to the demands of various target groups. Despite this, no contemporary research has focused on the need of having a unified framework for elementary and secondary education (Guitert and et al. 2020 : 1). As a result, this study adapted this framework to create a standard framework for elementary and secondary education that promotes the development and assessment of digital competence. The DigCompEdu framework is intended for educators at all educational levels, including general and vocational training, special needs education, and non-formal learning environments, from early childhood through higher and adult education. Its goal is to give member states, regional governments, pertinent national and regional agencies, educational institutions themselves, and public or private professional training providers a generic reference framework for creating digital competency models (Redecker. 2017).

Creating Research Tool

The research study used in-depth interviews and focus groups to collect the information. The current researcher develops a qualitative question interview from a quantitative research study in Melilla, Spain, in which they adapted the Common Digital Competence Framework for Teachers (CDCFT) in their study research (García and et al. 2021). The CDCFT is the Spanish version adapted from the EU's European Framework for the Digital Competence of Educators (DigCompEdu) (Redecker. 2017). This framework was designed and used for quantitative research. However, due to the limitations of the research population, the current researcher adapted these questionaries for a qualitative design. The adapted interview questions were reviewed by 5 experts,

a co-advisor, and an advisor, and were then approved by the advisor. The interview questions were designed and consist of five main areas:

1. Information and Data Literacy
2. Communication and Collaboration
3. Digital Content Creation
4. Safety
5. Problem Solving

The researcher created and determined the quality of the research instruments as the followings:

1. Information and Data Literacy: There were two questions used to explore the following areas: browsing, evaluating, and crediting the data and information.
2. Communication and Collaboration: There was one question used to explore the following areas: interacting and collaborating through digital technology.
3. Digital Content Creation: There were two questions used to explore the following areas; developing digital content, copyright and licenses.
4. Safety: There were two questions used to explore the following areas: protecting devices and protecting personal data and privacy.
5. Problem Solving: There were two questions used to explore the following areas: solving technical problems and identifying needs to improve digital competence.

A reliable interview methodology is essential for obtaining high-quality interview data. Creating a proper interview procedure, on the other hand, is not an easy undertaking, especially for new researchers (Yeong and et a.l 2018). The qualitative research interview is a significant data-collection method that allows educators to investigate undiscovered areas of education and practice further development (Cormac McGrath and et al. online.2018). The interview remains the primary mode of knowledge across varied subfields, albeit it is increasingly supplemented or augmented by other means such as diaries and autobiography (Dowling and et al. online.2015).

Collect Data

Research Tool Checked by Advisors

After developing a research tool, the researcher submitted it to an advisor and co-advisor for assessment and verification. Both the advisor and co-advisor checked the validity, spelling, and grammar structures and provided feedback and recommendations. The researcher then adjusted the research tool in accordance with the advisor's and co-researcher's comments and recommendations.

Research Tool Checked by Five Experts

The advisor suggested the researcher find five experts who at least hold a Master's or PhD in the related field of the research study and ask them to help review and check for the validity, spelling, and grammar structures and provide feedback and comments. The five experts are required to have the following qualifications:

1. An expert whose field is digital or information and communication technology (ICT)
2. An expert whose field is educational administration
3. A teacher trainer from a teacher training center
4. An administrator whose experience is at least 5 years and who is currently working in an educational institution
5. An expert whose field is in English and who is able to give feedback in both English and Khmer

After finding the five experts and having them agree to help review the research tools and provide feedback, the researcher then adjusts the research tool in accordance with the experts' comments and recommendations.

Edit Research Tool

The researcher adjusted the research tool according to the advisor, co-advisor, and all five experts' feedback and recommendations. The researcher was then given permission to continue processing once the adviser and co-advisor gave their final review and approval.

Conducting Interview

1. In-Depth Interview

The interview was conducted individually using semi-structured questions. The researcher made sure the participants felt at ease during the interview for the research study, and their answers were kept confidential. Note-taking and voice-recording using a notebook and

smartphone recorder are used in this process. The key informants selected for the in-depth interview are the heads of administrators, as listed in the following:

1. Director of the Kampong Chhnang Provincial Teacher Training Center (PTTC).
2. Head of Academic Department of the Kampong Chhnang Provincial Techer Training Center (PTTC).
3. Head of Administration Department Kampong Chhnang Provincial Teacher Training Center (PTTC).

2. Focus Group

The interview was conducted in a small group, which consisted of four people.

The interview used semi-structured questions. People who had similar experiences and backgrounds were placed in the same group. The researcher made sure the participants felt at ease during the interview for the research study, and their answers were kept confidential. Note-taking and voice-recording using a notebook and smartphone recorder were used in this process. The key informants selected for the focus group were:

1. Administrators of Kampong Chhnang Provincial Teacher Training Center (PTTC) whose experience at least five years and currently working in the center.
2. Technical Supervisors in Kampong Chhnang Teacher Training Center (PTTC) and currently working in the center.
3. Second year course and class presidents who enrolled in a computer course in Kampong Chhnang Teacher Training Center (PTTC) and currently studying in the center.

3. Ethical Assurance

By being aware of and using recognized ethical concepts, particularly autonomy, beneficence, and justice, one might lessen the challenges that come with qualitative research. While the concept of justice relates to fairness and equitable sharing, beneficence is the act of providing good for others and averting harm. Avoiding the exploitation and abuse of participants is a vital and distinguishing aspect of this approach (Orb and et al. 2001 : 95). In any research project, it is crucial to protect human subjects by putting the right ethical standards into practice. Due to the extensive length of the research process, ethical questions have a special resonance in qualitative studies.

The balance between the possible hazards of research and its expected rewards must be maintained at all phases of qualitative investigation, and ethical considerations are vital (Arifin 2018)

In order to perform this study ethically, the researcher made sure that the outcomes did not have an impact on any participants or the school. The information was gathered, examined, and tailored to the participants. Participants were required to sign a permission form and affirm that they were willing to provide the necessary details. The participants were free to withhold any responses that they found offensive or unpleasant. All information submitted was reportedly kept private. The board of the faculty of education gave their approval to the study. After receiving the permission letter from the faculty of education, the data collection process was conducted. After transcribing, all personally identifiable information was promptly removed.

The researcher's laptop was used to Ave the interview transcripts with codes and numbers. Only the researcher and the advisor and co-advisor were allowed access to the data throughout the whole process. The permission letter made it clear that participation was optional, that participants may leave the research at any time, and that they were not required to answer any questions that made them feel uncomfortable. Additionally, the participants had the option to suggest convenient times and days for their interviews.

Analyze and Interpret Data

Since qualitative data are text-based, non-numerical, and unstructured, coding is an important stage in the analytical process that helps to arrange and make sense of the textual data. In the context of data reduction, condensation, distillation, grouping, and classification, researchers have discussed about coding. Coding enables communication and connection between the researcher and the data, which helps the researcher understand newly emergent phenomena and develop theory based on the data (Tehmina Basit. 2003 : 152).

Researchers can anticipate doing analytical tasks repeatedly; the necessity of this iteration is a well-known finding. However, it is not explicitly stated how researchers use repetition to further their theories. Understanding the coding activities in relation to the coding moments that relate to how researchers employ the coding actions as their study progresses is helpful. There are

many distinct ways to code, and the same coding operations are applied to many contexts. For instance, engaging data and utilizing existing literature are two typical and acknowledged things programmers accomplish (Locke and et al. 2020).

Since the interview was conducted in Khmer, the researcher first transcribed it in Khmer, then translated it into English. After that, the researcher asked three experts to check the translation. Following the conclusion of the interviews, the open coding process started. In order to facilitate and organize the coding process, the researcher classified interview items that helped the study objectives align before grouping participant groups together. The researcher printed the transcripts and collected notes, papers, and other resources. The researcher then marked the source, any demographics that were gathered, and any other information that could help in data analysis.

Then the researcher reviewed and reread the transcripts, noting words, phrases, and sentences that represented notions or meanings that were similar and assigning them a different color.

A Guideline for Developing ADC (Administrators' Digital Competence)

A guideline for developing ADC (Administrators' Digital Competence) that covers five main focusing areas such Information and Data Literacy, Communication and Collaboration, Digital Content Creation, Safety, and Problem Solving aims to tackle the problem of administrators' digital competence at the Kampong Chhnang Provincial Teacher Training Center (PTTC) and provide critical success factors for strengthening their abilities in managing school administration tasks with digital technologies more efficiently and confidently with modernization to meet 21st century skill needs.

Offer a Guideline

Advisors Check a Guideline

After analyzing the data and drawing the research findings and conclusions, the researcher submitted the work to the advisor and co-advisor for them to check and review its validity and accuracy. Both the advisor and the co-adviser double-checked to ensure that the work was done accurately and ethically. The researcher then adjusted the research work in response to the advisor's and co-advisor's feedbacks and recommendations.

Thesis Defense

Researcher prepared a presentation for the thesis defense according to the date set. The thesis defense was conducted on the campus of the faculty of education at Rambhai Barni Rajabhat University, and four committees were in attendance. Researcher was given 60 minutes to present and defend the work. After the presentation, researcher was asked about their work, and researcher was required to be able to answer all the questions from the four committees. Once researcher could respond to all the questions asked, the work was approved and it was suggested that some parts have further editing.