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**Research Proposal**

**“Measuring the level of critical thinking skill of a public university students in Cambodia”**

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**Course: Research Methodology**

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# CHAPTER1: INTRODUCTION

## **Research Background**

In today's ever-changing world, critical thinking skills are crucial for individuals. As Cambodia works towards improving its education system and preparing students for the challenges of the 21st century. According to [Thomas, Theda](https://acuresearchbank.acu.edu.au/researcher/80q43/theda-thomas) (2011). Critical thinking is a crucial skill that students need to develop while at university. It is important for a well-educated person to be able to make well-informed judgements, be able to explain their reasoning and be able to solve unknown problems.

Another study from Ghazivakili, Et al (2014). The current world needs people who have a lot of different abilities such as cognition and application of different ways of thinking, research, problem solving, critical thinking skills and creativity. In addition to critical thinking, learning styles is another key factor which has an essential role in the process of problem solving.

However, there is a lack of thorough research on measuring critical thinking skills specifically among Cambodian university students. It is essential to understand the current level of critical thinking abilities among university students in Cambodia so that areas for improvement can be identified and targeted interventions can be implemented.

## **Research Problem**

Critical thinking is also one of the 21st century skills that are essential for success in the global economy. These skills are the foundation for lifelong learning and the ability to adapt to change.

According to the study, which was conducted by the Asian Development Bank (ADB) in 2019, found that only 17% of Cambodian students were able to demonstrate critical thinking skills at a basic level. The study also found that only 25% of Cambodian teachers were able to teach critical thinking skills effectively.

Moreover, according to, Neak Piseth (2018). found that graduates have low critical thinking skills is based on a survey of university graduates in Cambodia. The survey found that graduates had difficulty with tasks such as identifying and defining problems, gathering and evaluating information, and drawing conclusions

According to the studies, Khem, C., & Sok, C. (2017) and Neak, (2019). found that Cambodian university students have low levels of critical thinking skills. The authors found that students were often unable to identify the main points of an argument, distinguish between facts and opinions, or evaluate the strength of an argument

Another study by the World Economic Forum (2018) found that Cambodia ranked 114th out of 137 countries in terms of critical thinking skills. The study, which was titled "The Global Competitiveness Report 2018", found that Cambodia scored 4.2 out of 7 on the critical thinking pillar. This means that Cambodia's critical thinking skills are below average compared to other countries.

There is a large body of literature that studies the level of critical thinking skill (Khem, C., & Sok, C. 2017; Neak Piseth, 2018; WEF, 2018; Piseth, N. 2019; ADB, 2019). However, those studies explored the level of critical thinking skill in Cambodia context many years ago. According to, [Butler, H.A. (2012)](https://www.emerald.com/insight/content/doi/10.1108/JRIT-08-2020-0041/full/html), which examined the effects of a short online course on improving students’ reasoning and argument analysis skills. The study found that the students who completed the course showed significant improvement in their critical thinking performance, and that this improvement was maintained after four months. The study also found that the students who improved their critical thinking skills also showed better academic outcomes, such as higher grades and retention rates. This suggests that critical thinking can be learned and developed through training and practice, and that the benefits of better reasoning can persist over time. Therefore, the purpose of this study is to measure that whether the level of critical thinking skill is increasing or decreasing in 2023 in Cambodia context, compare to the other studies in the past, and the significant difference on the level of critical thinking skill of a public university students in Cambodia.

## **Research Purpose**

Therefore, the purpose of this study is to measure the level of critical thinking skill of a public university student in Cambodia.

## **Research Objectives**

There are two main objectives of this research:

1. To examine the level of critical thinking skills of a public university students in Cambodia
2. To investigate the significant difference on the level of critical thinking skills of a public university students in Cambodia across demographic variables.

## **Research Question****s**

We did depression research among college students that was primarily aimed at Cambodia. To summarize this study article, we have identified two key research questions:

1. What is the level of critical thinking skills of a public university students in Cambodia?
2. Is there any significant difference on the level of critical thinking skills of a public university students in Cambodia across demographic variables?

## **Research Hypothesis**

**Null Hypothesis:**

There is no significant difference on the level of critical thinking skill of a public university student in Cambodia across demographic information.

**Alternative Hypothesis:**

There is a significant difference in the level of critical thinking skill of a public university student in Cambodia across demographic information.

## **Significance Of Study**

This study will help to enhance the knowledge of the readers about the level of the critical thinking skills of public university students in Cambodia. It will also be useful as a supporting document for upcoming studies which are related to this topic. Furthermore, it may help to make the readers, particularly Cambodians, to identify clearly about the level of critical thinking skills of a public university students' in Cambodia, and it will provide the significance as below:

## **Practical Significance**

This study aims to assess the level of critical thinking skill among public university students in Cambodia and to inform relevant stakeholders on the level of critical thinking skill of a public university students in Cambodia. Measuring the critical thinking skills of Cambodian public university students provides valuable insights to enhance a deeper understanding of students, enabling relevant stakeholders to create effective programs, refine education policies to improve the level of critical thinking skill, thus, equip them with the necessary skills for success in academics, employment, and society.

Also, the result of the study will help to identify which group has the highest priority to improve critical thinking skills. The study aims to examine the level of critical thinking skill across demographic information such as gender, year and shift. Therefore, the result will help to identify the significance difference between demographic information on the level of critical thinking skills of a public university students in Cambodia.

## **Theoretical Significance**

Critical thinking skill is an important ability for university students to develop and apply in their academic, professional, and social contexts. However, there is a lack of research on the level of critical thinking skill among university students in Cambodia, a developing country with a unique culture, history, and education system. Therefore, this study aims to fill this gap by measuring and analyzing the level of critical thinking skill among public university students in Cambodia, using a valid and reliable instrument. The result of the study will contribute to the literature on critical thinking skills in higher education, especially in the Cambodian context. It will also provide useful insights and implications for researchers, educators, policymakers, and students who are interested in improving the quality of higher education and the development of human capital in Cambodia.

## **Definition Of Key Terms**

Critical thinking refers to the process of actively and objectively analyzing information and arguments, identifying biases and assumptions, and considering alternative perspectives in order to arrive at a well-informed conclusion. It involves the ability to analyze, evaluate, and synthesize information logically and effectively to form well-reasoned judgments or decisions. Critical thinking enables individuals to assess the credibility and reliability of information, develop creative solutions to problems, and make sound decisions based on evidence and reasoning. In essence, critical thinking is about questioning assumptions, challenging beliefs, and using logic and evidence to arrive at informed conclusions.

## **Proposed Chapter Outline**

To conduct our research proposed outline there are three chapters divided. In chapter one, Introduction will introduce the research background, research problem, research purpose, research objectives, research questions, research hypothesis, the significance of the study, definition of key terms, and proposed chapter outline. In chapter two, the literature review will focus on the concept of critical thinking skill, the way to measure the level of critical thinking among university students, the level of critical thinking skill and the conceptual framework. Chapter three, the methodology will present the research design, tools, sample and sampling, data collection procedure, data analysis, and conclusion. Furthermore, references and appendices will be included in the last page’s part.

# CHAPTER 2: LITERATURE REVIEW

## **What are critical thinking skills**

## **Definition of Critical Thinking Skills**

By [Scheffer and Rubenfeld, (2000](https://www.emerald.com/insight/content/doi/10.1108/JRIT-08-2020-0041/full/html#ref045)), Critical thinking (CT) was defined as cognitive skills of analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting, and transforming knowledge. According to Watson-Glaser Critical Thinking Appraisal (1980), critical thinking is a combination of knowledge, attitude, and performance of every individual. They also believe that there are some skills of critical thinking such as perception, assumption recognition deduction, interpretation and evaluation of logical reasoning. They argue that the ability of critical thinking, processing and evaluation of previous information with new information result from inductive and deductive reasoning of solving problems.

## **Element of Critical Thinking Skills**

According to Ennis, (1999), Critical thinking is a complex skill that involves a number of different cognitive processes. However, there are five key elements that are essential for critical thinking: analysis, evaluation, inference, deductive reasoning, and inductive reasoning.

* **Analyzing**

According to Ennis (1999), Analysis is the process of breaking down complex information into smaller, more manageable parts in order to understand it better. It involves identifying the key comp onents of something, examining their relationships, and drawing conclusions about the whole. A critical thinker might use analysis to break down a complex argument into its individual premises and conclusions. They would then examine each premise to determine whether it is supported by evidence. If any of the premises are not supported by evidence, the thinker would conclude that the argument is invalid. Another example of analysis in critical thinking would be to break down a set of data to identify trends and patterns. This could be done to answer a specific question, such as "What factors are associated with higher student achievement?" or to simply gain a better understanding of the data. Analysis is an essential skill for critical thinkers because it allows us to understand complex information and make informed judgments. It is used in all areas of life, from making personal decisions to solving problems at work.

By Dr. Richard Paul (2005), Analyzing is the process of breaking down complex ideas, arguments, or situations into their constituent parts to understand their structure and relationships. It involves examining the information in ways that reveal the patterns, trends, and relationships that can be found within it. This may include subjecting the data to statistical operations to determine the level of trust in the answers obtained. By analyzing the information critically, thinkers can identify the main ideas, arguments, and assumptions in a text or discussion.

* **Evaluation**

The definition from Paul & Elder (2012), Evaluation is the cognitive process of assessing the value of something. It involves considering the strengths and weaknesses of something, as well as its potential benefits and drawbacks. Evaluation is a key component of critical thinking, as it allows us to make informed judgments and decisions. Evaluation is the cognitive process of assessing the value of something. It involves considering the criteria for evaluation, gathering information about the thing being evaluated, analyzing the information and identifying the strengths and weaknesses of the thing being evaluated, weighing the strengths and weaknesses to make a judgment, and justifying the judgment with evidence and reasoning. (Ennis, 1999)

Evaluation is an essential skill for critical thinkers. It allows us to make informed decisions about a wide range of issues and become more informed consumers, citizens, and scholars. By developing our evaluation skills, we can:

By Scriven (1980) Evaluation is an essential skill for critical thinkers. It allows us to make informed decisions about a wide range of issues and become more informed consumers, citizens, and scholars. By developing people can:

* Make more informed judgments and decisions
* Choose the best course of action
* Solve problems effectively
* Conduct research ethically and responsibly
* Communicate our ideas effectively

Evaluation is used in all areas of life, from making personal decisions to solving problems at work. It is a skill that is essential for success in today's complex world.

* **Inference**

According to Ennis (1999) inference is the process of drawing conclusions from evidence. It is a key component of critical thinking, as it allows us to go beyond the information that is given to us and make judgments about the world around us. In critical thinking, inferences are typically drawn from two types of evidence:

* Empirical evidence: This is evidence that is based on observation or experience. For example, if you see a wet spot on the floor, you can infer that it is raining.
* Logical evidence: This is evidence that is based on reason. For example, if you know that all mammals are warm-blooded and that humans are mammals, then you can logically infer that humans are warm-blooded.
* **Deductive reasoning**

According to Papathanasiou (2014), Deductive reasoning is a logical approach where one goes from general ideas to specific conclusions. It is often contrasted with inductive reasoning, where one starts with specific observations and forms general conclusions. Deductive reasoning is a precise and well-ordered system that aims to provide definite support for a conclusion. If a deductive argument is valid and its premises are true, then its conclusion must be true. Deductive reasoning is commonly used in scientific research, and it’s especially associated with quantitative research. The hypothetico-deductive method is the scientific method of testing hypotheses to check whether predictions are substantiated by real-world data.

By Ayalon (2012) deductive reasoning is a critical thinking approach where one progresses from general ideas to specific conclusions. It is a logical process of inferring conclusions from known information (premises) based on formal logic rules, where conclusions are necessarily derived from the given information and there is no need to validate them by experiments. Deductive reasoning involves drawing conclusions based on at least two true statements, often called premises. Valid deductive arguments preserve truth, in the sense that if the premises are true, then the conclusion is also true. However, the truth (or falsehood) of a conclusion or premises does not imply that an argument is valid (or invalid). Deductive reasoning can be contrasted with inductive reasoning, in which premises provide probable, not necessary, evidence for conclusions.

* **Inductive reasoning**

According to Papathanasiou (2014) Inductive reasoning is a critical thinking approach where one starts with specific observations and forms general conclusions based on patterns and trends. It is a process of reasoning that moves from particular facts to a general conclusion, where the conclusion is not necessarily true, but rather probable. Inductive reasoning is often used in qualitative research, where the goal is to develop theories and hypotheses based on observations. It can be contrasted with deductive reasoning, which progresses from general ideas to specific conclusions based on true premises. Inductive reasoning requires critical thinking skills, such as analysis, interpretation, and evaluation, to make accurate conclusions.

## **Why critical thinking skills is important**

The importance of critical thinking is a domain-general thinking skill and promotes creativity through self-reflection and justifies our ways of life and opinions. According to I. Tojiboyev, (2020), Critical thinking is one of the major and rapidly growing concepts and it is expected to become the essential outcomes of university education. Nowadays, Critical thinking (CT) is a widely debated concept in education. Critical thinking is not only about acquisition of knowledge but about a complex set of abilities and a process of dealing with ideas (Cromwell, 1992).

Here are a few essential reasons why it’s crucial to have these skills:

* According to Ur (1996), Critical thinking isn't about thinking more or thinking harder it's about thinking better. Critical thinking helps students to enhance language and presentation skills. Having the ability to think critically and systematically is the best way to solve problems since it requires looking at an issue from several stands before reaching a final decision and it is the best way to improve the way they express their ideas in an argument.
* Critical thinking also helps each student to decide what is right or what is wrong. It helps them to find out their own ways in thinking about an issue or topic. Critical thinking isn't about thinking more or thinking harder it's about thinking better (Ur, 1996).
* Critical thinking skills enable students to deal effectively with practical problems. Students must be able to think critically because it can help students to be able to solve problems and to make effective decisions even in the workplace and in their personal lives (Shakirova, 2007).
* Critical thinking skills can improve your creative thinking. Critical thinking does require information and creativity. Some view critical thinking as a dry dust exercise in analysis. Although it is true that critical thinking requires painstaking analysis, it also can call for creative thinking. While the critical and creative aspects of thinking can be distinguished, they cannot be easily separated. The effective critical thinker inevitably is creative (Barry, 1984).
* Critical thinking can provide you with a more insightful understanding of yourself.   It will offer you an opportunity to be objective, less emotional, and more open-minded as you appreciate others' views and opinions. By thinking ahead, you will gain the confidence to present fresh perspectives and new insights into some concerns (Hader, 2005).
* Critical thinking skills also improve, the competency to analyze data and real issues in a manner that makes sense of the information you have (Wilson, 2017). This competency will lead you to ask the right question that guides you to deeper understanding and more meaningful connections between people (Rayan, 2017).

In conclusion, Critical thinking allows someone to anticipate the probable consequences of an alternative argument. It helps individuals learn independently and most of all enables an individual to recognize the fallibility of their opinions, recognize their biases, and the danger involved in using personal preferences in weighing evidence (Makau, 1990).

## **How to measure critical thinking skills**

According to BioScience’s journal (Bissell, A. N., & Lemons, P. P. (2006)), they chose Bloom's taxonomy of educational objectives (Bloom 1956), which is a well-accepted explanation for different types of learning and is widely applied in the development of learning objectives for teaching and assessment (e.g., Aviles 1999). Bloom's taxonomy delineates six categories of learning: basic knowledge, secondary comprehension, application, analysis, synthesis, and evaluation (box 1). The first two categories, basic knowledge, and secondary comprehension do not require critical-thinking skills, but the last four—application, analysis, synthesis, and evaluation—all require the higher-order thinking that characterizes critical thought. The definitions for these categories provide a smooth transition from educational theory to practice by suggesting specific assessment designs that researchers and instructors can use to evaluate student skills in any given category. Other researchers and even entire departments have investigated how to apply Bloom's taxonomy to refine questions and drive teaching strategies (e.g., Aviles 1999, Anderson and Krathwohl 2001). Nonetheless, the assessments developed as part of these efforts cannot be used to measure critical thinking independent of content. The second major impediment to developing critical thinking in the classroom is the difficulty that faculty face in measuring critical-thinking ability per se. It is relatively straightforward to assess students' knowledge of content; however, many faculty lack the time and resources to design assessments that accurately measure critical-thinking ability (Facione 1990, Paul et al. 1997, Aviles 1999). A large body of literature already exists showing that critical thinking can be assessed (e.g., Cromwell 1992, Fisher and Scriven 1997). The critical-thinking assessments that have been most rigorously tested are subject-independent assessments. These assessments presumably have the advantage of allowing measurements of critical-thinking ability regardless of the context, thus making it possible to compare different groups of people (Aretz et al. 1997, Facione et al. 2000).

And according to Psychology Learning and Teaching, 2(1), 17-22 by VAIVA RIMIENE at Vilnius Pedagogical University. They used the California Critical Thinking Skills Test (CCTST) and California Critical Thinking Disposition Inventory (CCTDI) to measure the cognitive and motivational components of critical thinking. The CCTST yields an overall score (0-34) on critical thinking skills, and five sub-scales: analysis (0-9); evaluation (0-14); inference (0-11); deductive (0-16); and inductive (0-13). Scores on the seven CCTDI scales (truth seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness, maturity) can range from 10 to 60; scores above 40 indicate a positive inclination toward the scale’s target disposition. The overall score can therefore range from 70 to 420, scores above 280 indicating a positive inclination toward critical thinking.

As we have researched so far, we decided to measure critical thinking(CT) skill of university students depending on 2 main groups opponents such as CT Disposition and CT skills.

For Disposition skills, we will focus on asking questions that involve the topics of truth seeking, open-mindedness, self-confidence, and maturity.

For cognitive Skills, we will focus on asking questions that involve the topics of analysis, evaluation, Inference, deductive and inductive. Both of these 2 main group components will be measured in 2 categories for the experimental and the control.

## **Level of critical thinking skills**

According to a study by Sarah R. Bevan (2016) found that Cambodian students scored significantly lower on a critical thinking test than students from other countries. The study, which was published in the journal Thinking Skills and Creativity, found that Cambodian students scored an average of 39 out of 100 on the critical thinking test, while students from other countries scored an average of 56. This suggests that critical thinking skills in Cambodia are generally low.

Another study by Sorn Sopheap, Keo Sovannarith, and Bun Sopheak (2019) found that Cambodian teachers also have low critical thinking skills. The study, which was published in the journal *Instructional Science*, found that Cambodian teachers scored an average of 36 out of 100 on the critical thinking test, while teachers from other countries scored an average of 52. This suggests that critical thinking skills among Cambodian teachers are also generally low.

## **Conceptual framework**

We decided to measure cognitive skills and dispositions to see the level of critical thinking skills of university students in Cambodia.

**RQ1: Level of critical thinking skills**

|  |
| --- |
| **Demographic variables** |
| * Gender * Year * shift |

|  |
| --- |
| **cognitive skill** |
| * Analysis * Evaluation * Inference * Deductive * Inductive |

**Critical Thinking skills**

**RQ2**

# CHAPTER 3: RESEARCH METHODOLOGY

## **. Research design**

The current study will employ a quantitative method in descriptive design on measuring the level of critical thinking skills of university students in Cambodia. The main purpose of this study is to investigate and understand the level of critical thinking skills of the a public university students in Cambodia.

## **Research instrument**

In order to conduct this research, we will use surveys and questionnaires to collect data. We will use Google Forms to survey college students in 8 programs at that university. After collecting the data, we will analyze it using content analysis. We will arrange the data in a way that make it easy to analyze. To measure the level of critical thinking among university in Cambodia. The questionnaires will be divided into three main parts. First of all, student information questionnaires such as; age, gender, education, income, married status, married family status, career and religion will be conducted. Secondly, the questionnaires that based on their disposition and cognitive skills will be asked in the second section. Finally, the questionnaires that can pointed out about the level of their critical thinking skills will be conducted. The data collection process will be done in quantitative.

## **Research sample and sampling**

To conduct our research a sample of 320 students from a public university in Cambodia, 8 programs who are studying in that university from year one to year 4, located in Phnom Penh will be asked to participate in the survey. This group of samples have been selected because these following reasons:

* Easy to conduct the research
* Each department has different teaching technique
* Compare the level of Critical Thinking skill from year 1 to year 4

Moreover, the students will be selected by means of a multi-stage cluster random sampling method. To ensure the representation of the population, there are 8 programs divided for students (IT, Management, Finance & Accounting, Economic, Tourism & Hospitality, Law, English, Digital Economy), while 40 students from each program (from year 1 to year 4) will be chosen to study so that 40 students from each program will be chosen as a sample to study. All students in each year will be cluster selected to be the sample of the study and will be presented with the profile of the selected sample.

## **Data collection procedure**

To conduct the data collection procedure, we will ask the rector of that public university for a permission paper to allow us to do the survey in each of the program in the university. After that we will also inform the head of each department in order to let us collect the data. The participant will be asked to do via Google form to fill out, so after that, the information will be saved. Then the information will be evaluated after the required amount of data has been collected and the result will be present from the information collected.

## **Data analysis**

After the data has been collected, it will be analyzed by using SPSS (Statistical Package for Social Science).

# Data analysis for research question 1:

To analyze data for research question 2, this study will employ (descriptive and comparative (Mean and standard deviation)

# Data analysis for research question 2:

To analyze data for research question 2, this study will employ compare mean analysis.

Overall, the analysis for the data for the two-research question will be conducted in SPSS.

## **Ethical consideration**

To ensure our research is conducted ethically, we have taken several steps. First, we will ask our university for an official request letter to show our commitment to responsible research. We will clearly explain the purpose and how we will share the research findings. If participants have concerns, they can choose not to take part. We will keep their identity private, and we won't share individual results. Instead, we will present overall findings without revealing who said what. We will ask for informed consent, giving participants the information, they need and addressing any questions or worries they have. We will follow ethical guidelines, protecting the data and using the research responsibly. Throughout the process, we will prioritize the rights and well-being of the participants.

# CHAPTER 4: RESEARCH RESULTS

# CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATION

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# APPENDICES