Improving Management Students’ Skills in Framing “Thought-Provoking Questions”: An Action Research

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ABSTRACT

This paper describes how a teaching intervention in an action research (AR) environment improved the learning processes and higher-order thinking skills among undergraduate management students. Action research has been gaining currency as a way of improving business and management education. The current study, conducted from October to December 2014, involved 70 students at a state university in the Philippines. As part of their class work in the Introduction to Management course, the students were assigned to teams, which took turns in presenting various management concepts to the class as a whole. Non-presenting students were required to submit student-generated “thought-provoking questions” (TPQs) for class discussion. The teacher-researcher’s reflection on the initial results of the TPQs necessitated a teaching intervention to improve the quality of the students’ TPQs. The lecture intervention improved the management students’ TPQ writing skills and learning processes. This study’s findings are supported by the triangulation method of (1) the teacher-researcher’s observations, (2) the students’ self-reports through a post-intervention survey, and (3) a t-test of mean differences in students’ marks. The paired t-test for mean differences between the pre- and post-lecture scores is significant and shows improved average scores after the lecture-intervention. The study concludes that AR may be an effective mode of improving teaching methods in management education.

Keywords: Action research, thought-provoking-questions, management education, deep learning
1. INTRODUCTION

Conscientious educators make sure that their teaching and learning approaches are effective. The delivery and achievement of curriculum goals are optimized through the teachers’ continuous reflection on the appropriate mix of learning methodologies. Action research (AR) is one approach by which educators are able to evaluate and reflect on the value of their teaching and learning activities. The efforts of a teacher-researcher in AR are expected to lead to the identification and subsequent implementation of enhanced alternatives. This in turn necessitates assessment and further reflection on the results of the implemented strategies. The reflective process in an AR setting enables teachers to validate these recalibration approaches. Young et al. [2010] describe AR as an “applied scholarly paradigm resulting in action for a specific context offering faculty immediate payback by improving his or her own teaching and providing explicit documentation for meeting their educational responsibilities . . . .” The realizations drawn from the cyclical processes in AR are typically documented and shared with educators who possess similar interests and passions.

The overarching aim of the current study is to assess the viability of using AR to improve learning and skills in thinking and writing among management students. The study intends to encourage tertiary-level educators to use AR to help identify approaches that are effective in developing and improving students’ learning. This study’s classroom setting and learning approach required the students to write and submit “thought-provoking questions” (TPQs) on specific learning materials. These student-generated questions, prepared as assignments, were expected to be raised in class for discussion. The goal of having the students design their questions was to develop their higher-order thinking skills through writing, raising, and tackling thought-provoking questions on the assigned lessons. The writing of TPQs as a learning activity is within the education context known as “deep learning.”

The teacher-researcher was challenged to undertake this study because of the quality of the initial turnout of the TPQs submitted by the students. Reflecting on the content, form, and substance of the students’ TPQs, the teacher-researcher realized the urgent necessity for an intervention that would improve the manner by which students crafted their TPQs. The teacher-researcher focused on the following AR problem: “Will there be a significant improvement in the way the students wrote their TPQs if a teaching intervention is implemented?”

Consistent with the findings of other teacher-researchers who have used AR to improve their portfolio of teaching strategies, this study found that
implementing the appropriate strategy significantly enhanced the students’ performance. The positive results of this study could encourage other teacher-researchers to discover the value of AR in improving their teaching performance. This study presentation is organized following the template recommended by Riel [2010], using an action research methodology.

2. RESEARCH CONTEXT

This section discusses the work community (action) context and presents a review of the literature.

2.1. Work Community Context (Action Context)

The teacher-researcher in the current study is a member of the faculty of the business management department of a state university in the Philippines who taught two sections of Management 101 (Introduction to Management) during the first semester of academic year 2014-2015. The two sections included 72 students – 36 in each section. For purposes of team activities, the 36 students in each section were organized into six teams with six students in each team. All 72 students were considered as the population in this study.

As a foundation course in the B.S. in Management program, Management 101 aims to develop the students’ knowledge of concepts and theories in management and also to develop their skills in management decision making. The basic modes of inquiry in the course are lecture discussion, case analysis, and discussion. Toward the second half of the school year, the teams were assigned to report on specific concepts of management. They also had to lead the analyses, decision making, and discussion of the assigned mini-case studies. Table 1 presents a profile of the participant-students.

<table>
<thead>
<tr>
<th>Age</th>
<th>Count</th>
<th>Percentage</th>
<th>Gender</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>20</td>
<td>27.8</td>
<td>Male</td>
<td>4</td>
<td>5.6</td>
</tr>
<tr>
<td>18</td>
<td>45</td>
<td>62.5</td>
<td>Female</td>
<td>68</td>
<td>94.4</td>
</tr>
<tr>
<td>19</td>
<td>5</td>
<td>6.9</td>
<td>Total</td>
<td>72</td>
<td>100.0</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>2.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>100.0</td>
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<td></td>
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</tr>
</tbody>
</table>
The six teams in each class took turns in presenting their reports. The non-presenting students were tasked to submit TPQs, which were to be marked by the teacher. The primary purpose of crafting the TPQs was to develop the students’ higher-order thinking skills. The secondary purpose was to facilitate the question-and-answer (Q&A) session, with the TPQs serving as class discussion stimuli. The teacher-researcher used the AR methodology to evaluate the effectiveness of the TPQ as a learning activity. The reiterative fashion of AR facilitated the evaluation of the effectiveness of the interventions carried out.

2.2. Literature Review

This section reviews the literature relating to four topics: action research, approaches to learning theory, questions as a learning approach, and student-generated thought-provoking questions.

2.2.1. Action Research

According to Reason and Bradbury [2001], action research is a “participatory, democratic process concerned with developing practical knowledge in pursuit of worthwhile human purposes . . . . It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people and more generally the flourishing of individual persons and their communities.”

Sagor [2000] offers a similar definition of AR as “a disciplined process of inquiry conducted by and for those taking the action. The primary reason for engaging in AR is to assist the ‘actor’ in improving and/or refining his or her actions.” In addition, Riel [2010] specifies the following as the goals of AR: (1) the improvement of professional practice through continual learning and progressive problem solving; (2) a deep understanding of practice and the development of a well-specified theory of action; and (3) an improvement in the community in which one’s practice is embedded through participatory research.

Action research is used by school administrators, educators, and teachers to evaluate the effectiveness of their curriculum implementation and to improve their teaching strategies. Extant literature refers to this type of action research as “teacher action research” or “educational action research.” McNiff and Whitehead [2010] propose two objectives of teacher action research. The first is to take action to find ways to improve the teacher-researchers’ classroom practices and other situations. The second objective is to carry out research as to how teacher-researchers can provide “descriptions and explanations for what they have done,
and how they can make judgements about the quality of their research and practices.”

In their study of marketing management course activity using action research as the methodology, Young et al. [2010] recommend the use of AR as an “appropriate paradigm for improving everyday class practice.” In another teacher action research, Yasmeen [2008] concludes that “at all educational levels action research can be adopted to improve the teaching/learning outcomes” and endorses the practice of AR as an important education strategy.

The AR process is cyclical, going through the iterative patterns of “observing, reflecting, acting, evaluating, modifying and moving into new directions” [McNiff and Whitehead, 2010]. Sagor [2000] identifies the following seven steps in AR, which spiral through the action-reflection cycle: (1) selecting a focus; (2) clarifying theories; (3) identifying research questions; (4) collecting data; (5) analyzing data; (6) reporting results; and (7) taking informed action. Kemmis [1981] is credited with developing a simple model of the cyclical nature of the typical AR process. In his model, cycles progress as problems are found and actions are performed and evaluated. Each cycle undergoes the four steps of planning, acting, observing, and reflecting.

Riel [2010] furthermore describes AR as involving a “systematic process of examining the evidence” and emphasizes that at the heart of action research is “critical reflection.” Identifying a good research question requires “reflection, observation, conversation, and study of the natural life of the classroom,” according to Cunningham [2008]. In studies using AR, the “best” question is the one “that will inspire the researcher to look at their practice deeply and engage in cycles of continuous learning from the everyday practice of their craft” [Riel, 2010]. In education action research specifically, Dana and Yendol-Hoppey [2008] claim that “improving or experimenting with teaching strategies and techniques” is one of the eight passions for finding a research question.

2.2.2. Approaches to Learning Theory

The theory on student approaches to learning is attributed to Marton and Säljö [1976], who advocated the concepts of “deep” and “superficial” approaches to learning. According to Marton and Säljö, deep learning is carried out through the application of knowledge, where the approaches “facilitate the ability to understand and apply the information learned.” Surface learning, on the other hand, entails “information reproducing,” where “memorisation is an end in itself” and “assessment asks students to reproduce information rather than apply
understanding” [Cohen, et al., 2004]. According to Young et al. [2010], “the relatively passive approach of surface learning often fulfils course requirements but lacks the reflection that leads to deeper learning and uses low-level cognitive skills.” Aside from “passive learning,” Cohen et al. [2004] characterize superficial learning as “lacking the opportunity to pursue subjects in depth.”

In contrast, Lublin [2003] states that students exposed to the deep learning approach are “actively seeking to understand the material / the subject” as well as “relating new ideas to previous knowledge and concepts to everyday experience.” Turner and Bakersville [2013] similarly espouse that deep learning allows the integration of new learning into previous knowledge, modifying a person’s perception of reality. Briggs [1987], whose works build on the approaches to learning theory, defines good teaching as the promotion of the deep approach. “The surface approach is therefore to be discouraged, the deep approach encouraged — and that is my working definition of good teaching” [Briggs, 2006].

2.2.3. Questions as Learning Approaches

One approach that teachers use to guide learners in a focused way is to raise questions. The Q&A methodology not only engages students in the subject matter, but also promotes interaction between the teacher and students and among the students themselves. According to Rothstein [2011], the purposes of questions vary at different stages during a lesson. Teachers fundamentally ask questions to diagnose their students’ understanding of the learning materials. Broggy [2011] identifies many other reasons that teachers ask questions in the classroom. These include:

(a) to interest, engage, and challenge students;
(b) to check on prior knowledge;
(c) to stimulate recall and use of existing knowledge and experience in order to create new understanding and meaning;
(d) to focus thinking on key concepts and issues;
(e) to extend students’ thinking from the concrete and factual to the analytical and evaluative;
(f) to promote reasoning, problem solving and evaluation;
(g) to promote students’ thinking about the way they have learned; and
(h) to help students express themselves.

Questions raised in class, whether by the teachers or the students, cultivate deep learning processes [Offir et al., 2008]. Chin [2004] concurs that questions activate deep thinking strategies and that the act of raising questions is crucial to learning.
Bloom’s Taxonomy is a useful guide for educators when formulating questions that encourage students to develop their thinking skills at different levels. Developed by Benjamin Bloom in the 1950s, the taxonomy categorizes the levels of thinking processes and reasoning skills into the following six hierarchical domains: (1) knowledge; (2) comprehension; (3) application; (4) analysis; (5) evaluation; and (6) synthesis. Typically represented as a pyramid, the six levels start at the base with knowledge and recall thinking skills and end at the apex with higher cognitive skills. The framework is widely accepted and used by educators in the learning processes of students. At the lowest thinking level, teachers may ask questions to check the students’ recall of facts about the subject. These questions belong to the Broggy’s [2011] classifications “c” and “d.” At the highest thinking level, teachers may ask students analytical or evaluative questions. These questions belong to Broggy’s [2011] classifications “f,” “g,” and “h.”

In a classroom setting, the phrasing of questions is usually organized into typologies, one of which is according to the type of answers expected. Closed-ended or “convergent” types of questions are commonly used when asking questions to elicit a short list of acceptable answers. Identification questions, for instance, require students to recall facts, to answer “yes” or “no” / “true” or “false,” or to determine the correct answer in a multiple-choice question. Closed-ended questions are appropriate for measuring knowledge and comprehension, testing students’ skills at the lower levels of Bloom’s Taxonomy.

Open-ended or “divergent” types of questions, on the other hand, are used to encourage deeper learning. Since a variety of answers are expected, students are given the opportunity to express and elaborate on their insights. Open-ended questions stimulate students’ higher-order reasoning skills such as analyzing, predicting, synthesizing, summarizing, and evaluating. Formulating open-ended questions, however, requires more time, and evaluating students’ responses is equally demanding on the part of the teachers.

2.2.4. Student-Generated Thought-Provoking Questions

Aside from using the teacher’s questions for class discussion and assessment, it is also possible to stimulate students’ learning by having students formulate questions as well. Rothstein and Santana [2011] assert that “when students know how to ask their own questions, they take greater ownership of their learning, deepen comprehension, and make new connections and discoveries on their own.” According to the proponents of constructivism theories, learners increase their ability to acquire and apply conceptual knowledge when they are encouraged to be
involved in the learning process [Vogel-Walcutt et al., 2011]. Constructivism is a learning approach that stresses the significance of deep learning.

Broggy [2011] identifies two purposes for having students generate questions. First, it encourages students to “get more involved in their learning,” and, second, “it also promotes their ability to ask ‘good questions.’” When required to phrase their own questions, students are enabled to reflect on their learning. In particular, questions that are open-ended engage students in higher-order thinking. Earlier on, Ciardiello [1998] averred that “student-initiated questions increase higher-order learning by requiring them to analyze information, connect seemingly disparate concepts, and articulate their thoughts.” Similarly, Hunkins [1969], in a study of the differences between the types of questions, concludes that high-level questions had a significant influence on improving the students’ deep learning processes.

Students who are trained to design their questions for class discussions are compelled to analyze ideas, find connections among the concepts, synthesize information, and even evaluate the conditions. When encouraged to craft their own questions, students experience greater involvement and interest in the learning materials [Nardone and Lee, 2011]. Similarly, Berry and Chew [2008] report that students’ question-generating activities improve their learning of the subject matter.

It is along this line that the teacher-researcher in the current study chose student-generated “thought-provoking questions” as a supplementary learning activity in teaching the Management 101 course. The teacher-researcher likewise selected AR as the method to evaluate the effectiveness of using “TPQs” as a learning activity.

3. THE ACTION RESEARCH

This section defines the research question, identifies the research objective, and discusses the two cycles of research adopted from Kemmis [2001].

3.1. Research Question

In the current study, the requirement of student-generated (SG) “thought-provoking questions” as a learning activity was envisioned to expose the students to deep learning and to sharpen their higher-order thinking skills. This learning activity was used by the teacher-researcher to supplement the students’ declarative knowledge gained from class presentations and discussions. At the beginning of the school term, the teacher-researcher explained that the purpose of the SG TPQ
assignments was to “challenge” the reporting teams by directing their TPQs to the presenting teams. The students were reminded that their TPQs should not elicit a categorical “yes” or “no” answer. They were likewise discouraged from framing questions that are answerable by facts or information cited in the learning materials.

3.2. Research Objective

In the current AR study, the teacher-researcher intended to validate the research question of whether “the requirement of writing SG TPQs and raising the same for class discussion and interaction will develop the students’ higher-order thinking skills.” The teacher-researcher concurs with Chin [2004] on the need to develop the students’ “skills and habit of question asking.” Anchored on this research question, the AR process went through two cycles. The first cycle focused on the quality of the students’ initial TPQ submissions. The teacher-researcher’s evaluation and reflection during the first iteration of the AR necessitated the introduction of a teaching intervention. This intervention was a result of reflective thinking to achieve the course goal of “deep learning.” The next iteration followed the intervention. This time, the second cycle focused on the quality of the subsequent TPQ submissions after the intervention.

3.3. Report on Two Cycles of Research

This AR study adopted the Kemmis [2001] action research spiral (Figure 1). As the figure illustrates, the study includes two iterations in which each cycle goes through the processes of gathering information, planning, acting, observing and evaluating the actions and then reflecting and planning for the next action, anchoring on the realizations of the earlier cycle. The first cycle investigates the effectiveness of writing and asking “thought-provoking questions” as a deep learning activity. The students were expected to raise their TPQs in class to ignite insightful discussions on the assigned learning materials in the Management 101 course. The second cycle evaluates the effectiveness of the teacher-researcher’s intervention as a result of the first cycle investigation.
3.3.1. **Cycle 1**

The first set of TPQs that was submitted by students was evaluated and marked by the teacher-researcher. Overall, the TPQs needed considerable improvement. First, there was a general weakness in the form or manner in which the TPQs were written. Many of the questions were phrased in a way that expected categorical answers. Second, there was a need to rephrase the questions to elicit answers that required higher-order thinking, such as analyzing, evaluating, and synthesizing situations. The teacher-researcher wrote her comments and suggestions on each of the students’ TPQ submissions and immediately returned the marked papers to the students for their contemplation.

The second set of TPQs submitted by the students failed to show improvement despite the comments and suggestions of the teacher-researcher. Only a few students were able to enhance their TPQs. During the Q&A session, the teacher-

*Figure 1. The Two-Cycle Action Research Spiral Adopted from Kemmis [2001]*
researcher started to comment on the quality of the TPQs and on the manner in which these were able to encourage discussion and student interaction. The third set of TPQs submissions also failed to exhibit the expected student-initiated improvement. A handful of students, however, did try to implement the feedback marked on their papers. This time, more students exhibited greater confidence with their TPQs, enough to raise their questions enthusiastically in class.

Evidence Used to Evaluate the Action. The teacher-researcher used two sources of evidence to evaluate the students’ performance: (1) the students’ scores on their TPQs submissions, and (2) the teacher-researcher’s observations on the students’ participation during the Q&A sessions. Table 2 shows the average scores of the students’ TPQs for the first through the third submissions and also indicates the number of students who raised their TPQs. The teacher-researcher noted the quality of the TPQs, the confidence of those who participated in the Q&A, and the conditions of interaction and exchange of ideas among students.

<table>
<thead>
<tr>
<th></th>
<th>TPQ 1</th>
<th>TPQ 2</th>
<th>TPQ 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average scores*</td>
<td>2.51</td>
<td>2.13</td>
<td>2.23</td>
</tr>
<tr>
<td>Number of students who raised TPQs</td>
<td>8</td>
<td>14</td>
<td>11</td>
</tr>
</tbody>
</table>

*1.0 = excellent; 2.0 = very good; 3.0 = good

Evaluation. The mediocre TPQ scores and lackluster student participation during the Q&A sessions alerted the teacher-researcher to the need for an intervention. The comments and suggestions on the students’ TPQ papers and the teacher-researcher’s remarks during the Q&A sessions seemed inadequate to motivate the students to improve the quality of their TPQs.

Reflection. The teacher-researcher decided to design and implement a lecture on how to write TPQs as an intervention to ensure that the students’ writing style and the substance of their questions took into account the goal of deep learning and higher-order thinking. The teacher-researcher also reflected that an improvement in the crafting of TPQs will encourage students to raise these TPQs in class. Thus, the intervention was conducted in the form of a lecture.
The recurring comments and suggestions on the students’ papers served as the discussion points of the lecture-intervention.

3.3.2. **Cycle 2**

The second cycle of the AR occurred after the special lecture on how to write thought-provoking questions and focused on the impact of the intervention. Two questions were asked:

- “Did the special lecture intervention significantly improve the writing skills and the higher-order skills of the students?”
- “If so, in what measurable ways?”

During this cycle, the last three teams took their turns to present. Once again, the non-presenting students were required to submit their TPQs, and these TPQs were evaluated and marked by the teacher-researcher.

**Description of What Happened.** After the special lecture, the teacher-researcher observed a considerable improvement on the fourth, fifth, and sixth sets of TPQs submitted. The majority of the students demonstrated an improvement not only in the form and style, but also in the substance of their TPQs. Many students endeavored to expand their sources of declarative information and used additional information as a basis for their questions. The questions were now mostly characterized by higher-order thinking elicitation, requiring the respondents to synthesize, analyze, compare, and evaluate situations.

The students were also observed to have generally raised their questions with more confidence. The enriched quality of the TPQs posed in class spurred a lively interaction during each Q&A and discussion session. The downside was that, on the fourth set, there were only a few students who had the chance to raise their questions. The teacher-researcher attributed this to the lengthy discussion devoted to the fewer, but more thought-provoking, questions. Thus, on the fifth and sixth reports, the teacher-researcher managed the time to allow for more students to raise their questions.

**Evidence Used to Evaluate the Action.** The evidence used to evaluate the action included the TPQ marks on the fourth, fifth, and sixth submissions and the observations of the teacher-researcher on the students’ participation during the Q&A sessions. Table 3 shows the average scores for all the students’ TPQs covering the fourth through the sixth sets, and...
also indicates the number of students who raised their TPQs. The teacher-researcher also observed the quality of the students’ interaction and exchange of ideas during the discussion session.

Table 3
Average Scores, Post-Intervention TPQs

<table>
<thead>
<tr>
<th></th>
<th>TPQ 4</th>
<th>TPQ 5</th>
<th>TPQ 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average scores*</td>
<td>1.89</td>
<td>1.41</td>
<td>1.50</td>
</tr>
<tr>
<td>Number of students who raised TPQs</td>
<td>7</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

*1.0 = excellent; 2.0 = very good; 3.0 = good

Evaluation. The research question of cycle 2 investigated whether the special lecture intervention on how to write TPQs significantly improved the writing skills and the higher-order thinking skills of the students. The evaluation method used was the mean differences between the individual student’s scores on the pre-intervention and post-intervention TPQs. Table 4 shows the paired t-test used to evaluate the difference between pre-intervention and post-intervention scores. The paired t-test results indicate that there was a significant mean difference between the pre-intervention and post-intervention scores, \( t(71) = 12.153, p < 0.05 \). On average, the scores of the students improved after the special lecture (mean difference = 0.70, 95% CI [0.59, 0.82]).

Table 4
Paired t-Test for Mean Difference Between Pre-Intervention and Post-Intervention Scores

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Mean±SD</th>
<th>Difference Mean±SD</th>
<th>t</th>
<th>df</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-intervention Score</td>
<td>2.25±0.36</td>
<td>0.70±0.49</td>
<td>12.15</td>
<td>71</td>
<td>0.000</td>
</tr>
<tr>
<td>Pre-intervention Score</td>
<td>1.55±0.37</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reflection / Discussion. In addition to the above sources of evidence, the teacher-researcher conducted a survey among the students after all the teams had done their presentations. The survey used a structured questionnaire composed of two sections. The first section contained a 10-
item researcher-designed Likert scale intended to measure the students’ experience on the “thought-provoking questions” activity as well as on the students’ perceptions of the lecture intervention. The second section contained three open-ended questions, asking the students to elucidate their realizations about the special lecture interventions.

Table 5 summarizes the 10 statements that reflect the students’ perceptions of the lecture intervention and of the TPQs as a learning activity. The students were asked about their degree of agreement or disagreement with the statements. Eight of the 10 statements measured the students’ perceptions of the benefits of TPQs. The two other questions measured the students’ impressions of the lecture intervention.

As indicated in Table 5, the three statements that garnered the highest “strongly agree” scores were:

- Statement 1: In general, I find crafting thought-provoking questions (TPQs) challenging. (81.9%)
- Statement 7: Crafting the TPQs helped me understand better the relevant management theories, issues, and concerns. (79.2%)
- Statement 9: Crafting the TPQs and raising the same in class should continue to be used. (75.0%)

The use of TPQs as a learning activity was generally appreciated by the students. Two or three students, however, moderately disagreed with statements 1, 7, and 9, as shown above. Although the students found writing TPQs to be challenging, the teacher-researcher believes that the hurdles they experienced in formulating their thought-provoking questions are integral to the deep-learning process.

Tables 6 through 8 summarize the results of the three open-ended questions in which students were asked to describe their realizations about the special lecture interventions. As the data indicate, all of the students responded yes to an earlier categorical question about whether they observed a marked difference between the way they wrote their thought-provoking questions before and after the lecture intervention.
### Table 5
Participants’ Experiences and Perceptions on the TPQs as a Learning Activity

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In general, I find crafting thought-provoking questions (TPQs) challenging.</td>
<td>59</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>81.9</td>
<td>18.1</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>2. The lecture on how to write thought-provoking questions (TPQs) has helped me to craft better TPQs.</td>
<td>52</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>72.2</td>
<td>27.8</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>3. Writing TPQs enabled me to come to class prepared.</td>
<td>45</td>
<td>47</td>
<td>0</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>62.5</td>
<td>37.5</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>4. Writing TPQs gave me the confidence to raise TPQs and participate in class discussion.</td>
<td>26</td>
<td>43</td>
<td>3</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>36.1</td>
<td>57.2</td>
<td>4.3</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>5. After the lecture on how to write TPQs, I was challenged to do literature search to craft a logical and rich scenario setting in my TPQs.</td>
<td>43</td>
<td>29</td>
<td>0</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>59.7</td>
<td>40.3</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>6. I never thought that in so short a time I could hone my skills in writing TPQs.</td>
<td>36</td>
<td>33</td>
<td>3</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>45.8</td>
<td>4.3</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>7. Crafting the TPQs helped me understand better the relevant management theories, issues, and concerns.</td>
<td>57</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>79.2</td>
<td>20.8</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>8. Raising the TPQs in class made the discussion more enriching.</td>
<td>49</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>68.1</td>
<td>31.9</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>9. Crafting the TPQs and raising the same in class should continue to be used.</td>
<td>54</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>75.0</td>
<td>25.0</td>
<td>0</td>
<td>0</td>
<td>100.0</td>
</tr>
<tr>
<td>10. Giving extra points to those who raised TPQs motivated me to raise my TPQs in class.</td>
<td>45</td>
<td>25</td>
<td>2</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>62.5</td>
<td>34.7</td>
<td>2.78</td>
<td>0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 6 presents the students’ reasons (first-mentioned) for the indicators to their response. Of the total, 43.1% cited their higher scores and the fewer teacher-researcher comments on how to improve their TPQs. A total of 25% said that they learned how to refer to literature and other sources and how to cite scenarios and establish the predicate for thought-provoking questions; and 18.1% said that their questions were now “more specific and discussion-worthy” and said that their questions were now phrased in a manner that is clear, lessening the confusion of the person who is to answer the question.

Table 6
Reasons That Students Found Marked Difference in the Way They Wrote Thought-Provoking” Questions Before and After Lecture Intervention

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Higher grades; fewer comments for improvements by teacher</td>
<td>31</td>
<td>43.1</td>
</tr>
<tr>
<td>2. After the lecture, applied the right way of writing TPQs, learned to cite from literature other sources, and laid the predicate and provided the scenario for deliberation</td>
<td>18</td>
<td>25.0</td>
</tr>
<tr>
<td>3. TPQs became more specific (not vague anymore) and discussion-worthy, lessening the confusion of the person who is to answer the question</td>
<td>13</td>
<td>18.1</td>
</tr>
<tr>
<td>4. TPQs became more on application of theories and concepts rather than just recall of textbook facts / declarative information</td>
<td>6</td>
<td>8.33</td>
</tr>
<tr>
<td>5. Before, wrote only &quot;pure&quot; questions, based on immediate facts grasped, answerable by &quot;yes&quot; or &quot;no&quot;</td>
<td>3</td>
<td>4.2</td>
</tr>
<tr>
<td>6. Now, easier to write TPQs; became more proficient</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 7 presents the students’ comments on how they perceived the special lecture’s usefulness to them. Close to a third of the students said that they found “setting parameters, laying the predicate” as well as “properly crafting and phrasing questions in relation to citing relevant scenarios” to be useful. About a fourth of the students said that they also found “researching for relevant information and relating theories to situations and properly acknowledging sources of citation” of value. Finally, a fifth of the students said that they found “thinking critically and analyzing logically” to be useful skills.

**Table 7**

**Students’ Opinions on Usefulness of Lecture on How to Write TPQs**

<table>
<thead>
<tr>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Setting parameters, laying the predicate; properly crafting and phrasing of questions in relation to citing relevant scenario</td>
<td>20</td>
</tr>
<tr>
<td>2. Researching for relevant information and relating theories to situations and properly acknowledging sources of citation</td>
<td>17</td>
</tr>
<tr>
<td>3. Thinking critically and analyzing logically</td>
<td>14</td>
</tr>
<tr>
<td>4. Understanding the topics deeper</td>
<td>9</td>
</tr>
<tr>
<td>5. Writing TPQs where expected answer is not just “yes” or “no” leading to a thorough discussion in class</td>
<td>7</td>
</tr>
<tr>
<td>6. Helping me craft the right, logical questions</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
</tr>
</tbody>
</table>

Table 8 summarizes the students’ affective impression of the TPQ approach as a learning activity in their course, Introduction to Management. A total of 43.1% said that they had developed the confidence and the ability to write and raise TPQs; 23.6% said that they felt fulfilled and proud since they improved their skills in asking and writing TPQs; and 13.9% said they had been enlightened and had become more knowledgeable and aware of issues in business and management.
Table 8
Students’ Impressions of TPQ Approach in Relation to Management 101 Course

<table>
<thead>
<tr>
<th>1. Confident with the ability to ask/write TPQs</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Fulfilled, accomplished, developed, refined, improved proud of myself with the ability to ask/write TPQs</td>
<td>13</td>
<td>18.1</td>
</tr>
<tr>
<td>3. More knowledgeable, enlightened and became more aware of the issues in business and organizations</td>
<td>10</td>
<td>13.9</td>
</tr>
<tr>
<td>4. Empowered, more critical and prepared in class</td>
<td>7</td>
<td>9.7</td>
</tr>
<tr>
<td>5. Happy, glad, thankful, excited to have learned more in management, with skill useful in the future</td>
<td>6</td>
<td>8.3</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The survey findings presented in this section support earlier studies that investigated the merits of deep-learning approaches using student-generated questions [Berry and Chew, 2008; Nardone and Lee, 2011; Rothstein and Santana, 2011]. According to Chin [2004], asking questions is crucial to learning and activates deep-thinking strategies.

4. CONCLUSION

As the final reflection on the AR process, this study concludes with the commendatory value of action research in evaluating the effectiveness of a teacher’s activity. In this study, action research was used to assess the importance of TPQs as a learning activity. The study’s methodology through the AR cycles finds congruence with McNiff and Whitehead’s [2010] definition of action research – “a form of enquiry that enables practitioners in every job and walk of life to investigate and evaluate their work.” McNiff and Whitehead [2010] identified the following questions that action researchers ask:

- “What am I doing?”
- “Do I need to improve anything? If so, what?”
- “How do I improve it?”

These questions were the guideposts in this study’s AR methodology. The teacher-researcher, having chosen TPQs as a deep-learning activity, was directed by the first question, “What am I doing?” The answers to this question were
addressed in the first cycle of the AR process. The processes in the first cycle were driven by the questions, “Do I need to improve anything? If so, what?” and “How do I improve it?” They motivated the teacher-researcher to introduce the lecture intervention to help improve the students’ performance.

The study further concludes that the exercise of having the students craft their own thought-provoking questions addresses the deep-learning processes of students. According to Ciardiello [1998], student-generated questions increase higher-order learning since students are involved in analyzing information, synthesizing various concepts, and elucidating their ideas.

In this study, the evaluation of the effectiveness of the TPQs in an AR methodology spiraled through two cycles. In the first cycle, the focus was on the quality of the students’ initial TPQ submissions. It was during this first iteration that the teacher-researcher realized that an intervention was needed to improve the students’ performance. The second iteration focused on the outcomes of the lecture intervention. Central to evaluation and reflection were the quality and substance of the subsequent TPQ submissions after the intervention. As a result of the reiterative fashion of the AR methodology, the higher-order thinking skills of the students were enhanced, as evidenced by the improved scores.

As espoused by constructivist theories, learners are better able to acquire and apply conceptual knowledge when they are engaged in the learning process. The finding that the majority of the students in the Management 101 course agreed that the crafting TPQs should be promoted has prompted the teacher-researcher to recognize the value of such an approach in deep learning.

The triangulation of analyses on the data collected provides positive support of this study’s research question – whether “the requirement of writing TPQs and raising the same for class discussion and interaction will develop the students’ higher-order thinking skills.”

5. RECOMMENDATION

Drawing on the aforementioned results, the teacher-researcher would like to impart two things. First, other business or management faculty may want to experiment with AR methodology when strategizing the improvement of their teaching craft. The cyclical process of disciplined investigation, reflection, and action will not only benefit the learning process of the students, but also, more important, accrue to the teacher’s effectiveness in delivering the course objectives. In valuing the iteration of reflecting and doing an AR, it does not matter whether the business or management course deals with quantitative or qualitative concepts.
Similar studies have been done in accounting and marketing tertiary courses, with encouraging outcomes.

Second, the deep-learning strategy used in this Management 101 course may likewise be appraised by other teachers. Nurturing students to come up with student-generated thought-provoking questions enhances their higher-order thinking skills. When teachers guide their students to properly craft and raise their own thought-provoking questions, the students’ ability to attain and use conceptual knowledge is enhanced. In consonance with Briggs [2006], who espouses deep learning and dissuades surface learning, this study urges other business or management faculty to foster the culture of thought-provoking questions as a deep-learning approach. Specifically, teachers may want to consider Chin [2004] on the urgency of developing the students’ “skills and habit of question asking.”

6. LIMITATIONS

The current study, however, is not without limitations. It is recommended that, in similar studies in the future, researchers request other subject matter expert evaluators to assess the form and substance of the student-generated thought-provoking questions. The scores of the teachers and scores of the other experts scores can then be compared or averaged to minimize biases.

Another limitation is that the current research design uses a single-group, pre-test, post-test comparison. Similar studies in future may apply an experimental research design (whether quasi- or true experimental) to be able to truly compare the improvement of the results attributable to the lecture intervention.

REFERENCES


Broggy, J. 2011. The art of asking thought-provoking questions: Their role in encouraging student participation in the science classroom, Resource and Research Guides 2(#13).


ABOUT THE AUTHOR

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