



**USING ANALYTICAL THOUGHT PROCESS TO DEVELOP  
INSTRUCTIONAL RUBRICS IN WRITING DOCTORAL  
DISSERTATION RESEARCH PROBLEM STATEMENTS –  
A FOLLOW-UP STUDY**

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**ABSTRACT**

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Aim/Purpose	The purpose of this paper is to develop instructional rubrics that help in writing and evaluating doctoral dissertation research problem statements.
Background	This is a follow up study. In the first paper (Ali & Pandya, 2021), we introduced a model for writing a research problems statement that takes the students through four phases to complete their writing. In this paper, we introduce an instructional rubric to be used for helping to writing the research problem statement.
Methodology	This paper builds on the previous model, adding to it Socratic questions to trigger critical thinking to help with writing of research problem statement.
Contribution	Developing the instructional rubrics is the contribution of this study. The instructional rubrics can help with the writing of a research problem statement.
Findings	Writing a research problem statement is difficult by itself. Following the methodological approach suggested in this study will help students with the task of writing their own. Following this instructional rubric will help more with the writing.
Recommendations for Practitioners	A methodological approach to writing a research problem statement is helpful in mitigating the difficulties of writing the dissertation. This study tackles the difficulties with writing the research problem statement.
Recommendations for Researchers	More research is needed to give examples of research problem statement that shows the writing of the statement through the suggested phases.

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Impact on Society	The findings of this research will help doctoral mentors/advisors as they guide students in completing the writing of their research problem statement
Keywords	research problem statement, doctoral research problem, doctoral dissertations

## INTRODUCTION

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The purpose of this study is to develop an instructional rubric for the work submitted as a doctoral dissertation research problem statement. The intended rubric could be used to evaluate student work and as a learning and instructional tool to help students with writing the research problem statement.

This study builds on a previously published paper that introduced a model to help with writing of the research problem statement. Ali and Pandya (2021) discussed difficulties associated with the writing of a research problem statement and suggested breaking it down into four phases. Ali and Pandya introduced a model that intends to make writing the research problem statement more manageable and to provide guidance for each step in the writing process. This paper takes the previous study further in two ways: First, we use an analytical thought process to help shift the focus to the writing of the research problem statement. Second, we develop rubrics that help evaluate the learning process that goes into the writing of a research problem statement.

The remainder of this paper is divided into the following phases:

- First, the analytical thought process is introduced, listing what is involved and how it can be used in the writing of the doctoral dissertation
- This is followed by explaining the four phases of writing the research problems statement from our previous study and how using an analytical thought process can help shift the focus on the writing of each phase
- The third section elaborates on rubrics, their development and their use for assessment and analysis
- The fourth section links the principles of analytical thought process along with the principles of rubric development to build instructional rubrics for each of the four phases of the previous model developed by Ali and Pandya (2021).
- A summary of the study and suggestions for future research is finally presented

### *ABOUT ANALYTICAL THOUGHT PROCESS*

Analytical thought process (ATP) has been introduced at different levels in various fields of study. Experts suggest that ATP could contribute to successful completion of many tasks in different educational fields of study (Andrews, 2007; Nuroso et al., 2018). For instance, ATP helps with the completion of tasks in accounting/auditing (Plumlee et al., 2015), Mathematical Representations (Sukmaningthias & Hadi, 2016), nursing education (Simpson & Courtney, 2002), and music composition (Younker, 2000). While ATP was noted in general terms for contributing to completing tasks in these fields of study, Wilhelm and Kaunelis (2005) were more specific and suggested that employing ATP in the writing of doctoral dissertations helps with successful completion of the literature review chapter of the doctoral dissertation.

It is a well-known fact that ATP can help complete tasks large and small (Vyncke, 2012). However, the question could be asked “what is ATP?” and “how could it be used to complete tasks?” We start explaining ATP by stating that, as the name indicates, it is a process and what that means in terms in terms of the work to be done. Merriam-Webster’s dictionary (n.d.) defines a process as “a series of actions that produce something or that lead to a particular result.” These actions also define the flow of data (in this case flow of thoughts) that hold the process together. The particular result in this case is the completion of writing the dissertation research problems statement. The series of actions

in this study are the steps to follow so to develop the research problem statement. So, we need to define the steps that are helpful in writing the research problem statement.

Of course, as one can imagine, the Analytical Thought Process encompasses a wider range of concepts and tools used to utilize the analytical abilities of students in writing their research problem statement (Ribarsky et al., 2009). The range of concepts includes critical thinking, reasons for asking questions, methods of dialogue, and the relationship between two or more constructs. Extended analysis of these concepts is explored in the following section. After that, we will go back and discuss the analytical thought process along with the dissertation writing.

### ***CRITICAL THINKING***

Critical thinking is a term that is repeated often in literature but there is confusion and disagreement on what it means; something that can be considered critical thinking in one situation may not be critical thinking in another (Huber & Kuncel, 2016; Vyncke, 2012). Facione (2011) gave some examples of where critical thinking can be used:

- Good attorney or interviewer
- Clever investigative approach used by police detectives or and crime scene analyst
- People working together to solve a problem as they discuss and consider their options
- The trait of listening to all sides of a dispute, considering all facts, deciding what is relevant and what is not, and then rendering a thoughtful judgement
- The ability to summarize complex ideas clearly with fairness to all sides
- A person who can come with the most coherent and justifiable explanation of what is written in a passage
- The person who can clearly device sensible alternatives to explore but is agnostic as to which alternative is used and not defensive about abandoning them if they do not work.
- A person who can explain exactly how a particular conclusion was reached.

A note to be made here is that the traits above could be considered good critical thinking skills by some, while not as such by others. Despite such disagreements, educators note repeatedly the importance of teaching critical thinking as an important life skill that will help students in their future workforce (Huber & Kuncel, 2016). One tool that is used in academia for encouraging students to use their critical skills (or analytical thought process) is through the questions that are asked of the students (Hong & Jacob, 2012). This leads to the discussion of Socratic Questioning.

### ***SOCRATIC QUESTIONING***

Asking questions is critical to the teaching/learning process. It forms the cornerstone of what would mark the understanding of the subjects being taught (Paul & Binker, 1990). There are a variety of reasons that questions are asked in the classroom. Blosser (1991) suggested the following as some reasons why educators ask questions: help student review, check on comprehension, stimulate critical thinking, encourage creativity, emphasize a pointer, encourage discussion, challenge a construct/concept, and think outside the box.

What is of interest to this study from Blosser's list above is that questions are asked to stimulate critical thinking. Once critical thinking is stimulated, it can progress to the next step, which is suggestion of solutions to the problem at hand (Yang et al., 2005). But critical thinking does not always manifest naturally, and frequently, it must be triggered. *Socratic questioning*, which can serve as the trigger, is a concept widely used in academia (Paul & Elder, 2007).

Socratic questioning is named after the Greek philosopher Socrates, and it was thought of as the heart of critical thinking (Paul & Elder, 2008). Paul and Elder also noted that understanding concepts embedded in critical thinking naturally generates questions. So, what can be learned from Paul and

Elder is that critical thinking could be connected to thinking like a philosopher. While the phrase “thinking like a philosopher” may sound intimidating and may make some reluctant to pursue, it is simpler than it sounds. We need to go back to learning more about Socratic questioning to explain how it could be used in helping write a doctoral dissertation.

Socratic questioning is a well-established therapeutic procedure that is intended to make the individual think and to stimulate creative thinking (Carey & Mullan, 2004). The type of questions asked and the method of asking them work as triggers in making students think. Facione (2011) gathered and categorized questions according to the purpose of asking them. Table 1 below shows a partial of list questions classified by Facione.

**Table 1 – Questions to trigger Critical Thinking Skills**

<i>Purpose</i>	<b>Sample Questions to ask</b>
<i>Interpretation</i>	<ul style="list-style-type: none"> <li>• What does it mean?</li> <li>• What’s happening?</li> <li>• How should we understand that (e.g., what he or she just said)?</li> <li>• What is the best way to characterize/categorize/classify this?</li> <li>• In this context, what was intended by saying/doing that?</li> <li>• How can we make sense out of this (experience, feeling, or statement)?</li> </ul>
<i>Analysis</i>	<ul style="list-style-type: none"> <li>• Please tell us again your reasons for making that claim.</li> <li>• What is your conclusion/What is it that you are claiming?</li> <li>• Why do you think that?</li> <li>• What are the arguments pro and con?</li> <li>• What assumptions must we make to accept that conclusion?</li> <li>• What is your basis for saying that?</li> </ul>
<i>Inference</i>	<ul style="list-style-type: none"> <li>• Given what we know so far, what conclusions can we draw?</li> <li>• Given what we know so far, what can we rule out?</li> <li>• What does this evidence imply?</li> <li>• If we abandoned/accepted that assumption, how would things change?</li> <li>• What additional information do we need to resolve this question?</li> <li>• If we believed these things, what would they imply for us going forward?</li> <li>• What are the consequences of doing things that way?</li> </ul>
<i>Evaluation</i>	<ul style="list-style-type: none"> <li>• How credible is that claim?</li> <li>• Why do we think we can trust what this person claims?</li> <li>• How strong are those arguments?</li> <li>• Do we have our facts right?</li> <li>• How confident can we be in our conclusion, given what we now know?</li> </ul>
<i>Explanation</i>	<ul style="list-style-type: none"> <li>• What were the specific findings/results of the investigation?</li> <li>• Please tell us how you conducted that analysis.</li> <li>• How did you come to that interpretation?</li> <li>• Please take us through your reasoning one more time.</li> <li>• Why do you think that (was the right answer/was the solution)?</li> <li>• How would you explain why this particular decision was made?</li> </ul>
<i>Self-Regulation</i>	<ul style="list-style-type: none"> <li>• Our position on this issue is still too vague; can we be more precise?</li> <li>• How good was our methodology, and how well did we follow it?</li> <li>• Is there a way we can reconcile these two apparently conflicting conclusions?</li> </ul>

The key is entering the Socratic spirit when one becomes generally curious, truly wondering what the students may or may not be thinking (Wulandari et al., 2018). Educators ask students questions that probe the students' thinking. The spontaneous discussions provide models of listening critically as well as exploring the briefs expressed (Carey & Mullan, 2004).

### ***SOCRATIC DIALOGUE***

Socratic dialogue is another technique used to stimulate critical thinking and to continue to talk to complete the analytical thought process (Hong & Jacob, 2012). The point of this dialogue is to continue the discussion with the student and continue asking questions, forcing the student to continue reflecting on an issue (Paul & Elder, 2008). The dialogue need not be subverted from the main point of the discussion and should continue following the Socratic questioning to further stimulate critical thinking.

To help during the Socratic dialogue and to continue to stimulate this critical thinking, the faculty may attempt to not give students direct answers while in dialogue. Instead, they offer questions in place of answers, consistent with the Socratic process. It must also be acknowledged, however, that the student may get tired, frustrated and even angry with this process of consistent and seemingly unending questioning. It is then incumbent on the faculty to continue patiently and tactfully but unrelentingly asking, until both the professor and the student realize that the one "correct" answer is only realized after all other solutions have been systematically and unequivocally ruled out.

### ***DISSERTATION WRITING AND CRITICAL THINKING***

Dissertation writing is considered a long, complex, and often cumbersome process (Grant & Osanloo, 2016). To complete a dissertation, the student may need to use all of what has been discussed so far. The process may be helped by doing the investigative work that is explained around critical thinking. It could also be helped by asking Socratic questions or involving the Socratic dialogue. It is recommended that this pattern and the following steps should be utilized in clarifying the research problem statement.

- Start with asking Socratic questions about the research problem statement,
- Get involved in the Socratic dialogue, and
- From that point continue the process until the research problem statement is phrased in an acceptable manner (logical, interpretive, and structured) and that it can form a clearer start to dissertation writing.

Ali and Pandya (2021) created a framework for writing the research problem statement that is phased into four stages. Socratic questioning can start the analytical thought process which then continues in unknown directions. However, what is known here is that different questions need to be asked for each of the four phases of writing the research problem statement. A clearer understanding of the four stages suggested by Ali and Pandya is warranted at this point.

## **THE FOUR STAGES OF WRITING A RESEARCH PROBLEM STATEMENT**

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The basic issue that can be taken into consideration is that writing a research problem statement is difficult for students (Faryadi, 2018; Jacobs, 2013). Doing the writing in one step can be challenging for a majority of the students. Instead, the suggestion by Ali and Pandya (2021) was to break down the process of writing a research problem statement into four stages. Each phase asks the student a series of questions, with the intent of activating the analytical process. This is similar to what is discussed in Socratic questions. In the following, we present the four stages suggested by Ali and Pandya - we first list general explanation of each phase and then combine all the information in one table to make it easier to view and retrieve.

**Phase 1 Crude Statement of the Problem:** In phase 1, introductory steps are taken to activate the thinking process. This first step has to do with the basics of writing of a problem statement (Williams, 2020). So, the focus needs to be placed on phrasing the cause-and-effect relationship of the research problem statement.

**Phase 2 Finding keywords in the statement:** The suggestions here are to review what was written in phase 1 and elaborate by searching for keywords. As keywords are identified, elaboration and discussion can continue. The use of Socratic questioning can help further stimulate critical thinking. Questions can be asked such as “What do you mean by \_\_\_\_\_?”, or “How this \_\_\_\_\_ is a problem?”. The blanks in both cases can include keywords so to elaborate on them.

**Phase 3 Using the Peel Approach:** By the PEEL approach we mean Point, Evidence, Explain and Link (Humphrey et al., 2015). This phase is more advanced, so students need be asked questions about the connection between what they have written in the first two phases with the other sections in the dissertation. At this phase students also need to demonstrate the significance of their proposed research. This can be done by listing citations in every paragraph. Faculty use the term “Naked paragraph” to refer to writing a whole paragraph without citing a reference. The intention here is to limit naked paragraphs. And questions may need to be asked to achieve this purpose.

**Phase 4: Putting it altogether:** This is the finalization phase, which involves supporting the statement with data and looking ahead for future writing and how the problem is connected to the other sections of the dissertation.

Table 2 below summarizes our suggestions in four phases that guide the students to write their research problem statement. The first column lists the phase numbers in order. The second column provides a name to that phase. The third column lists the questions that we deem helpful to ask at this stage. These questions are on Socratic methods of questioning to stimulate creative thinking based on our review we listed in the previous section.

**Table 2: Summary of the Four Stages of Writing the Research Problem Statement**  
(Ali & Pandya, 2021)

Adjustment stage	Suggestions for writing	Socratic Questions to ask
Phase 1	Phrasing the problem statement	What is the cause and what is the effect in the statement? Where can you find the research in the problem statement? How viable is the research problem statement (what are your time and resource constraints)?
Phase 2	Finding keywords to elaborate	What are the keywords in the problem statement? Are the keywords explained or elaborated on sufficiently in the statement? Do you have supporting literature to back that this is a problem that can be researched?
Phase 3	The PEEL approach	Are there naked paragraphs in your problem statement? Are you connecting the problem statement with research? Are you following writing conventions and APA in your statement of research problem?
Phase 4	Putting it all together	Do you have supporting data for a research worthy problem? How is the problem statement connected to other sections in the dissertation? Is the problem statement finalized in terms of writing conventions, viability, and research worthiness?

## ABOUT RUBRICS

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The use of rubrics has been practiced in academia as a scoring criterion for long (Agu et al., 2015; De Silva, 2014). Cabigao (2021) on the other hands identified three questions that could be answered by rubrics:

- 1- What do educators want students to know and be able to do?
- 2- How well do we want students to know and be able to apply or use a skill in a concept?
- 3- How well do teachers and other scorers determine when a learner knows a concept and does an activity well?

Some basic form of rubrics is meant to identify gradation quality for each criteria in the work submitted (Andrade, 2000). Rubrics are meant to be used for assessment first. Rubrics set the phase for standardizing the assessment process and could serve as assessment and learning tools (Brookhart, 2018). Not all rubrics are developed with learning in mind. Frequently, the attention of using rubrics has focused on assessment because of the way rubrics are formatted (Dawson, 2017). However, with some addition and modifications, assessment rubrics can be tweaked to form a learning tool. This section first explains the use of rubrics as an assessment tool and then their use as teaching tool. It elaborates on what is needed to be modified in the assessment rubrics to make them be used to promote learning.

### *THE ASSESSMENT RUBRICS*

A rubric is an effective assessment tool for educators that helps with establishing a consistent evaluation of student performance (Cabigao, 2021, Lovitts, 2007). The use of rubrics for assessment varies and could be applied for the evaluation of assignments, reports, presentations, and doctoral dissertations among others (Agu et al., 2015). In this paper, we refer to all what is assessed in rubrics as “rubrics to assess assignments.” In other words, assignment is meant as a general name to refer to reports, presentations, thesis, or anything else that is assessed by rubrics.

The format of a rubric varies but the basic layout contains of list of items in the assignment that will be judged in the rubrics (Stevens & Levi, 2013). A rubric also typically contains levels of performance for the items judged. Rating the level of performance could vary and groups of rating could be developed (Gentry, 2008, Reddy, 2007). Levels of rating could range from poor to outstanding. Each rating level is given a numeric score which then will be added with the others to make a total score for the assignment assessed by using the rubric (Jonsson & Svingby, 2007). Table 3 below shows a basic formatting for an assessment rubric:

**Table 3: Example of basic rubric sheet**

	Poor	Acceptable	Very good	Outstanding
Criteria 1				
Criteria 2				
Criteria 3				
Criteria 4				

### ***THE INSTRUCTIONAL RUBRICS***

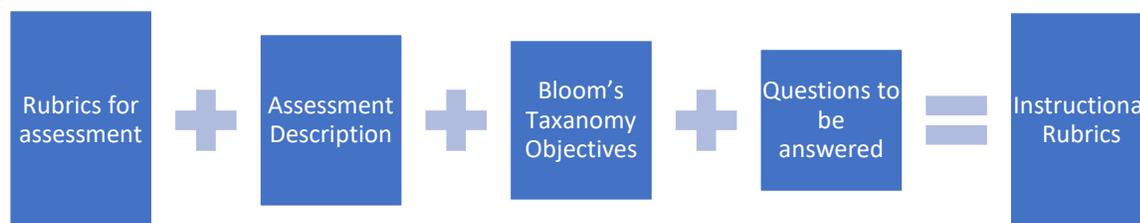
Although rubrics have been known to serve for assessment and evaluation, they can also be used for other purposes. Cabigao (2021), for example, suggested using rubrics for analysis and called it “analytic rubric.” Cabigao recommended using it for evaluation of writing at the graduate level because graduate courses require more writing.

Andrade (2000) on the other hands suggested using rubrics to promote thinking and learning. Andrade created a rubric sheet that has five evaluative criteria, and each criterion can be graded based on four gradation levels that range from a score of 1 for non-performance, low or poor to 4 for outstanding, exceptional or distinguished. The gradations of quality allow self-assessment by having the students answer questions related to each gradation of quality (Ari, 2021). In this section we discuss adapting the assessment rubric by adding elements that help with analytical thinking such that it can be applied to the Socratic process.

### ***ADDENDUM TO EVALUATIVE RUBRICS***

Our task here is to take assessment rubrics, add items to it that encourage critical thinking, and produce a learning rubric. We believe that adding three items to the already developed assessment rubrics could make it useful for use as a learning rubric. The three items we suggest adding are description of the assignment, objectives of the assignment, and questions - Socratic in nature - that could be asked to simulate creative thinking.

The description would be a standard item that can be taken from the instructions for an assignment. It is important to add the description because it helps provide perspective for the objectives and Socratic questions that are to follow. Adding objectives and Socratic questions is likely to encourage critical thinking as the students read the rubrics. A listing of clear objectives for each step is helpful. The objectives, if phrased using Bloom’s Taxonomy, could add a valuable layer of critical thinking. And questions asked within the rubric, if phrased according to Socratic formats, can help stimulate critical thinking. Thus, we are suggesting adding these objectives to the rubrics sheet (Adams, 2015; Forehand, 2005). Figure 1 below depicts our thinking regarding additions to an assessment rubric, thereby making it useable as an instructional rubric.



**Figure 1 – Depiction of the development of Instructional Rubrics**

Bloom’s Taxonomy or The Taxonomy of Educational Objectives is “a framework for classifying statements of what we expect or intend students to learn as a result of instruction” (Krathwohl, 2002). It is widely used in academia to establish course objectives as the development of course syllabi go through different curriculum process approvals. Krathwohl explained that any statement of a course objective in Bloom’s taxonomy is constructed from four components: object, verb, keyword, and subject. The advantage of using Bloom’s Taxonomy is that it is well known and well used in academia and adding them along with Socratic questions can work further to trigger creative thinking.

## DEVELOPMENT OF INSTRUCTIONAL RUBRICS FOR THE RESEARCH PROBLEM STATEMENT

In this section, we present rubrics that we suggest including in doctoral courses that teach and prepare the students to write their research problem statement. We align these rubric steps along with the four stages to writing a research problem statement suggested by Ali and Pandya (2021). For each stage, we are going to list the objective of the stage, explain about the step and then provide a set of questions. The intent of the questions is to start creative thinking. The questions are phrased in a way that resemble Socratic type of questioning.

### *DEVELOPING RUBRICS FOR PHASE 1 OF THE RESEARCH PROBLEM STATEMENT*

The emphasis of this phase is on writing a crude problem statement, which marks the start of the process.

Phase 1: Crude research problem statement				
At this phase of writing the research problem statement, students begin by forming the basics of the problems statement, thus it is termed Crude problem statement.				
<b>Objective:</b> State a problem statement that reads like a problem statement (has a cause and effect), and that it is researchable and viable				
<b>Explanation:</b> To begin writing your dissertation, you are going to start by writing a research problem statement. This is completed at four stages. The first phase is about writing crude statements. Write a statement that sounds or reads like a problem. Make sure you identify the cause/effect relationship in your problem statement and show viability and research worthiness in the statement.				
Be prepared to answer the following questions:				
<ul style="list-style-type: none"> <li>• What is the cause and what is the effect in the statement?</li> <li>• Where can you find the research in the problem statement?</li> <li>• How viable is the research problem statement in terms of time and resources)?</li> </ul>				
Criteria	Non-performance	Basic	Proficient	Distinguished
Write a statement that reads like a problem	The statement does not read or sound like a problem statement	Statement partially sounds like a problem statement	The statement sounds like a problem statement	The statement sounds like a statement and provides supporting evidence
Articulate a cause/effect relationship in the statement	No cause/effect relationship present in the statement	A partial cause/effect relationship exists in the statement	Cause/effect relationship present in the statement	Cause/effect relationship clearly articulated in the statement
Explains the viability/research ability of the problem statement	No viability/research worthiness shown in the problem statement	Partial viability/research worthiness shown in the problem statement	Viability/research worthiness is shown in the problem statement	Clearly shows viability and research worthiness in the statement

Figure 2 – Instructional Rubrics for Phase 1 of Writing the Research Problem Statement

## DEVELOPING RUBRICS FOR PHASE 2 OF WRITING THE RESEARCH PROBLEM STATEMENT

In this phase, the intent is to have the students find keywords from the previous step and to elaborate and explain them further and to develop a full statement. The questions and explanation of the step need to focus on finding keywords. The Socratic questions need to be directed for this purpose. Figure 3 below shows the questions' explanation, the objectives, and the questions to be asked along with the rubric sheet. The purpose of the question is to find keywords in the previous phase, to elaborate on them, and to make them full statements.

<b>Phase 2: Elaborate on keywords</b>				
<b>Objective:</b> Identify keywords in the problem statement, clarify them and support them with literature				
Explanation: As a continuation of your writing of the research problem statement, you are tasked at this phase with the identification of keywords that you can elaborate on to make your research problem clearer. So, look at your initial problem statement, find keywords (or buzz words), and then write more about them (elaborate) to present a clearer picture of your problem statement.				
<b>Be prepared to answer the following questions:</b>				
<ul style="list-style-type: none"> <li>• Do you have keywords in the problem statement?</li> <li>• Are the keywords explained or elaborated enough on it in the statement?</li> <li>• Do you have supporting literature to back that this is a problem that can be researched?</li> </ul>				
Criteria	Non-performance	Basic	Proficient	Distinguished
Identify keywords in the problem statement	No keyword exists in the statement or unclear statement	Vague identification of keywords presented	Identified keywords in the research problem statement	Clearly identified keywords in the research problem statement
Elaborate enough on the identified keywords	No elaboration or clarification for the keywords in the statement	Limited elaboration included on the keywords in the research problem statement	Elaborated and explained the keywords in the research problem statement	Elaborated, explained and clarified on the different keywords listed in the research problem statement
Present literature in support of the problem statement	No supporting literature presented in the statement	Partial supporting literature included in the research problem statement	Supporting literature included in the research problem statement	Significant supporting literature included in the research problem statement

Figure 3 – Instructional Rubrics for Phase 2 of Writing the Research Problem Statement

***DEVELOPING INSTRUCTIONAL RUBRICS FOR PHRASE 3 OF WRITING THE RESEARCH PROBLEM STATEMENT***

At this stage, attention is to be focused on using the PEEL approach for continued build out of the research problem statement. The effort is to focus the writing to PEEL on the different portions of the research problem statement.

<b>Phase 3: The PEEL approach</b>				
<b>Objective:</b> Support research problem statement with data/literature				
<b>Explanation:</b> Use the Peel (Point, Evidence, Explain, Link) to further clarify and strengthen your research problem statement. Take each point, provide evidence of what you are saying, explain further and then link the whole paragraph together to make sound as a research worthy problem statement.				
Be prepared to answer the following questions:				
<ul style="list-style-type: none"> <li>• Are there naked paragraphs in your problem statement?</li> <li>• Are you connecting the problem statement with research?</li> <li>• Are you following writing conventions and APA in your statement of research problem?</li> </ul>				
Criteria	Non-performance	Basic	Proficient	Distinguished
Fill the paragraphs with citations to provide evidence	Did not fill the paragraphs with enough citations	Limited citations listed to show research depth for statement	Supported research problem with data and research citations	Extensive support of business technical problems through research and data
Connecting the problem statement with research data	Did not connect the problem statement with the research	Limited connection to research/data	Connected problem statement with research data	Significant connections to research/data noted
Following writing conventions (APA)	Did not follow the writing conventions	Some follow up to writing convention	Followed writing conventions and no errors noted	Followed writing conventions and produced well-read document

**Figure 4 – Instructional Rubrics for Phase 3 - Using the PEEL Approach**

***DEVELOPING INSTRUCTIONAL RUBRICS FOR PHASE 4 OF WRITING OF RESEARCH PROBLEM STATEMENT***

This is termed as the finalization stage because the research problem statement after this will be complete and should be understood as a research problem statement. Figure 4 below shows the rubric sheet for phase 4 of the writing of the research problem statement

<b>Phase 4: Finalization Phase</b>				
<b>Objective:</b> Finalize the research problem statement				
<b>Explanation:</b> At this stage, you will finalize the writing of the research problem statement to make it look complete. Make sure you present data that supports your problem statement.				
Be prepared to answer the following questions:				
<ul style="list-style-type: none"> <li>• Do you have supporting data that this is a research worthy problem?</li> <li>• Is the problem statement connected to other sections in the dissertation?</li> <li>• Is the problem statement finalized in terms of writing conventions, viability and research worthiness?</li> </ul>				
Criteria	Non-performance	Basic	Proficient	Distinguished
Presented data or evidence to support the problem statement	Did not present evidence to support the data	Limited evidence presented to show viability of the problem statement	Showed evidence of viability of problem statement	Extensive evidence showed of the viability of problem statement
Related the problem statement to the other sections of the dissertation	Did not connect to other sections in the dissertation	Limited thought & connections noted to other sections in the dissertation	Established connections noted to other sections in the dissertation	Connections to other problem statements were clearly noted
Completing the problem statement in terms of viability, research worthiness, writing conventions and others	Did not explain the problem statement in terms of viability, research worthiness, conventions or others	Presented some evidence of viability, research worthiness and writing conventions in problem statement	Presented evidence of viability, research worthiness and writing conventions in problem statement	Extensive evidence presented for viability, research worthiness and writing conventions in problem statement

**Figure 5 – Instructional Rubrics for Phase 4 – The Finalization Phase**

## SUMMARY

This section summarizes the content of the paper. It also suggests steps for writing a follow-up paper that will include an example of writing a research problem statement that takes the students through the four stages of writing it.

If there is one point that can be summarized here, it is that Socratic questioning can help with the writing of research problem statement. Through the series of questions that will be asked and then following them with Socratic dialogue, the writing of the research problem statement can be simplified, and it can be completed in four manageable steps rather than one long single step. Adding to it the rubrics sheet that typically clarifies the questions asked and work as assessment, the writing of a research problem statement can be helped greatly if the students can show an example of a

statement at each step. This is our intention to write another paper that builds on these two papers and publish it soon.

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