



TEACHERS' PERCEPTIONS ON THE CLASSROOM PEER OBSERVATION EXERCISE AT EAC-CAVITE, PHILIPPINES

Ethel Reyes-Chua¹ⁱ,

Marisol Remollo-Mack²,

Alma O. Vilorio³

¹Ed.D, Emilio Aguinaldo College,
Dasmarinas City, Cavite,
Philippines

²JD, Emilio Aguinaldo College,
Dasmarinas City, Cavite,
Philippines

³MSME, Ed.D, Emilio Aguinaldo College,
Dasmarinas City, Cavite,
Philippines

Abstract:

Aligning teacher's classroom peer observation with professional development can be considered effective if teachers would actually try to conduct this exercise, collect evidence, and to manage a peer post-conference. The major purpose of this study was to identify the teachers' perceptions and insights on the classroom peer observation at EAC-Cavite. It also aimed at developing appropriate responses to evidence, identifying the advantages and disadvantages of classroom peer observation, and improving the system using the qualitative method of research and an open-ended survey questionnaire approach which was administered randomly to 14 schools or 35 faculty members. The results revealed that there was a positive insights of faculty members in the conduct of classroom peer observation. The results were analyzed using the Kolb's Experiential Learning. As part of its implications to teaching practice, the researchers have adopted the cycle and came up with their own paradigm which is highly recommended to be used and evaluated for professional development and improvement.

Keywords: peer evaluation, professional development, perceptions

1. Introduction

Classroom peer observation has just recently implemented at EAC-Cavite. In its first attempt to conduct this exercise, it has become successful. However, there were factors

ⁱ Correspondence: email coolwaterphil@gmail.com

to be improved like the provision of a more personalized post-conference between the faculty member involved, coordination between the observer and the faculty, and the manner of giving feedback by the observer. Provision of feedback builds relationships through the development of empathy, respect, and trust (Shortland, 2010). According to this author, the objective of successful peer observation is to develop both the feedback provided by two individuals for personal and professional development on a continual basis. We are now approaching the end of the semester, and this classroom peer observation is going to be done at various schools again. The HR has made things clear before the conduct of this task. Faculty members are of its objectives, the way it has to be conducted, and the manner of giving the feedback and post-conference to fellow faculty members. The role of the observer and the observed has been clarified by the deans of each school and therefore, its results become the basis of self-improvement and professional development.

On the other hand, full-time and part-time professors can be one issue in promoting and conducting this peer classroom observation. Some professors may not be available during their free time. Thus, this activity cannot be fully done. Donnelly (2007) emphasizes that faculty members should discuss or talk about their teaching. This is an outlet for discussion of all matters concerning teaching or problems encountered in teaching. In Higher Education institution in the Republic of Ireland, this context is called the "Continuing Professional development" or CPD. Peer observation is defined as the formal process by which the good practice of faculty members is identified, disseminated and developed (Donnelly, 2007). In the Philippines' Higher Education, classroom peer observation is part of faculty's professional development and standards. This is one way of addressing the academic problems of faculty or students through observations.

2. Literature Review

Some studies have shown the integration of peer evaluation as a model of teacher evaluations can have a positive impact on the teachers and their performance that participate in peer evaluation as well as the potential for an increase in the academic achievements of the students (Farrell, Dale Patrick, 2017). There are few researches conducted about peer observation and there is less research pertaining to classroom peer observation as part of professional development. Mack and Chua (2019) believe that peer evaluation is effective most especially if the purpose is to improve the teaching and learning process and the results of evaluation becomes part of professional growth of faculty members. They discover that whatever the results of the evaluation will always be the basis of the administration to enhance and support the CPD of professional teachers. Shortland (2004) stresses that peer observation has always become part of professional development programs for both new lecturers and established staff members. Nevertheless, Cosh (2002) has argued that there seems to be no real evidence that people develop and improve. However, some studies mentioned

that teacher's evaluation should measure a teacher's strength and weaknesses through an accurate and consistent process that provides timely and useful feedback. It should inform instruction and professional development opportunities to create a well-developed classroom instructions and educational outcome, thus fostering improvement in both professional development opportunities and teaching practices (Kathe Callahan & Leila Sadeghi (2015).). The use of peers in the evaluation of teaching is part of a larger trend in postsecondary education toward a more systematic assessment of classroom performance. Many scholars believe that certain aspects of teaching can be assessed only by classroom observation (Maria Yon, Charles Burnap & Cgary Kohut, 2010). Moreover, the evaluation process can play an important role in developing teacher's instructional capability, which in turn contributes to the academic achievement of the students. Based on Cosh's statement, it is in contradictory with Shortland (2007); (Mack and Chua (2019) who have found out that the peer observation strongly develops relationship, respect, and trust. The benefits of peer observation according to Hendry and Oliver (2012) are a supportive and developmental process for improving the quality of teaching in universities. This study provides some evidence that teachers do welcome the possible integration of peer evaluation and perceive that peer evaluation may result in an increase in the amount of time spent sharing instructional strategies among other teachers (Farrell, Dale Patrick, 2017).

Donnelly (2007) carefully points out the rationale and context of the peer observation scheme, summarized as follows:

Who	Who should be eligible to conduct observations of your teaching?
What and where?	The areas of focus in the teaching and learning process
When	When should the observer observe?
How	What tools and methods to be used to observe the teaching sessions?
Why	Contemplation of the purposes for which teaching is being observed and the principles involved

The first question involves the person to be observed and the observer. In the light of faculty standards, those observers should have at least similar qualifications with the one observed, i.e. English major should be observed by an English major; Math major should be observed by a Math major, and others. The focus of the teaching and learning should be emphasized more than the physical set-up of the classroom. The time of the observation should be clear with both parties. If methods are available during the teaching observation, these should also be clarified with the one being observed to avoid any misconceptions or problems during the actual conduct of Classroom peer observation. Finally, the purposes of teaching observation among peers should be carefully elaborated before its conduct.

According to Gosling (2005) as cited by Donnelly (2007), the objectives of peer observation of teaching within such a developmental model are:

- 1) To facilitate reflection on the effectiveness of the participants 's own teaching and identify their developmental needs;

- 2) To improve the quality of learning and teaching;
- 3) To foster discussion and dissemination of good practice; and
- 4) To increase participant awareness of the student experience of learning. (p. 120)

2. Conceptual Framework

One common denominator of the above literatures is that, peer observation is intended for professional improvement and to improve the quality of the teaching and learning process. Thus, the researchers adopted the Kolb's experiential learning because it involves reconstruction of one's experiences through the process of observation, analysis of feedback, evaluation of skills, attitudes, and knowledge, and exploration of new possibilities for professional action (Schon, 1983 as cited by Donnely (2010).

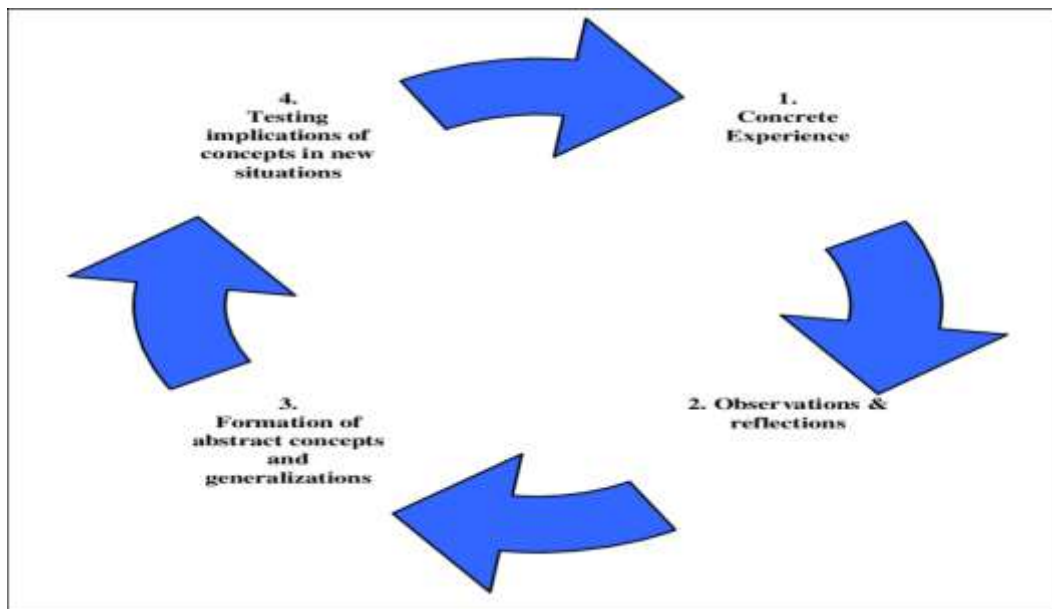


Figure 1: Kolb's Experiential Learning

Since it was the first time of EAC-C to conduct the classroom peer observation in the first semester, this was freely conducted by professors in their respective schools. They tried to experience how to be in their colleagues' class without really thinking of evaluating the person, but rather, looking first into positive observations or areas for improvement for professional growth and development. In this stage, both the observer and the observed are experiencing the first step on Kolb's Experiential Learning i.e. Concrete Experience. The observer has to take down notes on the positive as well as areas for improvement. The two will reflect on what has happened during the observation process. The observer creates generalizations and summarizes the observations during the post-conference stage. The last stage brings the observed individual to realize what has been commented and make reflections for further improvement. The observer also learns from this experience and may be able to utilize this experience in the future.

2. Methodology

The qualitative method of research is used in this study using a self-made open-ended survey questionnaire.

2.1 Methods and Procedures

The researchers informed the Research and Development Office (RDO) about the conduct of this study with the approval of the Ethics Committee on Research. The survey was conducted to 14 schools of EAC-Cavite. Those who have answered the questionnaire submitted the form to the HR and they were the ones who voluntarily provided their answers.

2.2 Participants

There were 35 participants in this study involving the 14 schools. The faculty members can be part-time or full-time professors teaching different courses assigned to them.

2.3 Data Collection and Analysis

The faculty members were given a week to answer the survey-questionnaire. After that, HR staff collects all the forms with their answers, analyzed, and interpreted.

2.4 Limitations

This study focused on the Classroom peer observation exercise at EAC-Cavite with 35 participants from various schools. The main point is to bring out the teachers' perceptions and insights about this exercise to develop and improve the teaching and learning process. The analysis was based on the Kolb's Experiential Learning approach.

3. Survey Questions

3.1 Survey Question # 1: How do you find the peer evaluation exercise as part of our Faculty Evaluation components and professional development?

Survey shows that most of the faculty-respondents who participated in the survey are optimistic that the Peer Evaluation exercise which is part of Faculty Evaluation components and professional development. According to their responses, the evaluation instrument is appropriate for the evaluation procedure, it help to mold as better young professional towards career, a good academe/institution practice, a formal venue to cusses colleagues performance through specific measures, a tool to improve oneself, can help school administrators to ensure that the educational objective vision, mission are followed, a way to learn and observe how co-faculty execute task as a teacher, can improve teaching, can contribute to the development of the faculty, can be a way to calibrate faculty performance and inter-relations objectively subjective, serve as one advantage point to spot improvement, just right and appropriate, can promote constructive feedback to colleagues, a check and balance scheme/welfare of humanity,

can help see strength and weaknesses, can be a way to know different strategies in teaching, a tool to observe/assess peers, awareness that not only deans evaluate faculty members but also peers, a way for every faculty member to be aware of how he/she conducts inside the campus.

Out of 35 faculty members, 3 of them find the Peer Evaluation instrument "excellent/great", 7 "good/okay", 1 "very effective, 1 "effective", 1 "stressing but somehow useful", 1 faculty suggested "needs to focus more on the behavioral rating" , 1 faculty responded "I am not involved" , and 1 faculty said that the Peer Evaluation "does not help."

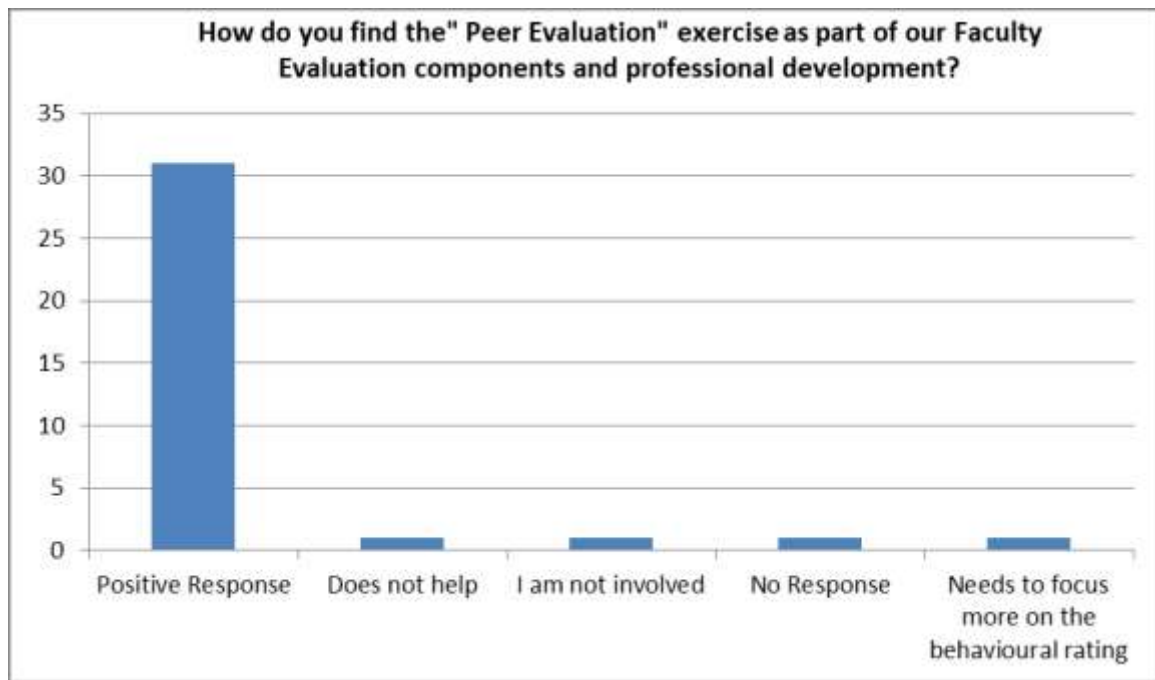


Figure 1: How do you find the "Peer Evaluation" exercise as part of our Faculty Evaluation components and professional development?

Figure 1 shows the frequency distribution of the faculty/respondents' responses as to how they find peer evaluation exercise as part of the faculty evaluation components and professional development. The data revealed that 31 out of 35 or 88.57% of the total faculty responded positively on the survey, 1 faculty member or 2.86% of the total faculty members in each of the following responses said that the peer evaluation "does not help", "I am not involved". One faculty member suggested that the peer evaluation needs to focus more on the behavioral rating while the other one faculty, 2.86% replied, "i am not involved" in the peer evaluation.

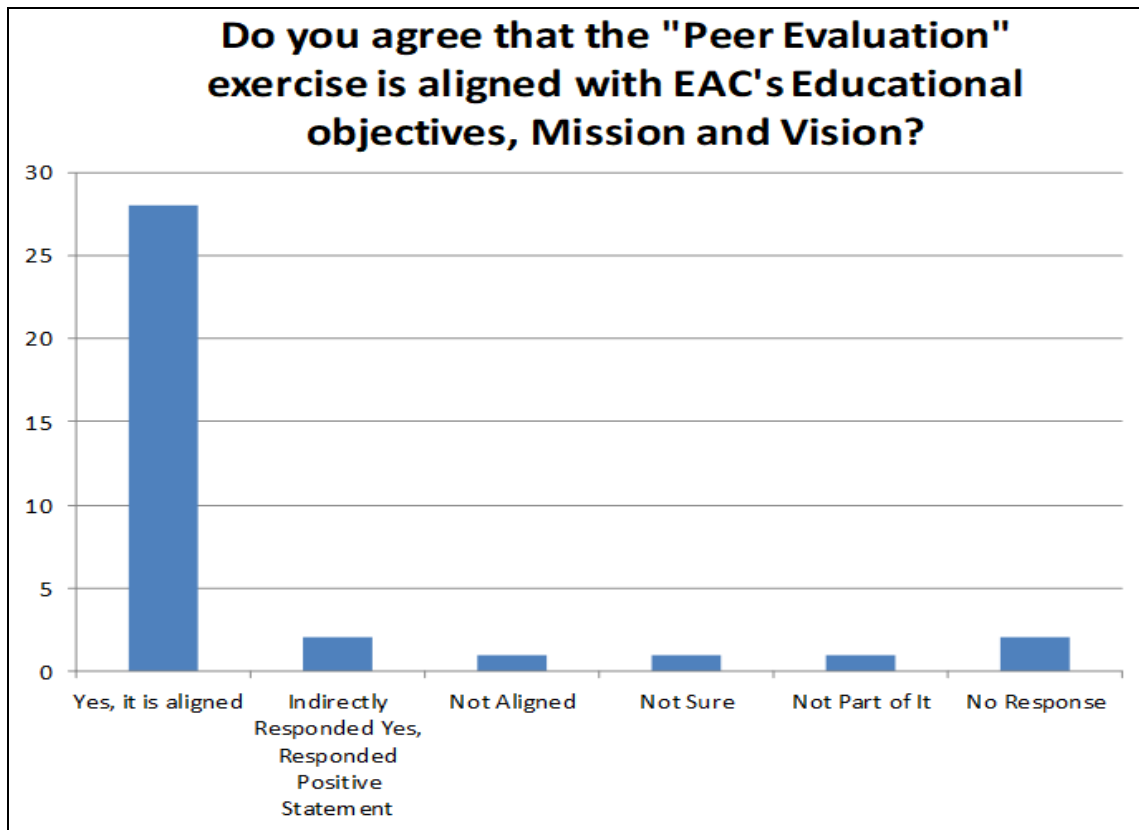
3.2 Survey Question # 2: Do you agree that the "Peer Evaluation" exercise is aligned with EAC's Educational objectives, Mission and Vision? Elaborate.

Ethel Reyes-Chua, Marisol Remollo-Mack, Alma O. Vilorio
TEACHERS' PERCEPTIONS ON THE CLASSROOM PEER OBSERVATION
EXERCISE AT EAC-CAVITE, PHILIPPINES

Survey on Peer Evaluation
Responses
Yes.
Yes, because improving our teaching strategies can help our student to become globally competitive students.
Yes, especially on part where it says "Consistently pursues advancements".
As nation we build this society from group of individuals , and from there socialization leads to nation building.
Yes it is in line with truth and excellence.
Yes but there should be additional questions and some questions are tend to answer like the first few part of evaluation form.
Yes, I agree.
Yes, because our institution wants to produce socially competitive students, so it is very essential to know as to what our teacher /faculty can offer and important. By this, faculty will have a chance to improve themselves.
Yes I think so.
It can also improve interpersonal relationship in the working area.
At centered of advancement Mission: Aligned with OBE exercise Objectives: the result can cultivate ones intellectual moral, spiritual aspects of person.
Yes , faculty members should be professionals.
Yes. Peer evaluation is a way to access faculty performance, which is very instrumental. It is important that they're continually being evaluated.
Yes. It may be an effective tool in assessing the teacher not only on areas that needs improvements but also with the teachers strength as influencers motivators.
Yes it is aligned because we faculty help our students to be best versions of themselves so they can pursue excellence.
It is aligned , it meet the standards to develop self-growth and esteem.
Yes improvement teaching competencies of the faculty member, means providing quality and relevant education to stakeholders.
Yes because in peer evaluation we can see if the faculty member is effective in teaching.
Yes.
Yes.
Yes I agree since one of the mission of EAC is to produce future educators who are equipped w necessary and highest order to monitor & measure it implemented evaluation.
Yes.
For the purpose of enhancing performance and recalculating self. Yes it helps oneself to calibrate excellence.
Yes to do what EACs objective must be followed by the employee.
Yes in order to achieve excellence we need to evaluate our peers.
I am not part of it.
Yes as faculty member we are being looked up its as a role models.
Not sure.
Yes since EAC Goal is to provide an outcome based education per evaluation is a way in which co faculty are able to observe and evaluate one another and having the chance to share their ideas.
Yes peer evaluation is aligning EACs educational objectives and the mission vision because it boosts the relationship among teaching and non-teaching personnel.
Yes it is align with our vision mission bec we want to gauge if they are really delivering good quality server our stake holders.

Yes to be able to meet the quality objective and quality policy.

Does not align since virtue excellence service should be performed from the students experiences.



Out of 35 faculty members, 33 responded to this question and 2 of them did not respond. 28 out of 33 who responded "Yes" implies that the Peer Evaluation exercise is aligned with EAC's Educational objectives, Mission and Vision, 2 faculty members indirectly responded yes but with positive response, 1 faculty responded " does not aligned", 1 faculty replied "not sure" , and 1 faculty said "not part of it".

3.3 Survey Question # 3: What are the advantages and disadvantages of conducting the Peer Evaluation exercise?

Advantages	Disadvantages
Gives us the chance to improve	Misunderstanding/conflict
Improvement	For others may provide not valid evaluation from personal side
Forces our peers to perform better	May be subjective and too personal
The good environment means creative and productive result	Quite time-consuming (or maybe it was rushed)
Its honest since the teachers see each other all the time	"kanya kanya or groupings"
You'll be wearing some honest or (sometimes) sugar coated critics from others.	Bias, Subjective, selective
Maturity	It can turn to subjective than objective

Ethel Reyes-Chua, Marisol Remollo-Mack, Alma O. Vilorio
 TEACHERS' PERCEPTIONS ON THE CLASSROOM PEER OBSERVATION
 EXERCISE AT EAC-CAVITE, PHILIPPINES

Objective , constructive	One disadvantage might be bias
It helps w/ faculty personality development	Bias if the hater is a friend or has professional jealousy with the teacher being observed.
it keeps us in check	it keeps us in check
I don't see negative part for me it helps other young professionals to be guided on their career.	There is an evidence of bias in peer evaluation it will not be successful
Faculty members will be cautious careful of their words actions to co faculty/other people	It's a source of disrespect
You get to position yourself as an external avatar and asses yourself colleague based on standardized measures.	It may cause misunderstanding among peers
It gives an opportunity to teachers to plan and shares their knowledge to strengthen their teaching competencies	Is a time frame
To guide that faculty members on how to interact to the students	Are to this evaluation must be every term and less paper please
Third person point of view as to performance which is devoid bias	Can be used for excellent personal advantage
Can appropriate suggestions and feedback	It can be subjective (eg. base on impression ")
N/A	Can create misunderstanding
It exercise fairness	Maybe when there is misunderstanding or evaluation can be biased and through personal motives
Peer evaluate must be monitored firmly and be excluded in the percentage of total score to see the advantages and disadvantages of the tool.	Some the questions in there evaluation are not applicable
Will be I self-examining/a looking glass to validate performance and ethics	Non-conformance of performance
are to improve your teaching skill and yourself	Personal interest that may uses
Transparency with peers	
It guides useful insights for future improvement	
Promote camaraderie/Professionalism	
Serves as a check and balance, the person who shared evaluate you should know you at least professionally	
Include promotion of cooperation among faculty members and a way of fostering communication and sharing their methodologies.	
Self-access	
Faculty can get some techniques	
For continuous improvement plan	
Room for improvement	

3.4 Survey Question # 4: In your own opinion, what else can be done to improve the "Peer Evaluation" exercise?

Ethel Reyes-Chua, Marisol Remollo-Mack, Alma O. Vilorio
TEACHERS' PERCEPTIONS ON THE CLASSROOM PEER OBSERVATION
EXERCISE AT EAC-CAVITE, PHILIPPINES

Responses
Insert a bracket for performance evaluation for salary increase.
We can't see our peers when they are conducting lessons in the classroom therefore, questions about their performance inside the class are unnecessary.
Peer evaluation can be given time by the evaluator with natural set up then be observed carefully.
It should be done inside the HR office by the teachers.
Peer evaluation should also include the "peer evaluation" to the teachers' behaviour way of dealing /communicating with his /her co-faculty attitude, being a professional and as a peer."
Continue the peer evaluation.
Face to face interview as a form of evaluation /assessment.
I think more trainings with respect to the subject matter/course curriculum faculty development/peer evaluation can be done in school.
No idea yet.
Have it done every semester.
Have a grievance committee for faculty members.
~Ensure confidentiality ~Keep track of the time when the faculty was observed. ~Consolidate results and discuss w/ the person who evaluated.
Inter school peer evaluation.
Has a team builder or seminar how to improve such aim.
Organize an orientation seminar or per evaluation to clear the objective and expectations of the procedure.
Exercise amount confidentiality of assures annonguity of how more who share new ideas
1. Well monitored 2. The peer evaluation should also has the evaluation for administrative duties for fulltime faculties.
N/A.
In my own opinion pa dialogue should be done before the start of evaluation. The purpose should be cleared to them In order to get the full cooperation of the people involved.
None.
Work relations spent the longer you wanted the person.
The evaluation must be answer in online account.
No comment.
I do not know the existing system a rubric is objective marks would be presentable for me.
Team building activities.
Some as above the person you should evaluate is known to you personally.
Peer evaluation should have different set of criteria checklist and documentation.
Maybe a gathering like a seminar workshop to all faculties to improve evaluation.
I think we need to make a separate and different evaluation question that are relevant us a must be an online evaluation if possible and the HR must be one to assign the peer to be evaluate.
Strictly compliance of key performance indicator.
It is better have an evaluation of rank file to his her management.

4. Implications for Practice

This peer evaluation exercise explores the potential challenges and the professional support received by the teachers. Through thorough findings the study examines the challenges in peer evaluation by proposing ways as to how these can be resolved like providing them methodological workshops on the implementation of peer evaluation

and creating successful criteria accessible to all teachers as a basis for peer evaluation.

Teachers implementing the peer evaluation should have adequate teacher training, which they learn more new effective strategies that encourage everyone to carry on with the peer evaluation. In adopting peer evaluation strategies, a great deal of time is needed and spent on discussing the success criteria with teachers thus, emphasizing the importance of adequate time in successful and effective assessment Liu, Ching-Yee (2013).

The responsibility of the institution is to strengthen its quality and effectiveness of the teacher workforce (Vivien Stewart, 2011) The participants have the power to assess their own teaching with an inquiry oriented attitude, adjust practice for improvement, and model reflective practices while explaining why they are making adjustments for better understanding and teaching. Evaluating their own teaching through reflective strategies thus assists them in analyzing their teaching approaches and the effectiveness of their strategies, providing them with information with which to improve their pedagogy and increase student learning (Cindy Giaimo-Ballard & L. Hyatt (2005). This expands the understanding about how the teacher supposed to be in dealing with classroom management and teaching professional development (Risman Wanci, Nirwana Darwis, 2018).

They should be objective, fair, and accurate in highlighting the strengths of the staff member's teaching and provides constructive criticism where appropriate in order to avoid a biased judgment (Susan Moore Johnson and Sarah E. Fiarman, 2012). EAC-C should provide guidelines for the school to ensure teachers have plentiful time and opportunities to adopt peer evaluation strategies. Peer evaluation builds appreciation, encouragement, and open-mindedness among teachers implementing the school's policy (Risman Wanci, Nirwana Darwis, 2018). This further expands the understanding about how the teacher supposed to be in dealing with classroom management and teaching professional development. After meeting all the set standards of the institution, success is more likely to happy and its success in not only limited to teacher's professional development, it will also promote students' growth and achievement (Julie Nelson, 2012).

Because of these, the researchers have come up with the cycle of peer evaluation strategy based on Kolb's experiential learning process:



Figure 3: Adopted Cycle of Peer Evaluation Strategy by Mack and Chua (2019)

5. Conclusions and Recommendations

A more systematic assessment of classroom performance can only be assessed through classroom observation. Peer evaluation is seen as an important component in evaluating the teaching effectiveness. By means of reviewing and reflecting on the existing peer evaluation strategies, teachers can then share experiences, address the challenges encountered, and find out the solutions that provide the needs of the learners. Peer evaluation is proven effective, for it promotes professional growth and effectiveness - a key role in achieving excellence in any educational institution. Teachers are one of the most important variables influencing the learning processes, thus their effectiveness can predict and show the differences in student academic growth. Favorable attitude will allow for greater benefits from the evaluation by allowing the teacher to become more aware of specific strengths and weaknesses.

The teacher will improve teaching performance as a result of a positive evaluation experience. It is a good process where teachers get involved in the evaluation. It is therefore, teachers must be part of the process by allowing them to be part of the planning; designing, implementing, and creating follow up processes for evaluation of materials in order to create positive perception and attitude towards the implementation. It is emphasized that teachers implementing the policy should know the profile of the teachers and the teaching staff's duties. They should be guided well for them to better guide the purpose of the evaluation. Furthermore, peer evaluation is a process of creating a valid and reliable assessment model and it should be a collaborative effort between the administrators and the teachers and the success of the policy will also depend on the willingness of the teachers who are carrying out the implementation. Working collaboratively will prevent unfavorable perceptions and

attitudes about the stringent of evaluation tools. The findings also showed potential benefits such as increased sharing of best practices of instructional strategies because of the insights that others give to their fellow colleagues, more timely and relevant feedback, and reduced feelings of isolation could potentially occur as a result of incorporating peer evaluation in the current model of formative evaluations.

References

- Ballard, C. G. and Hyatt, (2005). Reflection-in-Action Teaching Strategies Used by Faculty to Enhance Teaching and Learning.
- Callahan, K. and Sadeghi, L. (2015). Teacher Perception of the Value of Teacher Evaluation: New Jersey's ACHIEVE NJ.
- Cosh, J. (2002). Peer observation in higher education – a reflective approach. *Innovations in Education and Training International*, 35 (2), 171-176.
- Donnelly, R. (2007). Perceived impact of peer observation of teaching in higher education. *International Journal of Teaching and Learning in Higher Education*, 19 (2), 117-129.
- Farrell, D. P. (2017). Teacher's perceptions of how the use of peer evaluation could improve their Teaching Practice.
- Gosling, D. (2005). Peer observation of teaching. SEDA Paper 118. London: Staff and Educational Development Association.
- Hendry, G. and Oliver, G. R. (2012). Seeing is believing: the benefits of peer observation. *The Journal of University Teaching and Learning Practice*, 9 (1), 2012.
- Liu, Ching-Yee (2013). Teacher's Perceptions about Implementing Peer-evaluation Strategies for enhancing written work in a Hong Kong Primary School
- Mack, M. R. and Chua, E. R. (2019) Peer evaluation exercise at Emilio Aguinaldo College, Cavite, Philippines: Towards personal improvement and professional development. *European Journal of Human Resource Management Studies*. 2 (2): 1-14. Retrieved: <http://www.oapub.org/soc>. DOI: 10.5281/Zenodo.2620090.
- Moore, S. and Fiarman, Sarah E. (2012). The potential of peer review.
- Nelson, J. (2012). Effects of Teacher Evaluations on the Teacher Effectiveness and Student Achievement.
- Rismanwanci, N. D. (2018). Analyzing in-service and pre-service Teachers' Perception on Peer-Reflection at IAIN Bone.
- Stewart, V. (2011). Raising teacher quality around the world.
- Shortland, S. (2004). Peer observation: a tool for staff development or compliance? *Journal of Further and Higher Education*, 28 (2), 219-228.
- Shortland, S. (2007). Participation, justice and trust within the developmental peer observation of teaching: a model and research agenda. *International Journal of Management Education*, 6 (1) 27-37.

Yon, M., Burnap, C., and Kohut, C. (2010). Evidence of effective teaching: perceptions of peer reviewers.

Creative Commons licensing terms

Authors will retain copyright to their published articles agreeing that a Creative Commons Attribution 4.0 International License (CC BY 4.0) terms will be applied to their work. Under the terms of this license, no permission is required from the author(s) or publisher for members of the community to copy, distribute, transmit or adapt the article content, providing a proper, prominent and unambiguous attribution to the authors in a manner that makes clear that the materials are being reused under permission of a Creative Commons License. Views, opinions and conclusions expressed in this research article are views, opinions and conclusions of the author(s). Open Access Publishing Group and European Journal of Management and Marketing Studies shall not be responsible or answerable for any loss, damage or liability caused in relation to/arising out of conflict of interests, copyright violations and inappropriate or inaccurate use of any kind content related or integrated on the research work. All the published works are meeting the Open Access Publishing requirements and can be freely accessed, shared, modified, distributed and used in educational, commercial and non-commercial purposes under a [Creative Commons Attribution 4.0 International License \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).