

Acquiring critical* thinking skills and their relationship to decision-making skill among graduates of the American Institute (YALI) in Yemen: A case study

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Abstract:

The study aims at finding out the type of relationship between the acquisition of critical thinking skills (evaluation, analysis and extending argument) and the decision-making skill among the graduate students of Yemen America Language Institute (YALI) 2018-2019. The study sample was was 60 students. The number of respondents was 46 students. The response rate amounted to 76.6%. The (CAAP) Critical Thinking Test, which included 32 items, was used measure students' critical thinking skills. The tool which was used to measure decision-making skills consists of 19 items distributed into 6 sections. The study reached a number of findings. One of the main findings was that the level of critical thinking of the students was weak. The results of the study also showed an average level of decision-making skill. The results also indicated in general to the absence of a statistically significant correlation between critical thinking skills and decision-making skills. This is consistent with what the current study assumed. The researcher recommended that it is necessary for educational institutions to teach critical thinking skills in a systematic way from the primary stage.

Keywords: critical thinking, decision making, argument, evaluate, analysis and extended argument.

* Evaluation, analysis and extending argument.

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اكتساب مهارات التفكير الناقد* وعلاقتها بمهارة اتخاذ القرار لدى خريجي المعهد الأمريكي يالي في اليمن (دراسة حالة)

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الملخص:

هدفت الدراسة الى معرفة نوع العلاقة بين اكتساب مهارات التفكير الناقد (التقييم، التحليل وتوسيع الحجة او البرهان) ومهارة اتخاذ القرار لدى الطلبة الخريجين في المعهد اليمني الأمريكي للعام الدراسي -2019 2018، والبالغ عددهم (60) طالبا، وبلغ عدد الطلبة المستجيبين (46)، أي ان نسبة الاستجابة بلغت (76.6%)، وقد تم استخدام امتحان (CAAP) لقياس مهارات التفكير الناقد والمكون من 32 فقرة، أما بالنسبة لمهارة اتخاذ القرار فقد تم استخدام اداة قياس مكونة من 19 فقرة وستة محاور، ومن اهم النتائج التي توصلت اليها الدراسة ان مستوى مهارات التفكير الناقد لدى طلبة معهد (يالي) كان ضعيفا، كما أظهرت الدراسة مستوى متوسط لمهارة اتخاذ القرار، كما أشارت النتائج بشكل عام الى عدم وجود علاقة ارتباطية ذات دلالة احصائية بين مهارات التفكير الناقد ومهارة اتخاذ القرار، وهذا يتفق مع ما افترضته الدراسة الحالية، واهم ما اوصت به الدراسة ضرورة قيام المؤسسات التعليمية والتربوية بتعليم مهارات التفكير الناقد بطريقة منهجية منذ المرحلة الابتدائية.

الكلمات المفتاحية: التفكير الناقد؛ اتخاذ القرار؛ الحجة؛ تقييم وتحليل وتوسيع الحجة.

Introduction:

In general, it is our capacity for thinking which defines us as humans. It sets us apart from the higher animals, plants and all other living organisms. Specifically, it is our capacity to conceptualize thought. This means our ability to discern similarities and differences between real life things and create mental categories in our mind.

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In addition, thinking is our primary survival tool. It is the means of connecting with reality. It also makes rational values more likely., Moreover, thinking is the only way to figure stuff out and make sense of the world. Furthermore, thinking is the only route to effective action, and facilitates a can-do attitude ⁽¹⁾.

Thinking leads ⁽²⁾ to a sense of self-efficacy (can do mindset) and therefore self-esteem, because gaining knowledge increases our self-confidence. If we think and figure stuff out, we are informed and we feel capable, able to live and therefore worthy to live. On top of that, thinking is the only way to discern truth from lies. Thinking is the only way to sort facts from fiction, truth from lies. This is arguably the greatest challenge facing humanity today. Besides, thinking is the only way to 'not be fooled' or conned. Discoveries are made through thinking, as well, thinking is the only way to make discoveries, invent things and find better ways of doing things. Furthermore, thinking is the route to independent living and making-decision.

Critical thinking is ⁽³⁾ the ability to think reflectively and independently in order to make thoughtful decisions. By focusing on root-cause issues, critical thinking helps you avoid future problems that can result from your actions.

It is important not to take what you experience, read, or hear at face value, but to look behind the obvious for presuppositions, evidence, and arguments. The critical thinker has to read carefully, to be aware of possible difficulties, to explore reasonable explanations, and when appropriate, to think about the credibility of his or her sources of information. To learn how to think critically, one must learn skills ⁽⁴⁾.

However, critical thinking is ⁽⁵⁾ a widely used term that includes skills in identifying, analyzing, synthesizing, and evaluating information to make informed decisions, and the disposition to apply these skills. Better critical thinking can transform your life and help you improve every decision you make.

Critical thinking and decision making is ⁽⁷⁾ a crucial component of any organization, as each decision directly affects every member of that organization. Critical thinking entails the leader to examine the larger picture of the decision, allowing the individual to analyze the data

from different perspectives, in order to ascertain the choice which most benefits the organization ⁽⁶⁾. Effective decision-making is based on data, information, and logic, rather than the individual's biases or emotion. This is the major benefit of critical thinking decisions based on rationale.

While ⁽⁸⁾ critical thinking and decision-making are interrelated and rely on one another, they are also independent. Critical thinking does not guarantee that a decision will be made and decisions can be made without processing information logically. The decision-making and critical thinking have functions. While one may think that they are the same, they are separate. Critical thinking is the process by which one can make a systematic and logical decision.

At the level of students, Stephan says ⁽⁹⁾ that we are assured that critical thinking must give students an overall better understanding of not only their academic work but also a better general understanding about the world around them and independence in making their own decisions.

The ability to think critically will benefit students throughout their lives. It "is one skill separating innovators from followers ⁽¹⁰⁾. " The definition of critical thinking is not universally agreed upon, "it is merely the ability to understand why things are the way they are and to understand the potential consequences of actions." Today students are under a steady barrage of information, particularly from online sources, friends, parents and media, and it quickly becomes evident that they need to learn how to evaluate what they see and hear every day so they can identify false ideas and look beyond superficial appearances.

Critical thinking is the cornerstone for the acquisition of different experiences throughout one's life. Therefore, this study aimed to know the relationship between the acquiring of critical thinking skills and decision-making skill among the students.

Related Previous Studies:

The researcher has been able to obtain only a small number of studies in which critical thinking sample test questions booklet (CAAP) was used as a measuring tool. The researcher points out that is due to (CAAP) of the modern measuring tools, while there are many studies

and scientific papers that used different tests to measure the skills of critical thinking. In general, the researcher has been able to obtain a few studies in critical thinking in the Arab world.

Studies that have used (CAAP) test will be addressed first:

Owens⁽¹¹⁾ community college conducted a study using the CAAP Critical Thinking test. The study aimed to measure the difference between the level of critical thinking skills among Owens students and national sample of students at other two-year public institutions. The study sample was 372 students, while the response rate was 54.8%. Results indicate that Owens students do not differ significantly on their critical thinking skills from a national sample of students at other two-year public institutions. The overall scores showed negligible change from 2011-2013. There was no real change in students' critical thinking skills from 2011. There are no significant differences in critical thinking skills among different student groups of Owens students.

Another study was also conducted in Kean University⁽¹²⁾ using the CAAP Critical Thinking test in Fall semesters of (2011- 2012- 2013) for 366 student. The most important result related to the current study is that there is no significant difference between the averages of sophomore (Mean 58.6) and seniors (Mean 58.4) at Kean University.

A different result has been reached between the groups⁽¹³⁾ of MXC students, in a study which was conducted in (Spring 2011) on administration. The spring administration included 17 sections with a total of 350 students participating in the study. Two groups of students were used. Incoming students enrolled in lower level courses were tested during fall 2010 and students in capstone courses in various disciplines and departments were then tested with the same instrument. Generally, there were meaningful differences in critical thinking skills between different student groups of MXC students.

Overall, previous studies have shown that students possess critical thinking skills, and these studies were conducted to measure the difference between groups of students. Therefore, the outcome is different from current study, which shows a low level of critical thinking skills.

With regards to the study conducted on the relationship between critical thinking and decision-making, ⁽¹⁴⁾ the aim of the study was to examine the relationship between critical thinking and confidence in decision-making for 83 new graduate nurses. The study had some surprising and interesting findings. It showed a negative correlation between these two variables. It concluded that there is no statistically indication of correlation between students' critical thinking skills and their decision-making skills.

Another study has reached a similar conclusion by ⁽¹⁵⁾ both Hoffman, Elwin and the current study. Hill examines the relationship between decision-making and critical thinking in respiratory care students, Glaser Critical Thinking Appraisal for 143 graduating respiratory care students from 10 programs. The study showed a significant correlation between critical thinking and decision-making. The findings support the belief that students with strong critical thinking proficiency make better clinical decisions.

The purpose ⁽¹⁶⁾ of Ricketts correlational study was to explain the relationship between discipline specific critical thinking skills (analysis – inference - evaluation) and leadership training and experiences of selected youth leaders in the National leadership training FFA Organization. The study sample was 420 (210 leadership training – 210 leadership experiences). The study showed a positive relationship between critical thinking skills and leadership.

Kobayashi conducts a study, ⁽¹⁷⁾ which aimed to evaluate the relationship between critical-thinking and decision-making skills in Physical education and lifestyle in junior high school students. The survey was conducted among 1,443 students (561 boys and 583 girls). The study found that the total score of critical-thinking and decision-making skills in Physical education class was higher in boys with high health awareness, current practice in athletic activities, and previous experience in sports during elementary school. The scores were 1.6, 1.9, and 2.5 higher compared to those with low health awareness, who do not practice, and who previously did not have sports activities, respectively. This trend was also observed among girls with 1.8 and 1.7 times score greater than those who are presently and previously

active in sports, respectively. One of the most important conclusions of the study is that past or current sports experiences such as previous sports participation in elementary school and current athletic activities have greater impact than cognitive skills for promoting critical-thinking and decision-making skills in exercise.

A researcher from the Open University ⁽¹⁸⁾ of the Netherlands and her colleagues studied an interesting issue about critical thinking in decision-making. They wanted to know whether teaching critical thinking skills could improve judgment and decision making in general. The researchers tested a method for including critical thinking in decision-making. First, they explained the story model of decision-making. Then, they prompted the learners to reflect on their story and thinking critically about it. Some of the questions they included to prompt critical thinking were: Do you have all the necessary information? Is there any conflict in the evidence? The devil's advocate tells you that your story is wrong. Make up an alternative story. Is it more plausible than the original? The students in the study read through cases about crimes that had been committed. Their job was to decide on the priority of each case for the police. They got feedback, so they could learn what makes cases more important in police work. Some of the students received the critical thinking skills training while making these decisions. Others did not. How well they made these crime decisions was not the most important thing, though. The main thing was how well they would do in a different situation after learning about critical thinking in decision-making. That is, would their new skills transfer? The researchers tested for transfer by having the students make different decisions about traffic offenses. The overall results suggested that the training on how to include critical thinking in decision-making was effective. The benefits did transfer to the new decision-making task.

A study aimed to ⁽¹⁹⁾ investigate the relationship between critical thinking and self-esteem. This correlational study was conducted with 76 first and fourth year nursing students in Jeroft University of Medical Sciences. The results showed that the highest percentage of students had unstable critical thinking (86.8%). 73.7 percent of them had moderate self-esteem. Self-esteem in the fourth year students was significantly higher than the first year

students ($p < 0.05$) and there was a significant relationship between critical thinking and self-esteem ($p < 0.05$). Results showed that students with higher self-esteem have more favorable critical thinking and a positive and direct relationship was found between these two features. It was one of the most important recommendations of the study. It is needed that university professors and academics to plan self-esteem enhancement methods to promote critical thinking, because sufficient self-esteem is essential for capable critical thinking growth.

Sook's study⁽²⁰⁾ aimed to identify problem-solving ability, professional self-concept, and critical thinking disposition of nursing students in Korea. The findings from this study demonstrate the fundamental importance of professional self-concept and critical thinking disposition to improve problem solving ability for nursing students. Our results suggest that in the long run, professional self-concept and critical thinking disposition will enhance overall problem solving ability of nurse, thus improve nursing care for patient.

A recent study by North Carolina State University researchers⁽²¹⁾ finds that teaching critical thinking skills in a humanities course significantly reduces student beliefs in "pseudoscience" that is unsupported by facts. Critical thinking skills are often assessed via student beliefs in non-scientific ways of thinking, (e. g, pseudoscience). For this study, the researchers worked with 117 students in three different classes. They investigated the effects of a history course on epistemic unwarranted beliefs in two class sections. Beliefs were measured pre- and post-semester. Beliefs declined for history students compared to a control class and the effect was strongest for the honors section. This study provides evidence that humanities education engenders critical thinking.

Of the studies in the Arab world, the researcher indicates to two studies:

A study aimed⁽²²⁾ to identify the availability of some critical thinking skills of talented students in high schools in Yemen and disclosure of the relationship between the sex (male – female), the academic achievement and critical thinking skills. The sample was (121) students. The researchers used the test of Watson / Glaser to measure the critical thinking skills. The most important results related to our study that the sample of the critical thinking did not reach the acceptable limit educationally there was no correlation of statistical significance

between degrees of the sample in test of the critical thinking skills (for each sub-test and the test as a whole) and their academic achievement.

There is other study⁽²³⁾ in which the main objective was to investigate and measure the students' critical thinking skills and achievements in the Arabic language at Primary and secondary stages. The researcher has identified five elements which comprise of the varying levels of critical thinking abilities in the Arabic Language. These are as follows; analyses, inference, induction, deduction and evaluation. The most important results related to our current study was the levels achievement of critical thinking of students in both stages are average and satisfactory. There is no significant statistical difference in the achievement of critical thinking skills between primary and secondary students.

Comment on previous studies:

The concept of critical thinking has received attention of many researchers, especially in developed countries. Previous studies have varied in terms of their goals and target group, and these previous studies have been classified into three categories:

1. Studies which aimed at measuring the level of critical thinking
2. Studies which aimed at knowing the relationship between critical thinking skills and decision-making skills
3. Studies which aimed at identifying the relationship of critical thinking with the level of self-esteem and other life skills

Problem of the study:

Nowadays, the need for critical thinking has become one of the imperatives of continued success in life. The benefits of critical thinking are many and numerous, for example, but not limited to: Critical thinking is a key to career success; it reinforces problem-solving ability; critical thinking can make you happier; critical thinking ensures your opinions are well-Informed; critical thinking improves relationships; critical thinking makes you a better; more informed citizen; and critical thinkers make better decisions. As a faculty member during more than ten years, the researcher has noted the weakness of critical thinking among most

students during their discussions or the solution of some questions of teaching materials in a problem-solving way. In addition to this, the era in which we live and the abundance of information and the ease of receiving an endless number of information, and at the same time, receiving what contradicts that information, as many concepts and facts are mixed, and one needs to sift through this huge amount of information, all this makes it imperative for everyone to start practicing critical thinking in order to decide what is accepted and what is rejected and be aware of why he/she accepted this and rejected that scientifically.

Therefore, this study intended to identify the relationship between possessing critical thinking skills and decision-making skill by graduate students.

Hypotheses of the study:

There is no relationship between acquisition of critical thinking skills and decision-making skills by graduate students.

Questions of study:

1. What is the level of critical thinking among graduate students of the Institute?
2. Is there any relationship between acquiring Critical Thinking Skills and Decision-Making Skill by graduate students?

Objectives of the study:

1. identifying the level of critical thinking among graduate students of the Institute
2. Examining the relationship between acquiring Critical Thinking Skills and Decision-Making Skill by graduate students.

Significance of the study:

The significance of this study derives in general from the importance of the thinking process that distinguishes the human being. Besides, this study has special importance for its approach to critical thinking skills, which is considered the most important skills for success in the twenty-first century.

In addition, the importance of this study increases due to the target category (students), who represent the future of any society and its most important pillars. Therefore, the theoretical importance of this study is:

- Providing researchers with a theoretical framework and previous studies on the concept of critical thinking and its most important skills
- Standing on the level of critical thinking skills, which helps in preparing plans for training and developing life skills.

The applied importance of this study is:

- Providing a practical measure of critical thinking skills through the case study.
- Shedding light on the concept of critical thinking and its importance in an individual's life and success on the personal, family, and practical levels.

Study terminology:

Critical thinking:

While the definition of critical thinking is broad and diverse in the literature, there is a general agreement ⁽²⁴⁾ that it is purposeful, reasonable and goal-directed thinking.

From an ability perspective, it has been defined as ⁽²⁵⁾ the ability to think clearly and rationally, understanding the logical connection between ideas. It is also defined as the ability to think clearly and rationally about what to do or what to believe. It includes the ability to engage in reflective and independent Thinking.

Critical thinking is ⁽²⁶⁾ that mode of thinking – about any subject, content, or problem in which the thinker improves the quality of his or her thinking by skillfully, taking charge of the structures inherent in thinking and imposing intellectual standards upon them.

The simplest definition is offered by Beyer ⁽²⁷⁾: Critical thinking means making reasoned judgments From the careful, deliberate, determination perspective, it has been stated that critical thinking is the careful, deliberate determination of whether we should accept, reject, or suspend judgment about a claim, and the degree of confidence with which we accept or reject it.

Critical thinking is ⁽²⁸⁾ reasonable and reflective thinking focused on deciding what to believe or do.

There are definitions that linked between critical thinking and decision-making such as: Critical thinking is the identification and evaluation of evidence to guide decision-making. A critical thinker ⁽²⁹⁾ uses broad in-depth analysis of evidence to make decisions and communicate his/her beliefs clearly and accurately." "Critical thinking is reasonable, reflective thinking that is focused on deciding what to believe and do."

What is the difference between thinking and critical thinking:

Thinking is the mental process, the act and the ability to produce thoughts. People think about almost everything and anything. They often think of people, things, places, and anything without a reason or as a result of a trigger of a stimulus. Meanwhile, critical thinking often means "thinking about thinking." In a sense, it is a deeper form of thinking about a particular issue or situation before actually deciding and acting.

In any given situation, thinking is an action that requires the person to form a thought about that situation. Any thought can be formed, even without facts or evidence. When critical thinking is applied, the mind is open to all considerations, assumptions, and details before actually forming a thought or an opinion. A person who is a critical thinker regards the subject itself and all its aspects, like the methods of collecting facts or the motivation behind said facts. A person who employs critical thinking often adds the question "why" to "who, what, where, and when" in a particular situation.

A thinker may accept facts or realities based on faith alone and without examination and analysis of the issue. These facts or realities are often perceived as "truth" and cannot be criticized or modified. In this situation, there is no need for evidence or the effort to produce it and its examination.

Critical thinking is the opposite of all of this. It often requires a lot of time, questions, and considerations. It also involves a longer process before arriving at a conclusion or decision.

Individuals who apply critical thinking are often open-minded and mindful of alternatives. They try to be well informed and do not jump to conclusions. Critical thinkers know and identify conclusions, reasons, and assumptions. They use clarifying and probing questions in order to formulate their reasonable situations and arguments. They often try to integrate all items in the situation and then draw conclusions with reason and caution. They also have good judgment on the credibility of sources and the quality of an argument, aside from developing and defending their stand. If asked, these people can clearly articulate their argument with all its strengths and weaknesses.

Critical thinking is an on-going process and activity. This skill is learned through active practice and constant use. Exposure to controversial issues and thought-provoking situations stimulates the mind to utilize this skill, which is then applied upon careful examination of an issue or situation. Meanwhile, thinking can be done in an instant without any given proof and/or justification.

Critical thinking requires logic and accuracy, while thinking sometimes occurs in the form of faith and personal opinion. The former requires evidence and further actions of examination and analysis, while the latter does not. It is up to you to think and decide.

Summary:

1. Both thinking and critical thinking are mental processes.
2. Thinking can be classified as an action, while critical thinking can be said to be a skill.
3. Critical thinking is used with caution, while thinking can be spontaneous.
4. A critical thinker is able to identify the main contention in an issue, look for evidence that supports or opposes that contention, and assess the strength of the reasoning, while a thinker may base their belief solely on faith or personal opinion.

Decision-making:

There is an agreement and general consensus on the definition of decision-making as the best choice, and the decision-making⁽³⁰⁾ steps are as follows:

1. Establishing a positive decision-making environment. 2. Generating potential solutions. 3. Evaluating the solutions. 4. Deciding. 5. Checking the decision. 6. Communicating and implementing.

Decision making vs. Critical Thinking:

The relationship between critical thinking and decision-making is much more different from what most people think. Critical thinking is⁽³¹⁾ the process by which one evaluates information on a given problem. The process of reaching logical conclusions, solving problems, analyzing factual information, and taking appropriate actions based on the conclusions is called decision making.

Argument:

An argument is⁽³²⁾ "a claim or proposition put forward along with reasons or evidence supporting it.

Ennis defines an argument as⁽³³⁾ "an attempt to support a conclusion by giving reasons for it. He mentioned some definitions for authors such as: Irving M. Copi, in his *Introduction to Logic*, defines an argument as a "group of propositions of which one, the conclusion, is claimed to follow from the others, which are premises." In his book, *Critical Thinking*, Richard Epstein provides the following definition of argument: "An argument is a collection of statements, one of which is called the conclusion whose truth the argument attempts to establish; the others are called the premises, which are supposed to lead to, or support, or convince that the conclusion is true."

Extended argument:

An extended argument is one that has a main conclusion supported by premises which themselves are in turn supported by sub-premises.

Palmer ⁽³⁴⁾ explained two reasons why should we care about extended arguments. There are a couple of reasons: First, most arguments we encounter "in the wild" as articles, essays, and books come to us as extended arguments. Second, as you may have noticed, the premises of simple arguments do not always withstand scrutiny.

Analyzing an Argument:

The process of breaking an argument down into its component parts in order to understand how they work together to make up the whole ⁽³⁵⁾, analysis involves breaking what you read or hear into its component parts, in order to make clear how the ideas are ordered, related, or connected to other ideas. Analysis deals with both form and content.

We must ⁽³⁶⁾ pay attention to inference indicators which will often help us to disentangle argument components. Then he explains to us how to differentiate between whether the sentence is a premise or a conclusion by inference indicator. Some common indicators for premises are: since, because, for, as can be deduced from, given that, and the reasons are. Some common indicators for conclusions: Consequentially, so it follows, thus, hence, therefore, and we conclude that.

Evaluate an argument:

For evaluating an assessment of the quality of evidence and reasons in an argument and of the overall merit of an argument, evaluation ⁽³⁷⁾ occurs once we have understood and analyzed what is said or written and the reasons offered to support it. Then we can appraise this information in order to decide whether you can give or withhold belief, and whether or not to take a particular action.

Research methodology:

The researcher applied the descriptive analytical method for these reasons:

1. To describe the phenomenon and analyze for the research.
2. Descriptive research describes phenomena as they exist
3. To identify and obtain information on the characteristics of a particular issue.
4. To understand phenomena by discovering and measuring relations among them.

Scope of the study

This study was conducted for (60) graduates of the Yemen America Language Institute (YALI) in the Capital Municipality (Sana'a)

Limitations of the Study

This study was conducted for graduate students of Yemen America Language Institute (YALI) for the academic year 2018-2019. Their number is (60)

Overview of the measurement tools used in the study:

The questionnaire comprises three parts as follows:

The first part: personal variables

It includes (sex, education level, and marital status)

The second part: a tool to measure critical thinking skills:

The critical thinking module from the CAAP was used to assess students' development in critical thinking abilities and skills. The critical thinking test is a 32-item instrument designed to measure students' ability to clarify, analyze, evaluate, and extend arguments (ACT, 2008). The test consisted of four passages in a variety of formats (e.g., case studies, debates, dialogues, experimental results, statistical arguments, editorials). Each passage contained a series of arguments that support a general conclusion and a set of multiple-choice test items. Scores are calculated from these items and scaled using an algorithm devised by ACT to minimize measurement errors.

The third part: a tool to measure decision-making skill:

It consists of 19 item, and six axes (steps for decision-making)

1. Establishing a positive decision-making environment.
2. Generating potential solutions.
3. Evaluating the solutions.
4. Deciding.
5. Checking the decision.
6. Communicating and implementing.

Data analysis method:

Questionnaires were collected and the responses collated using a spreadsheet in the computer program SPSS. The SPSS database was used for analyzing the data. The data were analyzed using:

1. Descriptive statistics on the demographic data and raw data from the questionnaires. Frequency distributions were made for demographic data obtained as well as for critical thinking skills. Means and standard deviations were calculated for the CAAP test scores and the decision-making scores.
2. Critical thinking scores were correlated with decision-making scores to determine if these two were related.
3. Pearson's correlation coefficient for measuring the association between variables of interest because it is based on the method of covariance. It gives information about the magnitude of the association, or correlation, as well as the direction of the relationship.
4. An ANOVA test to find out if the results are significant, if we need to reject the hypothesis or accept it and testing groups to see if there is a difference between them.

Stability and validity of the questionnaire:

1. Measuring virtual validity

The questionnaire was reviewed by specialized experts and their observations were taken into consideration. The most important observation the arbitrators unanimously agree on is to change the target category from university students graduates at English language department to graduates students at the YALI institute, so that the language of the questionnaire proportional with the level of students. Then the questionnaire was reviewed by the academic officer of the institute and three of the students' teachers.

2. Measuring of internal consistency (stability)

The Cronbach's alpha test was used to measure of internal consistency, and how closely related a set of items are as a group, as is evident from the table:

Cronbach's alpha test

Tool	No. of Items	Cronbach's Alpha
Critical Thinking Test	32	0.793
Decision-Making	19	0.685
Questionnaire	51	0.740

Source: The researcher's preparation based on the questionnaire data and outputs (SPSS)

The overall stability of the questionnaire is estimated at (74%). The degree of stability for the critical thinking skills test tool (79.3%), while the degree of stability for decision-making skill test tool (68.5%). All these values are greater than the degree of marginal stability which equals (64%). This indicates that the search tool is generally internally consistent and show high stability, indicating that the results of the study which will be reached can be generalized to the research community.

Analysis of findings

Table 1: Demographic for sample:

Demographic Variables		N	%
Sex	Male	26	56.5%
	Female	20	43.5%
	Total	46	100.0%
Age	18 – 28	34	73.9%
	29 – 39	11	23.9%
	40 – 50	1	2.2%
	Total	46	100.0%
Education Level	Secondary School	21	45.7%
	Bachelor	22	47.8%
	Master	3	6.5%
	Doctorate	0	0.0%
	Total	46	100.0%
Marital Status	Single	35	76.1%
	Married	11	23.9%
	Total	46	100.0%

Occupation	Student	33	71.7%
	Employee	13	28.3%
	Total	46	100.0%

Source: The researcher's preparation based on the questionnaire data and outputs (SPSS)

First: analysis Critical thinking skills

The results were analyzed in aggregate, regardless of demographic variables, and those demographic variables require more in-depth studies

Table 2: The level of Critical thinking skills for the sample:

Students Critical thinking Level	N	%
Weak	34	73.9%
Good	10	21.7%
Excellent	2	4.3%
Total	46	100%

Source: The researcher's preparation based on the questionnaire data and outputs (SPSS)

The table (2) shows that the overall average level of the sample was weak of 33%. This indicates that the level of the students of Yemen American Institute was weak in general with reference to Critical Thinking Skills. It is an expected results in or under a cultural and educational heritage that does not care about thinking and depends on indoctrination as a teaching and educational way. This result is consistent with the findings of Alhedabi and Alashhwal study, but contrasts with most previous studies, which indicated medium or high levels of critical thinking in the study samples.

The following three tables show the sample's answers distributed to the test items according to the critical thinking skills.

Table 3: Analyzing an Argument Skill:

Q. No.	False		Right		Total		Dominate Answer
	N	%	N	%	N	%	
2	39	84.8%	7	15.2%	46	100%	False
3	30	65.2%	16	34.8%	46	100%	False

4	23	50.0%	23	50.0%	46	100%	False, Right
7	29	63.0%	17	37.0%	46	100%	False
8	35	76.1%	11	23.9%	46	100%	False
9	24	52.2%	22	47.8%	46	100%	False
10	34	73.9%	12	26.1%	46	100%	False
11	29	63.0%	17	37.0%	46	100%	False
13	31	67.4%	15	32.6%	46	100%	False
14	27	58.7%	19	41.3%	46	100%	False
17	27	58.7%	19	41.3%	46	100%	False
19	29	63.0%	17	37.0%	46	100%	False
20	34	73.9%	12	26.1%	46	100%	False
21	30	65.2%	16	34.8%	46	100%	False
25	29	63.0%	17	37.0%	46	100%	False
26	36	78.3%	10	21.7%	46	100%	False
29	32	69.6%	14	30.4%	46	100%	False
31	30	65.2%	16	34.8%	46	100%	False
Total	548	66%	280	34%	828	100%	False

Source: The researcher's preparation is based on the questionnaire data and outputs (SPSS)

It is clear from the table (3) that most of the answers of the sample to the questions related to analysing an argument skill were wrong with a general rate of 66%. This is an inevitable result of low level of critical thinking, and dependence on indoctrination, routine and tradition in various aspects of scientific and practical life.

Table 4: Extending an Argument:

Q. No.	False		Right		Total		D2ominate Answer
	N	%	N	%	N	%	
1	20	43.5%	26	56.5%	46	100%	Right
5	31	67.4%	15	32.6%	46	100%	False
15	36	78.3%	10	21.7%	46	100%	False
22	32	69.6%	14	30.4%	46	100%	False
30	37	80.4%	9	19.6%	46	100%	False
Total	156	68%	74	32%	230	100%	False

Source: The researcher's preparation based on the questionnaire data and outputs (SPSS)

Table 4 shows the weak level among the students with regard to the extending an argument. It is an expected outcome. Whereas any knowledge is weakened, its skills will be impaired.

Table 5: Evaluating an Argument:

Q. No.	False		Right		Total		Dominant Answer
	N	%	N	%	N	%	
6	25	54.3%	21	45.7%	46	100%	False
12	22	47.8%	24	52.2%	46	100%	Right
16	23	50.0%	23	50.0%	46	100%	False, Right
18	36	78.3%	10	21.7%	46	100%	False
23	36	78.3%	10	21.7%	46	100%	False
24	27	58.7%	19	41.3%	46	100%	False
27	35	76.1%	11	23.9%	46	100%	False
28	39	84.8%	7	15.2%	46	100%	False
32	39	84.8%	7	15.2%	46	100%	False
Total	282	68%	132	32%	414	100%	False

Source: The researcher's preparation is based on the questionnaire data and outputs (SPSS)

And as for table 5, it clearly shows an overall weak students with regard to the evaluating an argument skill. The researcher sees it as a natural result, anyone who does not allow his mind to think, inevitably won't be able to evaluate what comes in or out of his mind. We conclude from the above that about two-thirds of the research sample suffers from weak critical thinking skills. This may be because they have not studied courses or curricula that help them develop these skills, and the culture of the importance of critical thinking has not received proper attention in educational institutions and bodies. As the methods of education for the individual and the culture of society, in environment around the individual does not encourage the individual to think in general or in critical thinking way in a special form.

Secondly: analysis of Decision-Making Skill

Table 6: Analysis of results at sub- axes of Decision-Making Skill

Rank	Axes	Mean	Std. Deviation	%Mean	95% Confidence of %Mean		Verbal 1Response
					Upper	Lower	
1	Checking the decision	3.457	0.721	69.1%	73.3%	65.0%	Often
2	Deciding	3.375	0.647	67.5%	71.2%	63.8%	Sometimes
3	Evaluating the solutions	3.326	0.602	66.5%	70.0%	63.0%	Sometimes
4	Establishing a positive DM environment	3.304	0.548	66.1%	69.3%	62.9%	Sometimes
5	Generating potential solutions	3.297	0.641	65.9%	69.6%	62.2%	Sometimes
6	Communicating and implementing	3.174	0.628	63.5%	67.1%	59.9%	Sometimes
Decision-Making Skill		3.322	0.393	66.4%	68.7%	64.2%	Sometimes

Source: The researcher's preparation is based on the questionnaire data and outputs (SPSS)

It is clear from the table 6, that the sample indicates that it has approximately 66.4% of the overall decision-making skill. The average ratio of the sub-skills is 69.1% for the decision review skill and 63.5% for the communication and implementation skills. This indicates that the students of Yemen American Institute have overall medium decision-making skill. The researcher attributed the students' possession of average level of decision-making skill to the fact that the concept of decision-making has somewhat taken part of the attention in terms of importance and development as it is one of the administrative concepts recognized in colleges and administrative institutes as well as in administrative and self-development courses. This result is consistent with these studies (Hoffman & Elwin, 2003), (Hill, 2002), (Ricketts, 2005), (Kobayashi, others, 2016) and (Helsdingen, others. 2011), as their results indicated to average and high levels of decision-making skill.

Analyzing the relationship between critical thinking skills and decision-making skill

Table 7: Pearson Correlation Matrix, for the overall sample:

Critical Thinking Skills Decision-Making Skill	Analyzing Argument	Extending Argument	Evaluating Argument	Critical Thinking Skills
Establishing a Positive DM Environment	0.015	0.070	0.201	0.089
Generating potential solutions	0.128	0.179	0.119	0.160
Evaluating the Solutions	0.175	0.015	-0.016	0.108
Deciding	-0.020	0.133	-0.199	-0.043
Checking the Decision	-0.058	-0.007	-0.032	-0.048
Communicating and Implementing	0.223	0.232	0.275	0.280
Decision-Making Skills	0.119	0.165	0.084	0.140

Source: The researcher's preparation is based on the questionnaire data and outputs (SPSS)

It is clear from the correlation matrix (table 7) that there is no statistically indication of correlation between the skills of students in critical thinking and their decision-making skill. The correlation between the critical thinking skills and decision-making skill is generally (0.140%) and is 0 no statistically indication at level (0.05). This indicates that the students of Yemen American Institute may be independent of their decision-making skill.

This is consistent with the findings of both Alhedabi and Alashhwal study which indicated that there was no correlation of statistical significance between degrees of the critical thinking skills and their academic achievement. However, it contrasts with the results of the following studies:

The study of Hoffman and Elwin which indicated to a negative correlation between critical thinking and confidence in decision-making. As for Hill's study, it showed a significant correlation between critical thinking and decision-making, (Helsdingen, others. 2011) which showed positive correlation between critical thinking and decision-making.

Because the majority of the sample (about two-thirds of the sample) had a weak level of critical thinking skills, the weak group were isolated and the correlation test was re-administered to the good and excellent level group.

Table 8 Pearson Correlation Matrix, for Excellent & Good Students in critical thinking skills test

Critical Thinking Skills Decision-Making Skills	Analyzing an Argument	Extending an Argument	Evaluating an Argument	Critical Thinking Skills
Establishing a Positive DM Environment	-0.461	-0.293	0.253	-0.304
Generating potential solutions	0.166	0.155	0.036	0.1631
Evaluating the Solutions	-0.091	-0.308	-0.536	-0.314
Deciding	0.077	0.408	0.072	0.196111
Checking the Decision	0.000	0.190	-0.049	0.044
Communicating and Implementing	-0.113	0.011	0.259	0.010
Decision-Making Skill	-0.106	0.088	0.060	-0.021

Source: The researcher's preparation is based on the questionnaire data and outputs (SPSS)

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

In general view, it is clear from the previous table that there is no statistically indication of correlation between both the critical thinking skills of students and their decision-making skill. The correlation value between the two skills is generally reversed and approaches zero (- 0.021) indicating that the overall decision-making skill among students with a good and excellent level may also be independent of their critical thinking skills.

The following table illustrates correlation analysis as well, but after isolating the students of good and excellent level, and introducing the weak level students:

Table 9: Pearson Correlation Matrix, for Week Students in CTS test:

Critical Thinking Skills Decision-Making Skills	Analyzing an Argument	Extending an Argument	Evaluating an Argument	Critical Thinking Skills
Establishing a Positive DM Environment	-0.059	0.057	0.084	0.018
Generating potential solutions	0.074	0.185	0.097	0.175
Evaluating the Solutions	0.159	-0.074	-0.050	0.078
Deciding	-0.128	0.017	-0.397	-0.326
Checking the Decision	-0.070	-0.049	-0.007	-0.077
Communicating and Implementing	0.117	0.107	0.116	0.196
Decision-Making Skill	0.024	0.059	-0.045	0.012

Source: The researcher's preparation is based on the questionnaire data and outputs (SPSS)

* Correlation is significant at the 0.05 level (2-tailed).

The table also shows that there is no statistically indication of correlation between critical thinking skills and decision-making skill in general, which suggests that decision-making skills are in general independent of the critical thinking skills of the same students. To find out more in depth and detail about whether the decision-making skill of students will vary according to their level of critical thinking test, contrast analysis (ANOVA) is used. The following table shows the test findings at the sub-axes-level of decision-making skill.

Table 10: ANOVA table for sub-axes of Decision-Making Skill base on Students Critical Thinking Level:

No.	Sub-axes of Decision-Making Skill	Students Critical Thinking Level						ANOVA	
		Weak		Good		Excellent		F	Sig.
		Mean	%Mean	Mean	%Mean	Mean	%Mean		
1	Establishing a Positive DM Environment	3.250	65.0%	3.500	70.0%	3.250	65.0%	0.809	0.452
2	Generating potential solutions	3.265	65.3%	3.367	67.3%	3.500	70.0%	0.195	0.823
3	Evaluating the Solutions	3.275	65.5%	3.600	72.0%	2.833	56.7%	1.901	0.162
4	Deciding	3.368	67.4%	3.325	66.5%	3.750	75.0%	0.357	0.702
5	Checking the Decision	3.471	69.4%	3.400	68.0%	3.500	70.0%	0.039	0.962
6	Communicating and Implementing	3.078	61.6%	3.400	68.0%	3.667	73.3%	1.712	0.193
Decision-Making Skill		3.284	65.7%	3.432	68.6%	3.417	68.3%	0.595	0.556

Source: The researcher's preparation is based on the questionnaire data and outputs (SPSS)

It is clear from the table that there are no statistically significant differences in the level of students in the decision-making skill in general and in detail according to the different levels of students in the test of critical thinking skills. This indicates that there is no impact on the level of critical thinking skills of the students of Yemen American Institute (YALI) in having decision-making skill in general and at the level of each axis as well.

We conclude from this that the skill of decision-making is independent of the critical thinking skills of the students of the Yemen American Institute.

This is contrary to what other studies assumed that there is a positive relationship between acquiring critical thinking skills and decision-making skill.

This result reinforces what (Robert, McCall, 2004) said: While critical thinking and decision-making are interrelated and rely on one another, they are also independent. Critical thinking does not guarantee that a decision will be made and decisions can be made without processing information logically. The decision-making and critical thinking have functions. While one may think, they are the same, they are separate. Critical thinking is the process by which one can make a systematic and logical decision.

The following table shows the same test but at the level of all items of decision-making skill.

Table 11: ANOVA table for all sub- axes of Decision-Making skill based on Students Critical Thinking Level:

Sub Factor	Paragraph	Students Critical Thinking Level						ANOVA	
		Week		Good		Excellent		F-Test	Sig.
		Mean	%Mean	Mean	%Mean	Mean	%Mean		
Establishing a Positive DM Environment	I try to determine the real issue before starting a decision-making process.	3.618	72.4%	3.800	76.0%	4.000	80.0%	0.216	0.806
	I use a well-defined process to structure my decisions	3.206	64.1%	3.200	64.0%	2.500	50.0%	0.515	0.601
	In a group decision-making process, I tend to support my friends' proposals and try to find ways to make them work.	2.912	58.2%	3.600	72.0%	3.500	70.0%	1.813	0.175
	I prefer to make decisions on my own, and then let other people know what I've decided.	3.265	65.3%	3.400	68.0%	3.000	60.0%	0.125	0.883
Generating potential solutions	I rely on my own experience to find potential solutions to a problem.	3.265	65.3%	3.300	66.0%	2.500	50.0%	0.465	0.631
	I think that involving many stakeholders to generate solutions can make the process more complicated than it needs to be.	3.176	63.5%	3.000	60.0%	3.500	70.0%	0.173	0.842
	I consider a variety of potential solutions before I make my decision.	3.353	67.1%	3.800	76.0%	4.500	90.0%	1.867	0.167
Evaluating the Solutions	I evaluate the risks associated with each alternative before making a decision	3.412	68.2%	3.700	74.0%	3.500	70.0%	0.295	0.746

	I am sometimes surprised by the actual consequences of my decisions.	3.294	65.9%	3.700	74.0%	2.500	50.0%	1.307	0.281
	Some of the options I've chosen have been much more difficult to implement than I had expected.	3.118	62.4%	3.400	68.0%	2.500	50.0%	0.728	0.489
Deciding	I tend to have a strong "gut instinct" about problems, and I rely on it in decision-making.	3.029	60.6%	2.900	58.0%	2.500	50.0%	0.270	0.765
	I take the time needed to choose the best decision-making tool for each specific decision.	3.441	68.8%	3.300	66.0%	4.000	80.0%	0.416	0.662
	I determine the factors most important to the decision.	3.529	70.6%	3.700	74.0%	4.000	80.0%	0.342	0.712
	I use those factors to evaluate my choices.	3.471	69.4%	3.400	68.0%	4.500	90.0%	1.225	0.304
Checking the Decision	After I make a decision, it's final – because I know my process is strong.	3.353	67.1%	3.700	74.0%	3.000	60.0%	0.869	0.427
	If I have doubts about my decision, I go back and recheck my assumptions and my process	3.588	71.8%	3.100	62.0%	4.000	80.0%	0.805	0.454
Communicating and Implementing	Before I communicate my decision, I create an implementation plan.	3.000	60.0%	2.900	58.0%	3.500	70.0%	0.251	0.779
	When communicating my decision, I include my rationale and justification.	2.882	57.6%	3.400	68.0%	4.500	90.0%	3.390	0.043
	I emphasize how confident I am in my decision as a way to gain support for my plans.	3.353	67.1%	3.900	78.0%	3.000	60.0%	1.612	0.211

Source: The researcher's preparation based on the questionnaire data and outputs (SPSS)

- It is clear from the table that there is only one item in which the value of F-Test = 3.390 and P-Value (Sig) = 0.043 has statistically indication and is the second item of the last sub-axis (communicating and implementing) where obviously the sample indicates that when communicating the decision adds logical and formulated justifications for the decision. We find that the poor students in critical thinking of this feature indicate that they have 57.6% and those who have a good level of critical thinking indicate of 68%, while the level of excellent students in critical thinking indicates the availability of the

highest degree compared to the rest of the levels, that is, 90%. The acquisition degree increases, when the level of the sample increases in critical thinking skills. We can say that increasing the possession of the sample of the skills of critical thinking will increase their abilities to make decisions and add justifications and rationale for decision-making.

- ❖ This gives a hint that there may be a relationship between critical thinking skills and decision-making skill and needs to be studied in more depth and detail.
- As for the rest of the items, the value of F-Test is without statistical indication. This reinforces the reference to the level of critical thinking does not effect of the decision-making skill of students of Yemen American Institute.

Conclusions

1. There is no relationship between the acquisition of critical thinking skills and the decision-making skills of graduate students.
2. Students' critical thinking skills are clearly weak, and this will be reflected in their level of effectiveness in life and will make them more vulnerable to rumours and lies.
3. The low level of critical thinking skills makes the individual dependent on others and not an independent in his/ her opinion.
4. Regardless of whether critical thinking and decision-making are related or separate, critical thinking is the process by which one can make a systematic and logical decision.
5. A society whose members lack of critical thinking is a fragile and superficial society.

Recommendations

- 1- Raising awareness in the family, school and college of the importance of respecting one's mind
- 2- Educators have to encourage individuals/students on constructive criticism, analysis and evaluation of ideas, facts, information ... etc.
- 3- Studying and learning critical thinking and decision-making skills in a systematic study from the elementary stages.

- 4- Paying attention to the practical application of decision-making skill from an early age.
- 5- Promoting the principle that each individual is responsible for his/her decision.

The Questionnaire

Dear, Respondent

I am conducting a research that aims to investigate:

(Acquiring Critical Thinking Skills and Its Relationship with Decision – Making Skill)

This research comprises three parts as follows:

1. personal variables.
2. international test for measuring the critical thinking skills.
3. questionnaire for measuring decision-making skill.

Your responses to the test and questionnaire will be treated with utmost confidentiality, the responses will be used and analyzed for the academic purposes only.

Thanks for your kind cooperation

Researcher:

Dr. Arwa Abdullah farae

FIRST PART: Measurement of some personal variables

1. Sex:

Male (), Female ()

2. Age:

- 18 – 28 ()
- 29 – 39 ()
- 40- 50 ()

3. Education level:

- Secondary S. ()
- Bachelor ()
- Master ()
- Doctorate ()

4. Marital Status:

- Single () Married ()

5. Occupation:

- Student () Employee ()

SECOND PART: Measuring the Critical Thinking Skills.

DIRECTION:

There are four passages in this test. Each passage is followed by several questions. After reading a passage, choose the best answer to each question by circling the corresponding answer option. You may refer to the passages as often as necessary.

Passage I

Keepit, Givit, and Wait are discussing whether to make regular voluntary donations to charitable organizations. Keepit: I ought not contribute to charities. What 5 good would it do? My contribution would never be noticed as part of a million-dollar budget. But that same amount of money would be very noticeable if kept in my own family budget; that's where it makes the biggest difference, and hence does the most substantial good. In any case, our first moral obligation is always to the well-being of our own families. My family would rightly resent my favoring strangers over them. Given my level of income, any money of mine that is not needed for their present well-being should be saved for their future.

Givit: People have a right to have their most basic needs satisfied. Rights entail obligations. So anyone who has more than enough money to satisfy his or her own basic needs has a constant moral obligation to help meet the most basic needs of others. Hence, we are each morally obliged to contribute to charities, and to refuse is blameworthy.

Wait: I haven't decided what to do yet. I agree that it is good to contribute; still, it is not morally obligatory for us. Our money comes from wages we earn by our own labor, utilizing our own abilities. And so long as people don't use the money to harm others, they are morally entitled to put earned wages to whatever use they choose. People who contribute hard-earned money to charities deserve praise. But no one should be blamed for not contributing such money.

Givit: Some people are not as lucky as you: their abilities are fewer, or their legitimate needs are greater. For example, some people are born with serious physical or mental disabilities; others require expensive medical treatments. Why should they suffer for such accidents of fate? When our economic system provides you with luxuries while failing to meet their most basic needs, you are getting more than your fair share. I'm not saying that money should be taken from you by force, but I am saying that you have a constant moral obligation to help right such wrongs.

Wait: Your principles go too far. Suppose we do have a constant moral obligation of the kind you describe. Then even if people act morally, they will find themselves with a continuing

obligation to keep giving until they can just barely satisfy their own most basic needs. Be honest. We are all planning to buy season football tickets, which are not basic needs. Do you think we are obliged to forgo the tickets and give the money to charity instead?

Keepit: The economic system may treat some people unfairly, but that does not mean that I am obliged to help them at the expense of my own family.

The wealthiest 5 percent own 35 percent of the country's wealth, so obviously they have more money than they can use for their own families. And if they would contribute just a tenth of that wealth, charities would have all the money they need. Thus, there is no need for ordinary people like us to contribute, and hence no obligation.

1. Keepit's stated principles entail that:

- a. people who have no families have no moral obligations.
- b. Keepit is not morally obligated to contribute earned wages to charities.
- c. every action is either praiseworthy or blameworthy.
- d. it is fair to pay people on the basis of their abilities as well as their labor.

2. Wait states that so long as people don't use the money to harm others, they are morally entitled to put earned wages to whatever use they choose. In making this statement, Wait is:

- f. trying to establish that Wait, Keepit, and Givit are not morally obligated to contribute to charities.
- g. trying to establish that it is good to contribute to charities.
- h. trying to establish that charities should receive money from sources other than earned wages.
- j. contradicting Wait's own claim that those who contribute hard-earned money to charities deserve praise.

3. Givit's argument assumes, although it does not explicitly state, that:

- I. Keepit, Givit, and Wait each have more than enough money to satisfy their most basic needs.
- II. contributing to charities is a way to help some people satisfy their most basic needs.
- III. if people refuse to contribute to charities voluntarily, governments should force them to contribute.
 - A. I only
 - B. II only

- C. III only
D. I and II only
4. Keepit states that the truly wealthy have more money than they can use for their own families. Which of the following is NOT true of Keepit's statement?
- F. It is part of Keepit's attempt to establish that there is no need for ordinary people to contribute to charity.
G. It is consistent with Keepit's claim that charities would have all the money they need if the truly wealthy would contribute one-tenth of their wealth.
H. It supports Givit's claim that we each have a moral obligation to contribute to charities.
J. It is part of Keepit's attempt to refute Givit.
5. Which of the following, if true, would most substantially weaken Keepit's argument for not contributing?
- A. Keepit does not really want to contribute.
B. If Keepit were to contribute, the contribution would go entirely to a needy family who otherwise would not have received assistance.
C. Rights entail responsibilities.
D. The wealthiest 5% own much more than 35% of the country's wealth.
6. Keepit's argument for the conclusion that there is no need for ordinary people to contribute to charity is subject to a reasonable objection on the grounds that:
- F. the wealthy must spend some of their money on their own families.
G. it may not be possible to induce the wealthiest 5% to contribute one-tenth of their wealth to charity.
H. Keepit assumes that the wealthy have not earned their wealth.
J. the conclusion is not relevant to Keepit's main point.
7. Which of the following best explains why Wait's reference to the season football tickets is relevant to a logical evaluation of Givit's argument?
- A. It implies that Givit is a hypocrite.
B. It illustrates a possible consequence of Givit's position concerning the extent of the obligation to help those in need.
C. It demonstrates an inconsistency in Givit's position concerning one's obligations to one's family.

- D. It indicates that Givit overestimates the willing-ness of others to join with him in rendering substantial charitable aid.
8. Keepit and Wait clearly agree, while Givit clearly denies, that:
- F. Keepit should not be blamed for refusing to contribute.
 - G. contributing to charities is an ineffective way to help those in need.
 - H. the first moral obligation is to one's own family.
 - J. the present economic system is fair.

Passage II

The college at which Professor Burke teaches regularly asks students to evaluate faculty teaching performance. The announced purpose of these evaluations is to give information to faculty about their strengths and weaknesses as teachers, and to allow those who make decisions about salary increases and promotions to reward the better teachers. Professor Burke, who never does very well on those evaluations, recently wrote the following letter of objection to the college president: "It has become common practice in many colleges and universities for students to write formal evaluations of their professors and submit these to those who make salary and promotion decisions. Of course we do that here as well. This practice is supposed to provide valuable evidence both to faculty members and to decision makers regarding how well the faculty are teaching their courses. Despite all that, I believe this practice has so many undesirable consequences that it ought to be abandoned. I grant that those who advocate the use of student opinion surveys as a way of evaluating teaching have laudable goals. However, they have overlooked the disastrous effects which inevitably flow from this practice.

In order for students to learn effectively, two 25 requirements must be met: Students must be informed when they are in error, and they must be challenged to stretch their minds as far as possible. But this requires faculty members to be frank in criticizing student work. It also requires faculty members to set high standards so as to challenge all students to develop fully. Should a faculty member come to fear that being critical toward student work will result in loss of salary raises and denial of promotions, that faculty member is not likely to make critical comments when they are needed.

Should a faculty member come to fear that maintaining high academic standards will also result in loss of raises and denial of promotions, that faculty member is not likely to set high standards. These things are exactly what happens when student evaluations are used by colleges to help make salary and promotion decisions. These things are happening here.

It doesn't take long for a faculty member to dis-cover that many students react negatively to criticism, and that most students feel quite put upon when they are expected really to strive in a course outside of their major fields. True, some students do respond positively to a challenge, and many take criticism well, but what about those who don't? By not being critical and by having low standards, a faculty member can keep every student happy. By being critical and setting high standards, a faculty member runs the risk of making only a few students happy. There is no payoff for the faculty member in alienating a significant number of those who will be filling out the course evaluation form at the end of the term, when the results of those forms will be considered in future decisions about the faculty member's career advancement. Several of my colleagues have deliberately lowered their standards in order to curry student favor on these evaluations, and I note they have done far better than I in getting raises in recent years.

Because of these factors, student evaluation of college faculty represents an important pressure to lower academic standards. Such erosion in standards of achievement tends, of course, to promote a general climate of mediocrity in which no one expects of any student anything more than average performance. Students who have the ability to do better than average lose out from this process by not being encouraged to become all they can be. And society simply cannot afford to continue to allow this weakening of our educational system when the crying need is for ever larger numbers of well-trained, well-educated citizens.

Thus, for the benefit of students and society alike, we must stop using student opinion surveys to evaluate college faculty performance for salary and promotion decisions. It would be far better to ask certain selected faculty members to write evaluations of the teaching performance of other faculty members, based on class-room visits. This would avoid the difficulties described above and give us expert, objective opinions about teaching performance, which could be used as evidence for making salary and promotion decisions.

I urge you to take whatever action is necessary to bring about these changes on our campus."

9. Which of the following is a conclusion which Professor Burke argues for in this passage?
- A. There is a crying need for large numbers of well-trained, well-educated citizens in our society.
 - B. Some of Burke's fellow faculty members lowered their standards in order to get better student evaluations of their teaching.
 - C. The practice of using student evaluations of teaching performance as evidence for faculty salary decisions has very undesirable consequences.

- D. If a faculty member fears that maintaining high standards will result in loss of salary raises, that faculty member will not be likely to maintain high standards.
10. From what is said in this passage, we can see Professor Burke explicitly assumes without argument that:
- F. students today are less academically ambitious and more critical of their instructors than students used to be.
 - G. effective student learning requires that students be told of their mistakes.
 - H. administrators believe all the negative comments made by students about faculty teaching.
 - J. students lack the background necessary for making accurate judgments regarding faculty knowledge of course subject matter.
11. Burke claims that a faculty member can keep every student happy by not being critical and by having low standards, while that faculty member can make only a few good students happy by being critical and having high standards. What's the immediate point of these remarks?
- A. When a faculty member is critical and has high standards, that benefits only a few good students.
 - B. Unfortunately, there are more weak than good students attending the college where Burke teaches.
 - C. Using student evaluations for making salary and promotion decisions leads to desirable results.
 - D. There is no reward for the critical faculty member with high standards in a school that uses student evaluations in salary and promotion decisions.
12. Burke mentions some colleagues who lowered their standards and subsequently received higher raises than Burke. In order to make the overall argument as logical as possible, what does Burke need to establish with respect to these cases?
- F. That these teachers are not as good at teaching as Burke
 - G. That the higher raises were due in part to the lowering of academic standards mentioned
 - H. That the higher raises were not merely some sort of accidental quirk in the salary system
 - J. That the standards maintained by these faculty before they lowered their standards were unreasonably high

13. Although the passage does not explicitly say so, Burke is apparently assuming that:
- A. students generally feel that faculty criticism of their work is unfairly harsh.
 - B. students who react negatively to criticism and challenge will not give a favorable rating to the teaching of demanding instructors.
 - C. most faculty members at Burke's college have lowered their standards in response to pressures created by student evaluation of instruction.
 - D. being willing to criticize student work when needed and maintaining high academic standards are the two most important aspects of good teaching.
14. Given what Burke says in the passage, which of the following statements would Burke most likely agree with?
- F. Student evaluations of faculty performance provide useful information for decision making about faculty salaries and promotions.
 - G. All students desire their college courses to be less demanding than reasonable faculty members do.
 - H. There are disadvantages associated with the use of student evaluations as evidence in salary and promotion decisions.
 - J. There is a real danger that students will deliberately use evaluations of faculty performance to lower academic standards.
15. Which one of the following, if known to be true, would do the most to undermine Burke's argument in favor of having faculty, rather than students, evaluate teaching performance?
- A. Faculty are generally reluctant to have other faculty members visit their classrooms.
 - B. Most faculty members who would do the evaluating believe in upholding reasonably high academic standards.
 - C. Most faculty members who would do the evaluating believe that it is possible to be too highly critical of student work.
 - D. Because of personal relationships between faculty members, those who would do the evaluating could not be good judges of teaching performance.
16. In a school that uses student evaluation of instruction as evidence in salary and promotion decisions, according to Burke, the following three items are related to one another:
- I. Faculty members fear that being critical of student work will have bad career consequences for the faculty member.
 - II. Faculty members experience negative student reaction to criticism of student work.

III. Undesirable educational practices are pro-moted at the institution.

Which of the following represents the most satisfactory summary of the logical relations between I, II, and III as Burke sees them?

- F. I and II cause III.
- G. I promotes II, and II causes III.
- H. II causes I which then results in III.
- J. III causes II which in turn results in I.

Passage III

Silver is an attorney specializing in criminal defense. In a conversation with her friends Brown, Green, and Gray, she mentioned that she has recently become utterly convinced of the guilt of one of her clients, a client who has not yet gone to trial but insists on pleading not guilty. Brown, Green, and Gray are dis-cussing Silver's moral obligations in such a case.

Brown: If I were Silver, I would withdraw from the case. If she continued to serve as the client's attorney, she would have a moral obligation to her client, based on the implicit promise involved in the attorney/client relationship, to do her best to win an acquittal. But that obligation would conflict with an absolute moral obligation she has to her fellow citizens, and shares with them: the obligation not to hinder the conviction of persons one strongly believes to be guilty. She cannot cancel that obligation to her fellow citizens, but she can cancel the obligation to her client—by withdrawing from the case. Moreover, to defend her client, she would have to argue contrary to her beliefs, which is dishonest. But dishonesty is always wrong. So it is her duty to withdraw.

Green: And what good will that do? Any defendant can always easily get another attorney who will keep the case and fight for an acquittal. Suppose the new attorney wins an acquittal, and Silver's client then goes on to commit more crimes. Part of the responsibility for those crimes would rest with Silver, since she can prevent them by keeping the case and seeing to it 30 that her client is convicted and punished, as all criminals should be. For example, she could subtly highlight inconsistencies in her client's story, and refrain from introducing misleading evidence of innocence. She could intentionally be less aggressive than usual in cross-examination, and give less than her best effort in her closing arguments to the jury. After all, no one can ever have an obligation to protect criminals from the just consequences of their actions. Her highest obligation is to the public good, the general welfare of people.

It is not enough for Silver to wash her hands of the case and thereby make it someone else's problem. In order to fully protect the general welfare, she must see to it that her client is convicted.

Brown: But that would be dishonest—perhaps even more dishonest than defending a client whom she knows to be guilty. If Silver did what you suggest, she would have to mislead both her client and the judge about her true aims in the case. For if she admitted to her client what she was trying to do, the client would fire her for self-interest; and if she admitted to the judge what she was trying to do, the judge would be legally bound to remove her from the case.

Green: Don't you sometimes pay compliments that are insincere? Wouldn't you lie to an enemy in order to protect the lives of your friends? But I am not even advising Silver to tell a lie—just to keep the truth about her intentions to herself.

Gray: I agree with Green that Silver should not withdraw. After all, the vast majority of criminal defendants in this country are guilty—if they weren't, there would have to be something very wrong with our police or prosecutors. If defense attorneys withdrew every time they became convinced of their clients' guilt, the legal system would become a shambles. And many defendants wouldn't even be able to find attorneys willing to keep their cases. But I also agree with Brown that Silver has a duty to give her client her best effort to win acquittal if she remains. That is because human history shows by direct examination that, of the various systems tried, the best criminal justice system is one that works as a true adversary system, where each side strives skillfully to present a persuasive and successful case. Such a system tends ultimately to produce correct decisions more consistently than any other, and hence, best serves the general welfare; that is why we adopted an adversary system in the first place. When one side does less than its very best, the criminal justice system does not work as effectively; and so, in the long run, justice is not served as often. The guilt or innocence of the accused is for the jury to decide—it is not even for the judge to decide, let alone for the competing attorneys. An attorney's job is to formulate the strongest case available for whichever side the attorney is given to represent. If the attorney does that, then his or her whole duty in the case has been fulfilled, and he or she is blameless. Silver should keep her client and do her best to win an acquittal.

17. Gray disagrees with Brown's claim that:

- A. short-term benefits usually outweigh long-term benefits.
- B. Silver's decisive moral obligation is to the public welfare.
- C. it is Silver's duty to withdraw from the case.
- D. Silver should allow her own judgment of her client's guilt or innocence to guide her actions.

18. If human history shows by direct examination, as Gray claims, that of the various systems tried, a true adversary system makes more consistently correct decisions than any other kind of criminal justice system, which of the following must be true?
- The present criminal justice system was never intended to be a true adversary system.
 - Human history contains examples of criminal justice systems that are not true adversary systems.
 - There is a way of evaluating how consistently a criminal justice system makes correct decisions.
- F. II only
G. III only
H. II and III only
J. I, II, and III
19. By using a parallel argument adapted to the case of judges, Green could argue equally well from his stated principles that judges should:
- not disqualify themselves from cases in which they have a financial interest.
 - not disqualify themselves from cases in which they have a personal relationship with the victim.
 - try to influence juries to convict defendants whom the judges know to be guilty.
- A. II only
B. III only
C. I and II only
D. I, II, and III
20. Brown and Green evidently disagree about which of the following principles?
- If attorneys accept cases, then they should do their best to win them.
 - Attorneys should always act ethically.
 - Our legal system, as presently constituted, is a true adversary system.
 - People generally act from self-interest.
21. Gray's remark (lines 59–60) that "the vast majority of criminal defendants in this country are guilty" is relevant to his argument because it:
- expresses a lack of confidence in police and prosecutors.
 - suggests that defense attorneys will frequently become convinced of their clients' guilt.

- III. supports the claim that our present legal system was intentionally adopted as a true adversary system.
- A. I only
B. II only
C. III only
D. I, II, and III
22. Which of the following, if true, would do the most to strengthen Gray's overall argument and weaken Green's argument?
- F. Some innocent clients have an attorney who believes that the client is guilty.
G. Attorneys very often judge a client to be innocent when in fact the client is guilty.
H. Police and prosecutors do their jobs effectively on the whole.
J. Most attorneys would concur with Gray's advice.
23. Which of the following claims does Brown make without offering supporting argumentation?
- A. Silver has a duty to withdraw from the case.
B. Silver would have to act dishonestly if she were to follow Green's advice.
C. Silver wants to behave honestly.
D. A judge would be legally bound to remove Silver from the case if she admitted to the judge that she was not trying her best to acquit her client.
24. Green's two questions, about insincere compliments and lying to one's enemies (lines 53–55), are relevant to establishing the correctness of Green's conclusions to the extent that the questions:
- F. suggest that Brown is a hypocrite.
G. indicate that lying is only one kind of dishonesty.
H. show that Brown's argument contradicts itself.
J. imply that dishonesty may sometimes be morally permissible when its consequences are beneficial.

Passage IV

Senator Support proposed a bill in the Senate that would forbid TV stations from broadcasting commercials directed at children under thirteen years of age. In support of the bill, Support argued: I feel that advertising aimed at young children takes unfair advantage of their undeveloped reasoning

abilities and encourages bad thinking. Commercials aimed at young children should be banned. My bill would do that. Research has shown that young children are often unable to discriminate good arguments from subtly bad ones. The arguments in TV commercials are, of course, predominantly bad, the main argument being, in essence, "Look at this image. If you like the image, buy this product." Children like my young son aren't sophisticated enough to know that this is a bad argument. Advertisers are taking advantage of children's ignorance, and that is utterly despicable.

Furthermore, TV ads encourage bad thinking habits. As you know, young children are impressionable, but we are showing them bad arguments like those in TV commercials. So they are bound to start thinking badly. A cereal commercial, for instance, will direct children to look at the characters and images associated with the cereal rather than at the ingredients. More generally, commercials encourage children to evaluate a product on the basis of images associated with the product rather than on the basis of the product's ingredients and utility.

I am sure that Senator Oppose will object to this bill, but I hope you will find her arguments unconvincing.

After Senator Support's speech, Senator Oppose stood to defend an opposing position: I can't approve of Senator Support's attempt to shield young children from advertising. His bill is vague, poorly supported, and unrealistic.

It is vague because it provides no clear and explicit criteria for distinguishing ads aimed at young children from ads aimed at teenagers. Without any specific criteria, regulators won't be able to decide what to forbid. Consequently, the bill would be unenforceable.

As if this were not enough, the bill is also poorly supported by evidence and argument. On the one hand, there is no scientific evidence to support the contention that ads encourage bad thinking. Indeed there are no studies which show that commercials have any harmful effects on children. On the other hand, none of Senator Support's arguments are satisfactory. First, commercials don't take unfair advantage of children since children can, to a large extent, distinguish good arguments from poor ones. Second, commercials don't encourage bad thinking because they rarely involve bad arguments. There's nothing wrong, for example, with, "Here's an image. If you like the image, buy this product." I suspect that many senators have acted on the basis of such arguments. So Senator Support's arguments are not just inconclusive, they're wrong.

To conclude, I would like to point out some of the implications of the bill that make it politically unrealistic. First, of course, child advertising would stop. But then so would child programming, since commercial stations would have no child-based income. Children would then not know what to do

with their time, so parents would become angry with us. For economic reasons, manufacturers and retailers would also be upset with us. Considering that the bill is also vague and poorly supported by evidence or argument, I don't think it's worth enduring the anger of so many interests.

25. In his speech, Senator Support's main conclusion is that:
- A. commercials aimed at young children should be banned.
 - B. it is unfair to aim commercials at people who can't reason well.
 - C. commercials with bad arguments encourage children to think badly.
 - D. the bill is politically, socially, and economically unrealistic.
26. When Senator Support says (lines 17–19) that taking advantage of ignorance "is utterly despicable," he is probably:
- F. condemning ignorance.
 - G. concluding that his son is ignorant.
 - H. concluding that all children are ignorant.
 - J. appealing to the emotions of the audience.
27. Suppose Senator Support's reasons for his belief that advertising has a detrimental effect on children are wrong. Would that show that advertising has no detrimental effects on children?
- A. Yes, because bad reasons often yield incorrect conclusions.
 - B. Yes, because advertising has not been proven to have a detrimental effect on children.
 - C. No, because good reasons may support contrasting conclusions.
 - D. No, because reasons can be wrong when the conclusion is correct.
28. What would Senator Support probably need to assume in order to apply his arguments to the proposal that all commercials should be banned?
- F. If all commercials are banned, then bad arguments will not appear on TV.
 - G. Commercials often encourage people to buy luxuries rather than necessities.
 - H. Commercials are irritating interruptions in viewing, and they irritate everyone, not just children.
 - J. People of all age groups are impressionable and unable to discriminate good arguments from subtly bad ones.
29. According to the passage, which of the following is the main reason why Senator Oppose thinks that the bill would be unenforceable?
- A. The bill is too vague.
 - B. Powerful interest groups would be upset.

- C. The bill would, in effect, ban child advertising.
- D. Commercials contain relatively few bad arguments.
30. Senator Oppose says that without child programming, children would not know what to do with their time. Which of the arguments below would probably be the most effective reply to this statement?
- F. At any point in time, every child is doing some-thing, be it eating, sleeping, thinking, or some-thing else. So children would always be doing something with their time, even without TV.
- G. If Senator Oppose is considering teenagers as children, she is wrong. If Oppose is excluding teen-agers, she is contradicting herself.
- H. You are assuming that children do not value their time. Based on my experience with children, I know that assumption is false.
- J. In many parts of the world, children still have no television but find things to do with their time. So children can find things to do with their time.
31. In mentioning that no studies show that commercials damage children (lines 49–51), Senator Oppose seems to assume, but does not say, that:
- A. commercials are valuable for purposes of entertainment.
- B. if commercials have known harmful effects, they should be banned.
- C. if commercials have no known harmful effects, they should not be banned.
- D. if commercials are not banned, then they have no known harmful effects.
32. What conclusion follows necessarily from these two premises?
- I. If the bill passes, child advertising will stop.
- II. Once child advertising stops, commercial stations won't be able to make a profit from child programming.
- F. If the bill passes, commercial stations will not show child programming.
- G. If child advertising stops, it will be because the bill passed.
- H. Passing the bill would be a disaster for child programming.
- J. If the bill passes, then child programming would be unprofitable for commercial stations.

THIRD PART: MEASUREMENT OF THE DECISION-MAKING SKILLS

INSTRUCTIONS:

For each statement, select the column that best describe you, please answer question as you actually are (rather than how you think you should be), and do not worry if some questions seem to score in the wrong direction.

statements to Answer	Not at All	Rarely	Some times	Often	Very Often
1. I evaluate the risks associated with each alternative before making a decision.					
2. After I make a decision, it's final – because I know my process is strong.					
3. I try to determine the real issue before starting a decision-making process.					
4. I rely on my own experience to find potential solutions to a problem..					
5. I tend to have a strong "gut instinct" about problems, and I rely on it in decision-making.					
6. I am sometimes surprised by the actual consequences of my decisions.					
7. I use a well-defined process to structure my decisions.					
8. I think that involving many stakeholders to generate solutions can make the process more complicated than it needs to be.					
9. If I have doubts about my decision, I go back and recheck my assumptions and my process.					
10. I take the time needed to choose the best decision-making tool for each specific decision.					
11. I consider a variety of potential solutions before I make my decision.					
12. Before I communicate my decision, I create an implementation plan.					
13. I tend to support my friends' proposals and try to find ways to make them work.					

14. When communicating my decision, I include my rationale and justification.					
15. Some of the options I've chosen have been much more difficult to implement than I had expected.					
16. I prefer to make decisions on my own, and then let other people know what I've decided.					
17. I determine the factors most important to the decision					
18. I use those factors to evaluate my choices.					
19. I emphasize how confident I am in my decision as a way to gain support for my plans.					

END OF QUESTIONNAIRE

THANKS FOR YOUR KIND COOPERATION

- هذه الورقة لا تتبع الاستبيان وهي خاصة بحساب نتائج الاستبيان

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Correct Answers for sample Critical Thinking Test Questions

Sample passage 1: Charitable Donations Debate

Question N	Correct Answer	Content Category
1	B	Extending an Argument
2	F	Analyzing an Argument
3	D	Analyzing an Argument
4	H	Analyzing an Argument
5	B	Extending an Argument
6	G	Evaluating an Argument
7	B	Analyzing an Argument
8	F	Analyzing an Argument

Sample Passage 2: Faculty Evaluations

Question N	Correct Answer	Content Category
9	C	Analyzing an Argument
10	G	Analyzing an Argument
11	D	Analyzing an Argument
12	G	Evaluating an Argument
13	B	Analyzing an Argument
14	H	Analyzing an Argument
15	D	Extending an Argument
16	H	Evaluating an Argument

Sample Passage 3: Moral Obligation

Question N	Correct Answer	Content Category
17	C	Analyzing an Argument
18	H	Evaluating an Argument
19	B	Analyzing an Argument
20	F	Analyzing an Argument
21	B	Analyzing an Argument
22	F	Extending an Argument
23	D	Evaluating an Argument
24	J	Evaluating an Argument

Sample Passage 4: Commercial Children

Question N	Correct Answer	Content Category
25	A	Analyzing an Argument
26	J	Analyzing an Argument
27	D	Evaluating an Argument
28	J	Evaluating an Argument
29	A	Analyzing an Argument
30	J	Extending an Argument
31	C	Analyzing an Argument
32	J	Evaluating an Argument

The third part:: a tool to measure decision-making skill:

And in this part a mind tool for decision making has been used, after making some adjustments. It consists of 19 item, and six axes as follows:

1. Establishing a positive decision-making environment (3,7,13,16)
2. Generating potential solutions. Items which measure it are No (4,8,11)
3. Evaluating the solutions. Items which measure it are No. (1,6,15)
4. Deciding. Items which measure it are No. (5, 10, 17)
5. Checking the decision. Items which measure it are No. (2,9)
6. Communicating and implementing. Items which measure it are No. (12, 14, 18,19)

-There are three levels for decision-making skill

1. weak (from 18- 42)
2. good (from 43- 66)
3. excellent (from 67- 90)

-The degree of response is as follows:

- very often (5 degree) - often (4 degree)
- sometimes (3 degree) - rarely (2 degree)
- not at all (one degree)

The Margins

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