A self-evaluation technique in improving teacher’s professional development: The use of “realia” media and “wait time” strategies

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Abstract. Personal teaching evaluation is an influential way to improve teacher’s professional development and student achievement. The purpose of this study was to assess the teaching performance of the use of “realia” media and wait time strategy found in daily life to teach science for elementary school students. The anatomy of a blue crab was selected as the topic in this study. The teaching performances were analyzed qualitatively using the modification of Florida Teacher Performance Measurement system. Students’ perceptions (n=32) of teacher teaching practice were used as extra information for this personal evaluation task. The result showed a positive response to class activity that has been designed using the realia media. Also, some students suggested that the wait time should have been implemented to show a sign of the willingness to give elaboration answer. Based on the analysis, although the teaching is less effective, it could be concluded that being confident (in relation to self-efficacy) was essential to support teaching activities such as showing enthusiasm, respecting the students, and other positive attitudes. Preparing a preserved specimen of a blue crab can be an alternative way to prevent fear and unpleasant scent in observing a blue crab for early grade school students.

1. Introduction
The independent study (teaching internship) is one of core requirement that offers an opportunity to have experiences as an instructor in a CIED 3143 class (teaching science in elementary grade). Attending to a semester class schedule, getting involved in teaching process (such as class preparation and class discussion), preparing lesson plans and teaching in the class, and writing an internship report, were the overall activities that have been done for this teaching internship program. In this case, writing report of teaching activities was one of the self-assessment techniques that was used to evaluate personal knowledge and skills got during graduate study. Personal teaching evaluation is an important way to improve teacher’s professional development and student achievement. Self-evaluation is a powerful technique for self-improvement as a theory of teacher practice for facilitating
professional growth and teaching effectiveness that can be done through self-monitoring, audio, and video recording, and students’ feedback on teaching [1][2].

Moreover, Airasian and Gullickson stated that teacher self-assessment is the process of teacher’s expertise (including scientific knowledge and social understanding) in classroom settings including (1) a teacher’s reflection on classroom action, beliefs, and outcome; (2) a resulting self-critique of one’s practice; and (3) if appropriate, a change in teacher understanding or future practice [3]. Besides, Tuckman considered effective teaching is the way that causes students’ improvement which might be assessed using performance-based assessment approach to evaluate teacher behavior [4].

From a review of the literature, realia are objects or activities related to classroom teaching to the real life that can promote hands-on interactions and involvements [5][6]. While wait time was defined as the interval time (in seconds) between an instructor’s question and a student response (wait time with response/wait time 1) or a decision by the instructor to move on to another topic (wait time without response/wait time 2)” (p.6) [7][8][9]. Therefore, there were little reports of the use of “creature” as real media and wait time strategy as the supporting tools to do self-evaluation in the teaching process. The purpose of these topics was to analyze teaching performance of the use of “realia” media enrichment in teaching science that is based on common things found in daily life or around us (such as home yard, grocery stores, or parks). The teaching performances have been analyzed qualitatively using the modification of Florida Teacher Performance Measurement system. In general, my teaching practice evaluation was analyzed to address the following research questions:

1. To what extent is this teaching practice effective?
2. How does the involvement in the classroom interact questioning and feedback to students’ responses?
3. How does the “wait time” concept apply in this teaching practice?

2. Methods
Introduction to the external anatomy (morphology) of blue crab (Callinectes sapidus) was selected. The purpose of this topic was to introduce the external anatomy of one of crustacean subfamily as a basic way for the classification system. External anatomy (Dorsal and Ventral) characteristics were done through observation and discussion during the class.

There were six group of students (pre-service teachers) who took “science teaching for elementary student” course. Each group consisted of five to six students. One female and one male of blue crabs were planned to be provided for each group. Since there were not enough number of male and female crabs, each table was just provided with one female blue crab only. The only one male blue crab was only shown in the class through the table to table explanation. The class opening was done by showing the power point presentation, asking several questions and short explaining about what the students should have done for the class activity. No specific teaching instruction method applied to teach the topic. Additionally, the observation was emphasized to teach the topic. Instructional plan, including teaching material and student worksheet, was arranged in a lesson plan. Moreover, the teaching practice was recorded using two different video cameras to get more views of the classroom activities.

Many researches found the effectiveness of using video analysis as teachers’ teaching reflection across several studies focus including “type of reflection tasks, the guiding or facilitation of reflection, individual and collaborative reflection, video length, number of reflections and ways of measuring reflection” (p.3) [10]. The teaching activity project was analyzed qualitatively using the Florida Teacher Performance Measurement system (Table.1) [4]. Students’ perceptions toward teacher teaching practice were gathered from students’ notes (optional) collected at the end of classroom instruction.

3. Results and discussion
Observing personal teaching video and analyzing it without unbiased perceptions are not easy. Thus, students’ evaluation towards the strengths and weaknesses of this practice teaching might be used as the second view for this personal teaching evaluation. In general, it was less than 50 minutes teaching
time because it was started in the middle of class introduction and discussion, which leads to a misunderstanding of the amount of time that needs to be spent in the class. There was a technical problem in the recorder, so we missed a couple of minutes of lesson opening at the time to engage student using a book of Eric Carle “A house for a hermit crab.”

Table 1. The Florida teacher performance measurement system

| Domain                      | Effective indicators                          | Blue crab anatomy | Ineffective indicators                                                                 |
|------------------------------|-----------------------------------------------|-------------------|----------------------------------------------------------------------------------------|
|                              | 1. Begins instruction promptly                | On Time           | Delays                                                                                 |
|                              | 2. Handles materials in an orderly manner     | handled           | Does not handle materials systematically                                              |
|                              | 3. Orient students to classwork/ maintain academic focus | focus             | Allows talk/activity unrelated subject                                                  |
|                              | 4. Conducts beginning/ending review           | yes               |                                                                                         |
|                              | 5. Questions: academic comprehension/lesson development | Asks single factual recall and analysis/ type of questions | Process multiple questions asked as one                                                  |
|                              |                                            | Requires analysis/ | Process non-academic questions/ procedural questions                                   |
| Organization and development instruction |                                | reasons            | Ignores student or response/express sarcasm, disgust, harshness                         |
|                              | 6. Recognizes response/amplifies/gives corrective feedback | Giving appropriate feedback with the instructor’s help | Uses general, nonspecific praise                                                       |
|                              | 7. Gives specific academic praise             | Giving praise      | Extends discourage, changes topic/ no practice                                          |
|                              | 8. Provides for practice                     | Hands-on activities: macroscopic observation |                                                                                         |
|                              | 9. Gives directions/assigns/checks comprehension of assignment/gives feedback | Students instruction sheet/ worksheet | Gives inadequate directions/ no homework/ no feedback                                    |
|                              | 10. Circulates and assists students           | Assisting all tables with the help of the class instructor | Remains at desk/circulates inadequately                                                 |
| Presentation of subject matter | 11. Treats attributes/examples/non-examples | Definitions were attributed with examples and pictures | Gives definition or examples only                                                       |
| Verbal and non-verbal communication | 12. Wait time 1                           | 3-10 seconds      |                                                                                         |
|                              | 13. Wait time 2                               | none               |                                                                                         |
|                              | 14. Emphasizes important points              | emphasized the external anatomy of blue crab |                                                                                         |
|                              | 15. Expresses enthusiasm/challenges students | Yes                |                                                                                         |
|                              | 16. Uses body behavior that shows interest/smiles/gestures | yes                | Frowns/deadpan/lethargic                                                               |
| Management of student misconduct | 17. Stops misconduct                          | Yes, with the help of a class instructor | Does not stop misconduct/desists punitively                                           |
|                              | 18. Maintains instructional momentum         | yes                | Loses momentum/fragments/over dwells                                                   |
The analysis of teaching effectiveness based on the Florida teacher performance measurement system is described and discussed based on Table 1. The first measurement was related to organization and development of instruction. In this teaching practice case, the instruction promptly was begun by the instructor since there are two or three topic sessions to be taught in one meeting. Teaching blue crab topic was conducted in the second session. The session was opened by engaging student to recall the example of crab that the might recognize from their kid time story telling. Next, the objective of the lesson has been introduced to maintain the academic focus. The teaching materials did not handle in an orderly manner purposively. It has been planned for handling worksheet and general information of the blue crab first; then it would be ended by giving the morphology of the crab “cheating sheet” at the end of the observation. Instead of distributing materials in two steps, all teaching materials had been handled at one time because the teacher was feeling nervous. Moreover, several students criticized the quality and attractiveness of the powerpoint that the teacher made. In addition, there was no precise instruction given to students about the activities. This fact was supported by a statement from a student as follow:

“I was sort of lost with what to do with the worksheet…, a little more instruction with that would be good” (Std-12).

Regarding questioning, academic praise, and feedback or responses, there was no application of the concept of wait-time-2 at all. Even though the wait time 1 (3-10 seconds) was applied, there was no “postponing time” that students might want to give more responses or more explanation for the question. Researchers found that wait time 2 have powerful in growing the probability of elaboration [11] and promote critical thinking skills [12]. In addition, it is found that 4-6 seconds of wait-time-1 has shown the highest frequency and depth of responses towards teacher’ question [7]. Four of the thirty-two students have realized and gave suggestions regarding the “wait time” while asking questions. Some of the student’s statements as follow:

“maybe when you ask questions, allow more wait time for the students to respond!” (Std-5)
“... and giving us a little bit wait time to think after the question” (Std-20)

The questions asked to students at the beginning of activity were expected to see the relationship between the observation and the classification of organisms. Those questions are categorized as “interpretation” type of question according to Blosser [13]. In addition, Shahrill reviewed that asking effective questions, applying “wait few seconds time,” structuring the teacher questions, being flexible, being open and non-judgmental, and being honest in showing a keen interest of students’ response towards questions were strategies to be an effective teacher in a classroom [14]. Another significant weakness of this teaching practice was an uncertain assessment that has been assigned to this class. The observation towards students’ practical activity, a comprehensive task given, and feedback given was not enough to provide the evidence of learning assessment.

The second measurement was related to a presentation of subject matter. There were none of the criteria that suggested by the Florida Teacher Performance Measurement system has been done in the class for this domain. In addition, students suggested that teacher could give more explanation or story about the blue crab such as the habitat, mating behavior, or type of food the blue crab eats. Students also needed to have more “space” to discuss their observation result and discuss further some information that might be useful for them. The last measurement was related to verbal and non-verbal communication and management of student misconduct. For this point, the enthusiasm for doing the class activity and stopped misconduct when it was needed has been done. Yet, the low English proficiency teacher had, especially speaking with correct grammar, might influence the success of the communication during the teaching practice. English proficiency is also needed to choose the appropriate words to explain certain information to avoid misconception.
In general, students appreciated and welcomed to this teaching practice time. Most of them gave positive responses towards the topic and class activity that have been designed. Several interesting responses from students such as:

“this activity was great! I’ve never looked at the anatomy of a sea creature, so it was a fun, new experience for me!” (Std-14)
“good at explaining things and walking around the classroom to ask us further questions making us think more into the activity” (Std-2)

Therefore, based on the analysis result, it might say that this teaching practice was still far to be categorized as effective teaching. Cultural differences might also be a limit to understand the language (ea. student responses) and to have effective communication between the students and teacher such as the time to get students’ attention to focus on the lesson. It also needs to improve questioning behavior such as suggested in McComas [15]: asking a variety of questions, using appropriate pauses and wait time, wording question clearly, encouraging students to expand on their own responses and asking questions that permit multiple responses. Questioning also plays an important role in the instructional strategy to assess learning progress, to enhance conceptual understanding, to recognize prior conceptions and misconceptions, to help the teacher in probing and redirecting, and to empower students in active learning [16]. Nevertheless, this teaching practice and self-evaluation have given a lot of feedback to improve further teaching practice.

Furthermore, concerning the revision of this teaching, the class instructor suggested a well-prepared alternative strategy when a certain realia media could not be provided due to any unpredicted conditions. She also suggested (to those pre-service teachers) that a teacher should not show any negative expressions while they are using unpleasant teaching tools in front of their students. In addition, an expert in marine invertebrate and ecology has provided a suggestion for another way to use crab as the realia media as follow:

“The introduction of a blue crab anatomy can be done through direct observation. However, the difference in student's school level should also be taken into account, especially related to the types of media used. As an alternative, for elementary school children at 4 -6 years of age, teachers can provide a specimen that has been preserved with Alcohol 70% to reduce students' fears, unpleasant scent, and the observation time concern. Students will be able to observe a blue crab easily since it has a very prominent carapace compared with its abdomen and has a bluish color and the bright white spots on the males, while the females are greenish-green with a rather dull white patch”.

4. Conclusion
Based on this evaluation, being confident in relation to self-efficacy is important to support teaching activities such as by showing enthusiasm, respecting the students, and other positive attitudes. Yet, some students suggested that the wait time should have been implemented to show a sign of the willingness to give elaboration answer. Although the teaching is less effective, a teacher should also consider other essential components in teaching such as questioning, providing feedback, wait time, and instructional design planning that is important to support more profound understanding and lifelong learning.

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