

Employing Big6 Process For The Development Of Information Literacy Among College Students

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Abstract: In the highly technological modern world the advent of internet provides university students with necessary information in just a flick of a finger and information can be accessed in reputable educational institutions with state-of-the-art facilities, mainly the library. Yet, given the information facility, the dilemma is, it seems not easy to find the facts desired, and in the form, it is wanted in order to use it effectively. In other words, students experience problems in gathering exact information. One solution to the information problem—the one that seems to be most often adopted in schools (as well as in business and society in general)—is to speed things up. Hence, try to pack in more and more content, to work faster to get more done which is considered a down proposition because speeding things up only means to work longer. Given adequate information access, what is still needed is to think about helping everyone to work smarter, not faster. There is an alternative way to speed things up. It's the smarter solution—one that will support people, especially the students to develop the skills and understanding they need to find, process, and use information effectively. This smarter solution focuses on process as well as content. This is advancing the information literacy or information skill of the students using a process. One process that can be employed is the Big6 Process which is a process model of how people of all ages solve an information problem. From practice and study, this practice is most widely known and widely used approach to teaching information and technology skills all over the world in K-12 schools and in higher education institutions but not in Philippine schools or in state universities. This study employed Big6 Process in the learning of the students in the college level at Laguna State Polytechnic University. As Eisenberg (1998) emphasized in her study that Big6 is an inquiry process which is very critical to students' learning in all areas like social studies (research process), science (experimental process), mathematics (problem solving process) this study was found equally helpful in the development of cognitive learning as it provides a strategy for developing the foundations of higher order thinking skills, reasoning, and critical thinking. True, the Big6 information problem-solving model was found applicable to the students as they need and use information everyday. Moreover, it was found countless times helpful in integrating information search along with technology tools in a systematic process in using, applying, and evaluating information for specific needs and tasks. After this study was conducted and documented, it was found to be significant and beneficial to the faculty members in the university across courses with the perception that if all students will be familiar and aware with the Big6 Process, completing their assigned tasks like assignments, requirements, and research among others, will be easier and the students can work smarter over the assigned task, hence, checking will be easier for the teacher. Students can use the Big6 Skills whenever they need information. It can be applied as a thinking process to deal with most problems and therefore can be applied consistently and repeatedly throughout their studies. Another useful way to view the Big6 is as a set of basic, essential life skills which can be applied across situations in school, personal, and work settings.

Index Terms: task definition, information seeking strategies, location and access, use of information, synthesis, and evaluation.

1 INTRODUCTION

To catch up with the fast changing world and with the advent of globalization and internalization, university students all over the world should be able to be updated with the latest trends in education. . Even if everybody can get entirely the necessary information from the world-wide-web, the dilemma is still the same. Students cannot find the exact information they want it right at the time they want it, and in a form they want it in order to use the information effectively. One solution to this information problem, the one adopted not only in schools but in business and society in general is to speed things up, to work faster and to get things done. However, speeding things up only means to work for so long because of packing more and more content. What the students need is to become smarter, not faster. When university students seek information, or making decisions, they tend to think of a systematic process which is considered basic and an essential life skills that can be applied across situations. The use of Big6 Process is the most widely used approach to information problem solving in the world. The smarter solution is developing students' skill and understanding their need to find, process, and use information effectively. The smarter solution focuses on process as well as content to advance their information literacy or information skill using a process. This is the use of a strategy, and Big6 Process. This Big6 Process is a kind of research strategy developed by Michael Eisenberg and Bob Berkowitz in 1988. Michael created the Big6 Approach to information problem-solving and worked with thousands of students at that time, also in public schools, business,

government and communities, to improve their information and technology skills. Way back then as emphasized by Sandra Hughes (2008) they found it to be an effective tool to help students learn the research process as an inquiry process. Big6 provides a strategy for developing foundations of higher order thinking skills, reasoning and critical thinking which is also dubbed as inquiry process in conducting research in social studies, experiments in science, problem solving in mathematics, and understanding concepts in literature among others. In fact, this is applicable in all areas as a thinking process and can be applied consistently and repeatedly throughout any learning program. The researchers attempted to employ this process among the BSED students in Laguna State Polytechnic University. For practice and study, LSPU students need to use information every day to solve problems and for critical thinking. This process may help the university students learn to integrate information search along with technology tools in a systematic process whereby they may use, apply, and evaluate information for every specific needs and tasks. Prior to the study, it was presumed that both the students and faculty across courses will be benefited by the method because if everyone will become familiar with the Big6 Process, completing tasks like assignments, requirements, researches among others will be a lot easy. Everybody can work faster and smarter over the assigned task and checking on the part of the professor will become easier. This study yielded amazing results and if appropriately employed may benefit thousands of students in Laguna State Polytechnic University, Philippines.

1.1 Objectives Of The Study

This study aimed at establishing a method that may be utilized by college students to gather appropriate information either for academic or for personal application. This study further aimed to find out if the use of Big6 Process for the development of information literacy among college students is an effective method. There will be six (6) processes that will be undertaken in the process such as task definition, information seeking strategies, location and access, use of information, synthesis, and evaluation. The study will also find out if the Big6 process will be best in identifying final product, identifying information sources, finding accurate sources, extracting information, putting together information and in judging product effectiveness or efficiency.

2. LITERATURE REVIEW

Michael Eisenberg and Bob Berkowitz introduced the Big6 approach in 1988. It is an effective tool for helping students learn the research process which allows researchers to effectively find, use, apply, and evaluate information. It is an effective tool for helping students learn the research process as an inquiry process. Information overload can hinder timely and effective research, and the Big6 method teaches researchers to work smarter to improve research skills. The six stages of the Big6, Task Definition, Information Seeking Strategies, Location and Access, Use of Information, Synthesis, and Evaluation are designed to focus on process as well as content. The Big6 can be used by younger, novice researchers as well as seasoned researchers and can be applied to all subject areas while in university. Hence, the best way for educators to teach the Big6 is to integrate it into the classroom curriculum by using Big6 terminology, by walking students through the process, and by focusing on specific Big6 actions to accomplish a given task (Hughes 2008). The Big6 is a six-stage model that develops students' literacy and information skills as they solve problems and make decisions using the resources that are available to them. In essence, say creators Bob Berkowitz and Michael Eisenberg, the Big6 process can help students master the Common Core standards, because the process gives students a way to actually "do" each specified portion of the standards. "The Common Core Standards present a challenge for schools and educators to integrate the standards into existing curriculum and into classroom instruction to meet specific standards through information and technology literacy programs, and to raise the status and awareness of the information and technology literacy program," said Berkowitz. Big6 Process can also be attributed to Literary theory, "sometimes designated "critical theory," or "theory," and now undergoing a transformation into "cultural theory" within the discipline of literary studies. Literary theory refers to any principles derived from internal analysis of literary texts or from knowledge external to the text that can be applied in multiple interpretive situations. All critical practice regarding literature depends on an underlying structure of ideas in at least two ways: theory provides a rationale for what constitutes the subject matter of criticism—"the literary"—and the specific aims of critical practice—the act of interpretation itself. The first step in the information problem-solving of the Big6 is task definition where students classify the information needed such as e-conferencing, email, computer, brainstorming, and other online communication methods. According to Barbara A. Jansen, the first process which is task definition would be a motivating task

to eager learners. Hence, students will classify the content objectives to be engaged by the students. For teachers to guide their students using the Big6 Approach, the first task should be in accordance to the curriculum standards and should be cognitively appropriate in such that the questions must be in higher-order-thinking, then in small groups students discuss the nature of the specific task. Learning how to ask good question can help advance students' comprehension of the subject matter by means of focusing on the main ideas and making connections through asking questions. Asking good questions increases students' comprehension of the subject matter. Eisenberg described that information seeking strategies is a mind-expanding stage. This is the stage 2 in Big6 Approach. It motivates the students to think creatively and innovatively where students can do so much of brainstorming about all possible sources that may include generating all potential information sources, prints, electronic and human sources, technology sources such as database, news, and internet. As Rob Darrow emphasized, information seeking can be an internet search utilizing various search engine or mechanisms and determine which one is best. Stage 3 is location and access is about getting the needed sources in one's hand like getting sources from stacks of books, online databases, on the web or books, online databases, or from experts. What is important is knowing where to look and how to find the needed source using indexes, card catalogs, or checking out print sources in the library media center or digital sources. Location and access leads students go through the process needed to complete an assignment or task. A major shift in information problem solving process is the use of information. This is the 4th stage and heart of the process where critical thinking and extracting which, in an efficient way through some form of note taking, is undertaken. This is all about literacy. It talks about learning or utilizing skimming and scanning technique to help students gather effectively relevant information. Stage 5 or synthesis is the end result, the outcome, or the conclusion. However, this approach does not always involve a report, paper, or project. Synthesis varies depending on the original tasks in which the focus is to make choices or decisions that make a difference. The product of the synthesis merely depends on the information problem solving situations like writing an essay, creating a poster, writing research paper or report, making a decision, communicating in person, telephone conversation, email, chat or video conferencing. Synthesis is certainly a big part of the society when people speak about information explosion. Evaluation is the final stage or the culmination of the Big6 information problem-solving process. Yet, this is not a linear, lockstep process. In this stage, deciding help is needed to organize and present the output. It's helpful for the students to know where they are in the process, how well they are doing, and what help they need in life. This self-awareness and understanding is all part of the evaluation stage. When students engage in evaluation during their information problem-solving process, it's called formative evaluation and the end of an output, also called summative evaluation which is a type that is crucial to long-term student success. Moving on, there are four types of questions categorized by Angelo Ciardiello (1998) which can aid in increasing students' comprehension. The first is memory level question where answers are found in books, web sites, and other reference materials. This question provides background for the subject. The next level is convergent thinking question that are

representing the analysis and integration of given or remembered information. These are answerable by explaining, stating relationship, and comparing and contrasting. 3rd level is divergent thinking questions that are representing intellectual operation to generate independently over ideas, or take new direction or perspective on a given topic as predicting, hypothesizing, inferring, or reconstructing. The last one is evaluative thinking questions which deal with matters of judgment, value and choice which are characterized by students' judgmental quality like valuing, defending, or justifying choices. According to Huffman (2005) one of the most useful things a student can learn in Big6 is the Information Seeking Strategies where brain storming is considered the most interesting part. Cluster diagram is utilized also along with graphics organizer which is flexible and appealing to both visual and textual learners. In information seeking strategies, searching for information can be an involved process, with multiple searchers using multiple keywords, synonyms, and related words; hence students begin to understand that a subject specific encyclopedia can assist them to narrow a topic, identify important names, dates, keywords, or subjects, and then proceed to help with the entire research process. In the process, students can learn become more aware of resources for information, including the services where Big6 is a tool for development. As Rob Darrow pointed out in 2005 location and access is the most widely used approach to information problem-solving in the world. This approach allows students go through the Big6 stages conscientiously or not – when they seek or apply information to solve a problem or make a decision. Thus, Big6 can be viewed as a set of essential skills that can be applied across situations – school, personal, and work settings. This is getting the needed source that involves online databases, on the web or from experts. In this stage students find sources they need, use indexes, table of contents, and locate and check needed print sources among others. This leads students through the process required to get the desired source needed to complete an assignment. In an effort to better understand the research process or the information problem-solving process, Kuhlthau (1993) examined the thoughts, feelings, and actions associated with various activities within the process. Her search process details the changes that occur for searchers while progressing from seeking relevant to pertinent information. This shift describes feelings that ebb and flow between more negative emotions such as uncertainty, confusion, frustration, and doubt, to more positive emotions such as optimism, clarity, confidence and relief. While Kuhlthau examined searchers as they sought information in a variety of situations, other authors focused on research paper writing in order to better understand the information search process. For example, Stripling and Pitts describe their model as a “thinking frame” (Stripling and Pitts 1988) for research. This ten-step process emphasizes a thinking framework that can be adapted for any age level and any curricular subject. The authors maintain that, most students do not automatically think about research in an explicit manner. Therefore, by prescribing the method in which to write research papers, the authors hope to improve student thought about the research process. The ten steps of the search process model (Stripling and Pitts 1988) are organized around the major activities performed in writing a coherent research paper: topic selection, planning the information search, locating and accessing materials, and creating a final product. Throughout

the model, students have several reflection points that allow them to make judgments about their progress. Similarly, this study applied Big6 in searching information to come up with good quality essays with science themes. Two groups were formed, the controlled and the experimental group and yielded a significant result. Both Kuhlthau (1993) and Stripling and Pitts (1988) examined the search process from the point of view of the searchers. By formulating a model that can be used by students to guide their thinking and research activities and by teachers to guide their planning and implementation of classroom instructional activities, Eisenberg and Berkowitz (1990) provided school library media specialists, students, and classroom teachers with a model that could be used in a variety of settings for a variety of activities. Big6 (Eisenberg and Berkowitz 1990) provides support in the activities required to solve information-based problems: task definition, information seeking strategies, location and access, use of information, synthesis, and evaluation. Lundstrom Kacy et. al (2015) conducted a research to determine how information synthesis skills can be taught effectively, and to discover how the level of synthesis in student writing can be effectively measured. The intervention utilized was an information synthesis lesson that broke down the synthesis process into sequenced tasks. A rubric was created and used to assess students' levels of information synthesis demonstrated in their final research essays. A form of counting analysis was also created to see if other methods could help in measuring synthesis. Findings from the rubric analysis revealed that students appear to benefit from the synthesis lesson. The level of synthesis, however, remains low overall. In addition, the study showed that the different measures of synthesis established were able to identify different levels of information integration. Discovering effective ways to measure and teach synthesis continues to be essential in helping students become information literate. Several researchers have examined behaviors & skills associated with information use (Kuhlthau 1993; Marchionini 1989; Oliver and Perzlyo 1994; Perzlyo and Oliver 1992; Small and Ferreira 1994; Stripling and Pitts 1988; Yang 1997) From the rich and empirical and rational empirical(Burisch 1984) body of knowledge, three prominent models of the research process have been developed such as process model (Kuhlthau 1993), the research process model (Stripling & Pitts 1988), and Big6 (Eisenberg & Berkowitz 1990). A case study conducted by Sara Wolf (2003) on the Big Six Information Skills as a Metacognitive Scaffold examined the effect of Big6 on grade 8 students who were asked to write about the events surrounding the African-American Civil Right Movement. Results showed that Big6 act as a metacognitive scaffold during the problem-solving process. Likewise, it was found out that Big6 may provide an overarching process that students can employ in a variety of learning situations. On another study conducted by Hill & Hannafin (1997); Land & Hannafin (1997), it was noted that one of the essential skills that students must possess to become successful in problem-based learning activities is metacognition. Bondy (1984) supported that Big6 is one strategy that can be utilized in order to navigate problem situation.

3. METHODOLOGY

Sixty senior students from the College of Teacher Education, Laguna State Polytechnic University were included in this study. 30 students composed the controlled group, they are

students from San Pablo City Campus, and 30 students composed the experimental group, they are students from Santa Cruz Main Campus. Both the controlled and the experimental group were given particular topics to be developed. After the controlled group was given the topic, members were given specific time to work on it without further instructions. However, the members of the experimental group were oriented on the processes that they have to skillfully undergo in order to develop their previously assigned topics. After the time allotted, the developed essays were collected, assessed, recorded and analyzed. The mean scores obtained in the four parameters (content, organization, development, grammar & mechanics) were evaluated as excellent, high pass, pass, conditional and fail.

4. RESULTS AND DISCUSSIONS

The output of this study is the application of a new strategy which is the Big6 Research Process for the learners to do appropriate and smarter research and come up with a meaningful output.

Table 1: Comparison of written reports with the use and without the use of Big6 Process.

Indicators	Without Big 6 Process			With big 6 Process		
	Mean	SD	Analysis	Mean	SD	Analysis
Content	82.19	1.487	Pass	90.35	0.92	High Pass
Organization	81.11	1.048	Pass	89.91	1.21	High Pass
Development	80.33	0.928	Pass	89.91	0.94	High Pass
Mechanics	81.28	0.961	Pass	89.70	0.70	High Pass

Legend: Legend:

92.00-100 Excellent
84.00-91.99 High Pass
76.00-83.99 Pass
68.00-75.99 Conditional
60.00-67.99 Fail

The students who were given previously assigned topics to develop essay is presented in Table 1. It is recorded that those students (controlled group) who were taught the conventional way showed passing ability in terms of content (M=82.19, SD = 1.487), Organization (M=81.11, SD = 1.048), Development (M=80.83, SD = 0.928), and Grammar and Mechanics (M=81.28, SD= 0.961). Table shows that they got only passing marks which is equal to the minimum satisfactory rating. In universities, particularly in the College of Teacher Education, the goal is for BSED students to utilize their capabilities to the fullest in order for them to become globally competitive. The table also presents the rating obtained by the experimental group who were oriented with the use of Big 6 Process. It is recorded that these students got a high passing rate in the area of content (M=90.35, SD=0.924), organization (M=89.9, SD=1.217), development (M=89.91 SD=0.949) and, Grammar and Mechanics (M=89.70, SD=0.700). This means that the Big 6 process is an effective strategy in developing the information literacy of college students. Since students were instructed to follow a process to such as task definition (identification of information), information seeking strategies (brainstorming), location and access (getting the needed

source), use of information (extracting relevant information), synthesis (presenting the information), Evaluation (judging the product) those students in the controlled group were properly guided and were able to come up with comprehensive report; hence obtained High pass marks. As Eisenberg (1998) stated information and technology literacy is the new "basic skill of the 21st Century". This is a leap in education emphasizing that all students need to be computer literate and at the same time information literate.

Table 2: Analysis of the mean scores of the students' written reports.

	Mean Scores		Mean Diff.	t-value	p-value	Analysis
	W/o Big6 Process	V/ Big6 process				
Content	82.19	90.35	8.16	25.632	0.000	Significant
Organization	81.11	89.91	8.80	28.082	0.000	Significant
Development	80.83	89.91	9.08	35.951	0.000	Significant
mechanics	81.28	89.70	8.42	38.483	0.000	Significant

Legend:

92.00-100 Excellent
84.00-91.99 High Pass
76.00-83.99 Pass
68.00-75.99 Conditional
60.00-67.99 Fail

Results in Table 2 shows the differences in the mean scores of the students who were taught with and without Big 6 Process. There was a significant difference on the students' mean scores in terms of content (t=25.632, p=0.000), organization (t=28.082, p=0.000), Development (t=35.951, p=0.000), and Grammar and Mechanics (t=38.483, p=0.000). This implies that there is a significant effect on the students' information literacy upon utilizing the big 6 process approach in terms of content, organization, development and mechanics. The results clearly indicate that properly guided with the Big6 Process, students were able to work on tasks smartly and develop their research skills, as well as their literacy and information skills. These skills acquired in the process may help students to solve problems encountered in their daily lives and in making basic and major life's decisions. As Rob Darrow pointed out in 2005 location and access of Big6 is the most widely used approach to information problem-solving in the world. Big6 can be viewed as a set of essential skills that can be applied across situations – school, personal, and work settings.

4. CONCLUSIONS AND RECOMMENDATIONS

After gathering the findings, it was found out that employing the big six process is an effective strategy in developing the information literacy among college students. Students in the college level should regularly be given something to search on (as a requirement) so that they will develop their information literacy in the same way that they may develop higher order thinking skill. Utilizing the Big6 Process will significantly develop output oriented students and future professionals in the modern world. The application of the Big6 Process for the development of information literacy among college students may be regularly monitored through students' outputs across all subject areas.

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