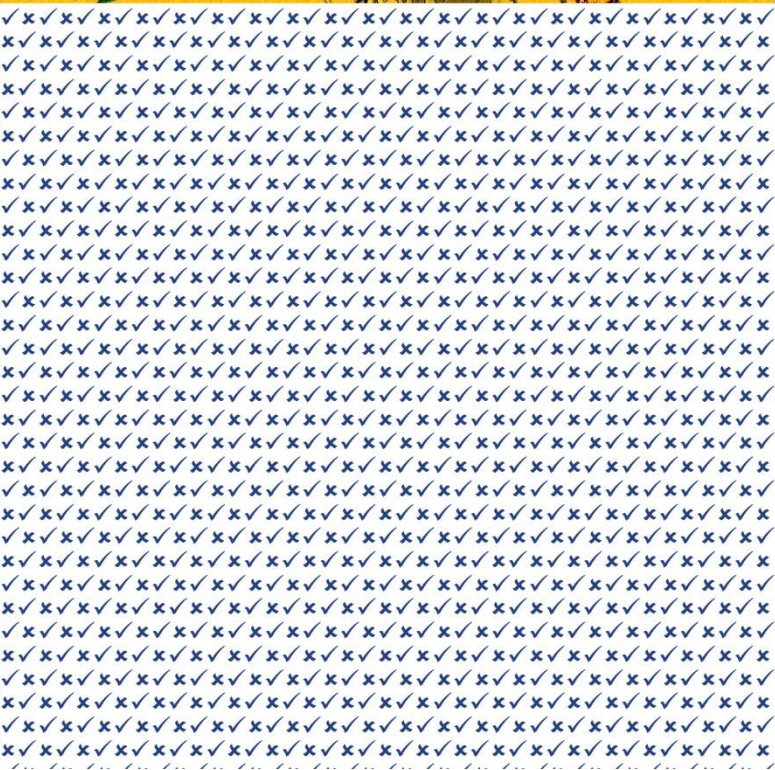


**STEAM**

**CLASSROOM**

**OBSERVATION**

**PROTOCOL**



TPACK in Philippine STEAM Education

# STEAM Classroom Observation Protocol



Philippine Normal University  
The National Center for Teacher Education  
Taft Ave., Manila



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# CLASSROOM OBSERVATION PROTOCOL FOR STEAM

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In the country's journey to improve the quality of life of Filipinos and to establish high economic growth, aspects of science, technology, engineering, agriculture and mathematics (STEAM) may highlight skills to achieve our goals. In fact, the adherence of the country to STEAM highlights the "AMBISYONNATIN 2040," themed as, "*Matatag, Maginhawa, at Panatag na Buhay* (Philippine Development Plan [PDP], 2017)." The country believed that the 2040 goal may be concretized through the three priority areas of the crafted Philippine Development Plan which includes: 1) *malasakit* (enhancing social fabric); 2) *pagbabago* (reducing inequality); and 3) *patuloy na pagunlad* (increasing growth potential). These three priority areas emphasize among others promotion and awareness of Philippine culture, acceleration of human capital development, promotion of technology, and stimulation of innovation. Apparently, the make-up of the PDP framework puts STEAM as among the cores to achieving the 2040 goals. Thus, necessitates cross-cutting strategies, which may be derived from quality STEAM education for the Filipinos. Relative thereto, our study aims to craft an Emerging Technological-Pedagogical-Assessment-Content Knowledge (TPACK) Model for Philippine STEAM Education and to provide inputs to policies for Philippine STEAM Education.

The **STEAM Classroom Observation Protocol** is a tool designed to help educators and researchers derive or deduce important information from STEAM educators significant to inform practices and policies in Philippine STEAM Education.

✚ **The Protocol contains the following instruments:**

***STEAM Classroom Observation Rating Scale*** – This instrument is a 6-point Likert scale sectioned into basic descriptive information and instruction. The rating scale determines the extent of visibility of the identified traits, characteristics, processes and products relative to content, knowledge and pedagogy; the learning pedagogy; and the diversity of learners. It is not recommended that this worksheet be used by teachers to rate classroom practice of their peers or for use by administrators to evaluate teacher performance. The worksheet is intended to be used in conjunction with the other instruments and protocol included in this set.

***Classroom Observation Notes*** – This instrument includes questions clustered into the dimensions of TPACK. The observation notes is designed for use by researchers who would want to collect qualitative data on STEAM Education anchored to the TPACK framework. It is not recommended that this worksheet be used by teachers to rate classroom practice of their peers or for use by administrators to evaluate teacher performance.

***TPACK Interview Protocol***—This instrument includes sets of questions intended to guide the researcher or evaluator in the collection of qualitative observations and extrapolation of meanings and explanations that will be used to augment all areas of concern not completely provided by the two other instruments. Themes highlighted in this interview guide include: Teacher's scientific attitude and pedagogical reputation, inquiry-based learning and teaching, inclusive and relevant STEAM education, classroom management, attainment of learning outcomes, knowledge of STEAM and STEAM related fields.

***Technology Integration Checklist*** – This checklist can be used to document the nature of the teacher and the student's use of technology in the classroom.



**Assessment Checklist-** This instrument includes items on various techniques a STEAM educator utilizes to assess the performance of the student.

**✚ Possible Uses**

The table below describes several possible uses of this tool. It also identifies which forms are most appropriate for each use:

Possible Use	STEAM Classroom Observation Rating Scale	Classroom Observation Notes	TPACK Interview Protocol	Technology Integration Checklist	Assessment Checklist
<b>In-service Professional Development:</b> In this case the tools are used by teachers or administrators to collect data on the knowledge and practice of in-service teachers regarding STEAM Education. Data collected can serve as baseline for analysis and development of framework leading to In-service trainings to enhance Philippine STEAM Education.	✓	✓	✓	✓	✓
<b>Pre-service Professional Development:</b> Teacher preparation programs would find the tool useful to help pre-service teachers to understand how to enact quality STEAM Education. What different traits and aspects of classroom such as pedagogy, assessment and classroom management are needed to practice quality STEAM Education?	✓	✓	✓	✓	✓
<b>Data Collection for Research of Evaluation:</b> Researchers or evaluators would use the tool to formally collect data. In this case the tool would need to be used under more rigorous standards by observers who have been trained on the use of the tool and who have a deep understanding of STEAM instructional practice.	✓	✓	✓	✓	✓



### ✚ Some Tips in Classroom Observation

Below are several tips to take into consideration when collecting classroom observation data.

- Stick on to all normal protocol when observing classes that relate to your role. This may include obtaining permission from the administrator and teacher, signing in when you visit the school, obtaining certificate of appearance if you are from a government school.
- Meet briefly with the teacher of the class you plan to observe prior to observation and ask the pre-observation questions (checklist) provided on the instrument pack in order to gather information about the lesson and the classroom context.
- It is important that the lesson observed be a typical lesson. Therefore, do not indicate to the teacher what it is that you are looking for because then the teacher will feel obligated to show you that and will adjust their lesson accordingly. Do not share any of the worksheets or protocols with the teacher.
- You must be able to observe at least several classes of the teacher to get a feel of the lesson and the education quality particularly on pedagogy, assessment, technology integration and content knowledge of the teacher.
- During each observation, take notes on separate paper. Avoid interactions with students and do not become a teaching assistant by helping students with the activity. It may be necessary to quietly ask a few students a question or two to check their understanding. Focus your observation on what the students are doing and saying looking and on the teacher.
- After the lesson is finished, ask the teacher the post-observations questions on the worksheet to get a better understanding of the lesson from the teacher's perspective.
- Ask also for some students for the student interview or focus-group-discussion (if necessary).
- In using the *STEAM Observation Rating Scale* check the number which you think is the appropriate rating during observation. The “don't know” is usually intended for items which you are not really familiar with regards the teacher concern or have no way of finding out. The “N/A” is chosen for items not connected or related to the class being observed.



## STEAM Classroom Observation Rating Scale

Observation Date: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time End: \_\_\_\_\_

School: \_\_\_\_\_ Address: \_\_\_\_\_

Teacher: \_\_\_\_\_

### PART ONE: THE LESSON

#### SECTION A. BASIC DESCRIPTIVE INFORMATION

1. Teacher Gender: \_\_\_\_\_:Male \_\_\_\_\_:Female
2. Subject Observed: \_\_\_\_\_
3. Level: \_\_\_\_\_
4. Program: \_\_\_\_\_
5. Course Title (if applicable): \_\_\_\_\_
6. Class Period (if applicable): \_\_\_\_\_
7. Number of Students: \_\_\_\_\_:Male \_\_\_\_\_:Female

#### SECTION B: INSTRUCTION

D1. Content, Knowledge and Pedagogy	N/A	Not at all				To a great extent
	(0)	(1)	(2)	(3)	(4)	(5)
1. Possesses content knowledge on STEAM (Science, Technology, Engineering, Agriculture, and Mathematics).						
2. Demonstrates content knowledge on core STEAM courses.						
3. Demonstrates content knowledge on STEAM-related fields (i.e., research, language and communication).						
4. Demonstrates STEAM-related laboratory/clinical skills.						





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5. Possesses knowledge on related industry/community as service providers.						
6. Exhibits knowledge on STEAM fields (content and skills) responsive to national goals and global concerns.						
7. Plans, conducts, and disseminates STEAM-related research.						
8. Designs, improves, innovates, and supervises basic to advance systems and/or procedures as solutions to local and global problems within realistic constraints.						
9. Utilizes research outputs to enhance professional practice and to address national and global concerns.						
10. Develops /Improvises new technology (software, laboratory equipment, and teaching materials) using locally available resources to advance effective and efficient practice of the profession.						
11. Uses modern statistical and computing techniques and tools in predicting future trends and processes of STEAM.						
12. Familiarizes with database relevant to the STEAM profession.						
13. Uses advanced and research-based techniques and tools in teaching STEAM content knowledge.						
14. Develops models of STEAM knowledge and processes.						
15. Communicates effectively across multiple platforms, both oral and written, especially in the English language.						
16. Seeks out information on subject related research, e.g., via journals or by attending conferences.						
17. Facilitates development of reflective and critical thinking among students.						
18. Promotes inquiry attitude through questioning.						
19. Facilitates active classroom discussion using inquiry learning strategies (project-based, problem-based, and product-based).						
20. Allows flexible channels of communication to get across students of different abilities and comprehension skills and even allows occasional use of mother tongue to help express themselves or their answers better (then translate them to a common language for everyone to appreciate and learn from).						
<b>D2. Learning Environment</b>						
21. Ensures a safe STEAM learning environment (free from fire hazards, safe electrical wiring, conforms to building code).						
22. Observes precautionary measures in the laboratory rooms and classrooms (fire extinguishers, fire force) alarm systems, and campus security.						
23. Facilitates ethical use of online resources.						
24. Promotes working effectively in multidisciplinary and multi-cultural teams.						



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25. Exhibits capability to facilitate large classes.						
26. Manages proper and fair implementation of Problem/Project-based Learning activities.						
27. Promotes proper care and handling of laboratory instruments, tools, equipment, online systems, virtual laboratories, and software.						
28. Promotes seamless transition of topics and establishes relevant relationship of concepts.						
29. Provides students with activities and classroom situations where they can implement independent individual or collaborative group work when suitable.						
30. Promotes student engagement and quality performance in class activities such as during group work, projects, and other activities.						
31. Utilizes teaching strategies suited to diverse learners.						
32. Monitors each student by establishing eye contact, walking around the area, being aware of what's happening in the class during sessions, site visits, field trips, tours, and other supervised visits.						
33. Models various scientific attitudes and STEAM professional traits.						
34. Promotes the concept of voluntary service by making students carry out classroom-related duties (e.g., monitoring cleanliness and orderliness in the classroom).						
35. Promotes proactive classroom management and exhibits capability of handling untoward behavior with fairness and prudence.						
<b>D3. Diversity of Learners</b>						
36. Develops instructional plan appropriate to the identified learners.						
37. Facilitates lessons and activities that are suited to the students' interests and individual differences and do not discriminate any cultural groups and are sensitive to students' needs.						
38. Arranges opportunities for students to learn by allowing them to form varied group structures (solo, pair, groups, and teams).						
39. Develops gender-sensitive instructional materials.						
40. Takes into consideration the cultural, social, and emotional differences among students.						
41. Prepares materials and lessons appropriate to specific learning capability.						
42. Offers additional classroom-based sessions (within official hours) to improve learning.						
43. Designs, plans, and implements working and support groups to provide help to learners in difficult circumstances.						
44. Facilitates peer learning to support other students cognitively and affectively.						
45. Is open to invitations for team teaching to provide supplemental learning from each member of the team for more holistic student learning.						



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46. Listens skillfully, reasonably, and patiently to his or her students during consultation.						
47. Develops different learning paths to respond to the student differences brought about by culture and ethnicity.						
48. Being aware of norms, cultures, and traditions so as not to cause discrimination in the delivery of lessons.						



## TPACK Classroom Observation Notes

This instrument includes questions clustered into the dimensions of TPACK. The observation notes is designed for use by researchers who would want to collect qualitative data on STEAM Education anchored to the TPACK framework. It is not recommended that this worksheet be used by teachers to rate classroom practice of their peers or for use by administrators to evaluate teacher performance.

Dimensions	Items	Observer's Field Notes
CK	What content/topic does the teacher intend to teach?	<p>Does the teacher possess sufficient understanding of the topic being discussed?</p> <ol style="list-style-type: none"><li><b>enumerate indicators of mastery of subject matter (see examples below)</b><ul style="list-style-type: none"><li><input type="checkbox"/> Uses Department's Scope and Sequence documents as appropriate</li><li><input type="checkbox"/> Uses relevant curriculum documents specific to year/subject level</li><li><input type="checkbox"/> Keeps abreast of new ideas and techniques through professional reading</li><li><input type="checkbox"/> Integrates knowledge and skills in content area</li></ul><b>(Observer may enumerate as many indicators as possible)</b></li><li><b>provide details of observed teacher's misconceptions (if any)</b></li><li><b>take note of the provided real-life examples (if there are any) that are inappropriate to the concept being advanced</b></li></ol>



PK	<b>Intended Strategy (Based on the Session Plan)</b>	<p><b>Is the teacher skillful in implementing the teaching strategy/ies used?</b></p> <ol style="list-style-type: none"> <li>1. describe the teaching strategy/ies used</li>   <li>2. provide indicators of effective (or ineffective) use of specific strategy (e.g. student engagement, student participation, productive work of students, smooth flow of laboratory work)</li> </ol>																																				
TK	<b>Intended tools for teaching and learning (based on session plan)</b>	<p><b>Is the teacher adept in using learning tools?</b></p> <ol style="list-style-type: none"> <li>1. enumerate/describe the teaching materials/tools used (e.g. specific softwares, equipment, gadgets, improvised material, laboratory materials)</li>   <table border="1"> <tr><td><input type="checkbox"/></td><td>CB</td><td>(Chalkboard/whiteboard/SMART board)</td></tr> <tr><td><input type="checkbox"/></td><td>OP</td><td>(Overhead Projector/Opaque Projector)</td></tr> <tr><td><input type="checkbox"/></td><td>PP</td><td>(PowerPoint or other digital slides)</td></tr> <tr><td><input type="checkbox"/></td><td>CL</td><td>(Clicker Response System)</td></tr> <tr><td><input type="checkbox"/></td><td>D</td><td>(Demonstration Equipment, e.g. could include Chemistry demonstrations of reactions, physics demonstrations of motion or any other material being used for the demonstration of a process or phenomenon)</td></tr> <tr><td><input type="checkbox"/></td><td>DT</td><td>(Digital Tablet or any technology where the instructor can actively write on a document camera as well as software on a laptop that allows for writing on PDF files)</td></tr> <tr><td><input type="checkbox"/></td><td>M</td><td>(Movie, documentary, video clips, or YouTube videos)</td></tr> <tr><td><input type="checkbox"/></td><td>Si</td><td>(Simulations that can be digital applets or web-based simulations and animations)</td></tr> <tr><td><input type="checkbox"/></td><td>WEB</td><td>(Website which includes instructor interaction with course website or other online resource other than YouTube videos. This can also include using website for student responses to questions in lieu of clickers)</td></tr> <tr><td><input type="checkbox"/></td><td>LDEM</td><td>(Use of equipment (e.g. lab equipment, computer simulation to convey course content)</td></tr> <tr><td><input type="checkbox"/></td><td>IAE</td><td>(Improvised apparatus or equipment)</td></tr> <tr><td><input type="checkbox"/></td><td>LA</td><td>(Learning applications, e.g. Kahoot!)</td></tr> </table>   <li>2. provide indicators of effective (or ineffective) use of learning tools</li> </ol>	<input type="checkbox"/>	CB	(Chalkboard/whiteboard/SMART board)	<input type="checkbox"/>	OP	(Overhead Projector/Opaque Projector)	<input type="checkbox"/>	PP	(PowerPoint or other digital slides)	<input type="checkbox"/>	CL	(Clicker Response System)	<input type="checkbox"/>	D	(Demonstration Equipment, e.g. could include Chemistry demonstrations of reactions, physics demonstrations of motion or any other material being used for the demonstration of a process or phenomenon)	<input type="checkbox"/>	DT	(Digital Tablet or any technology where the instructor can actively write on a document camera as well as software on a laptop that allows for writing on PDF files)	<input type="checkbox"/>	M	(Movie, documentary, video clips, or YouTube videos)	<input type="checkbox"/>	Si	(Simulations that can be digital applets or web-based simulations and animations)	<input type="checkbox"/>	WEB	(Website which includes instructor interaction with course website or other online resource other than YouTube videos. This can also include using website for student responses to questions in lieu of clickers)	<input type="checkbox"/>	LDEM	(Use of equipment (e.g. lab equipment, computer simulation to convey course content)	<input type="checkbox"/>	IAE	(Improvised apparatus or equipment)	<input type="checkbox"/>	LA	(Learning applications, e.g. Kahoot!)
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PCK

1. Did the teacher implement the lesson using the intended pedagogy?
2. Does the teacher manifest deep understanding of both the content and the strategy during the session?
3. Did the teacher fluently and fluidly conduct the lesson using the intended strategy?
4. Did the teacher resort to “on the spot” changes in the intended strategy to accommodate students’ needs?
5. Did the teacher extract high student engagement during the session?

**Is the strategy used appropriate to the topic being discussed?**

1. List down indicators where the teaching strategy used promotes students’ understanding of the subject matter
  - Introductory part of the lesson
  - Activity proper
  - Lecture proper
  - Discussion Proper

**(Provide additional list if necessary)**



<b>TCK</b>	<b>Did the teacher use digital tools in class?</b>	<b>Are the teaching tools used appropriate to the topic being discussed?</b> 1. List down indicators where the teaching tools used promotes students' understanding of the subject matter
<b>TPK</b>	<b>How did the teacher use the intended technology to extract the desired learning outcomes and experiences?</b>	<b>Are the teaching tools used appropriate to the teaching strategy/ies employed?</b> 1. List down indicators where the teaching tools used enhance the effectiveness of the teaching strategy
<b>TPACK</b>	<b>Assessment of TPACK Integration</b>	
	Session Plan	Actual Session



## Interview Questions

Theme: Teacher's Scientific Attitude and Pedagogical Reputation		
Main Question	<p><i>(For STEAM Teachers)</i></p> <p>What scientific characteristics do you possess that you want to model to your learners?</p> <p><i>(For STEAM Teacher Education only)</i> What scientific and pedagogical characteristics do you possess that you want to model to your learners?</p>	<p><i>(For School Heads, College Deans, and Other Officials)</i></p> <p>How would you assess the scientific and pedagogical characteristics that your STEAM faculty model to STEAM learners?</p>
Probing Points	<p><b><u>(Please customize the questions to the discipline of the interviewee)</u></b></p> <ol style="list-style-type: none"> <li>1. How do you emphasize in your learning and teaching processes that STEAM should benefit the society (e.g. school, community)?</li> <li>2. How do you exhibit dedication and commitment to the realization of the goals of the STEAM discipline?</li> <li>3. How do you promote academic integrity in teaching STEAM?               <ol style="list-style-type: none"> <li>a. ethical conduct as a professional such as but not limited to the ethical treatment of shared information and knowledge (e.g. online resources)</li> <li>b. ethical use of assessment results and student data</li> </ol> </li> <li>4. How do you establish (or maintain) a reputation as a “good STEAM teacher”?</li> <li>5. Describe your research activities in the past five years (in terms of):               <ol style="list-style-type: none"> <li>a. efforts to familiarize with sources of information regarding STEAM</li> <li>b. researches conducted</li> <li>c. research results that were utilized for policies and decisions and predicting trends in STEAM and STEAM education</li> <li>d. technologies developed from one’s research results</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. What are your indicators that your STEAM faculty emphasize in their teaching processes that STEAM should benefit the society (e.g. school, community)?</li> <li>2. How do you assess the dedication and commitment of your STEM Faculty in the realization of the goals of the STEAM discipline?</li> <li>3. How do you guide your STEAM faculty in maintaining a reputation as a “good STEAM teacher and promoting academic integrity in teaching STEAM?               <ol style="list-style-type: none"> <li>c. ethical conduct as a professional such as but not limited to the ethical treatment of shared information and knowledge (e.g. online resources)</li> <li>d. ethical use of assessment results and student data</li> </ol> </li> <li>4. As an administrator, how do you manage negative feedback of students to your STEAM teachers?</li> <li>5. Describe the research activities you facilitate in the past five years (in terms of):               <ol style="list-style-type: none"> <li>a. efforts to familiarize with sources of information regarding STEAM</li> <li>b. researches conducted</li> <li>c. research results that were utilized for policies and decisions and predicting trends in STEAM and STEAM education technologies developed from one’s research results</li> </ol> </li> </ol>



Theme: Inquiry-Based Learning and Teaching		
Main Question	<p><i>(For STEAM Teachers)</i></p> <p>Do you believe that inquiry-based learning and teaching approach is appropriate in the teaching of STEAM? <u><i>(Please customize the questions to the discipline of the interviewee)</i></u></p>	<p><i>(For School Heads, College Deans, and Other Officials)</i></p> <p>Do you believe and encourage your faculty to advocate inquiry-based learning and teaching approach is appropriate in the teaching of STEAM?</p>
Probing Points	<ol style="list-style-type: none"> <li>1. How do you promote critical and reflective thinking in class?</li> <li>2. How do you structure your questions during class discussion to maximize learning?</li> <li>3. How do you promote active and collaborative learning?</li> <li>4. How do you promote seamless transition of lessons and establish connection of concepts?</li> </ol>	<ol style="list-style-type: none"> <li>1. What are your ways and means to help your STEAM faculty promote critical and reflective thinking in class?</li> <li>2. Do you encourage your faculty to attend trainings on assessment of learning, active and collaborative learning and contextual learning? In what way do you extent support? Do you allow all request for trainings, seminars and attendance to conferences? Why or Why not?</li> <li>3. If your school sponsored the STEAM faculty in conferences and seminars, how do you facilitate successful knowledge sharing?</li> </ol>
Theme: Inclusive and Relevant STEAM Education		
Main Question	<p><i>(For STEAM Teachers)</i></p> <p>How do you ensure the relevance of STEAM to the learners? <u><i>(Please customize the questions to the discipline of the interviewee)</i></u></p>	<p><i>(For School Heads, College Deans, and Other Officials)</i></p> <p>How do you ensure that your STEAM faculty discuss and integrate the relevance of STEAM in their lessons?</p>
Probing Points	<ol style="list-style-type: none"> <li>1. How do you maintain the relevance of STEAM content and processes to the learners and the community?               <ol style="list-style-type: none"> <li>a. relevance to local needs (issues and problems) and contexts</li> <li>b. relevance to global needs (issues and problems) and contexts</li> </ol> </li> <li>2. Do you think a teacher should put into consideration the different types and backgrounds of learners in his learning plans (i.e. teaching strategies, language, gender, culture)? Why? Any relevant example/situation from your experience?</li> <li>3. Do you utilize the appropriate tools/technology in teaching STEAM concepts? How do you integrate these tools in the lesson delivery?</li> </ol>	<ol style="list-style-type: none"> <li>1. What management styles do you practice to sustain STEAM faculty's integration of relevance of STEAM content and processes to the learners and the community?               <ol style="list-style-type: none"> <li>a. relevance to local needs (issues and problems) and contexts</li> <li>b. relevance to global needs (issues and problems) and contexts</li> </ol> </li> <li>2. What administrative support do you extend to your STEAM faculty for them to be able to utilize the appropriate tools/technology in teaching STEAM concepts?</li> <li>3. What are the strengths and weaknesses of the planned and implemented support to your STEAM faculty?</li> </ol>



Theme: Classroom Management		
Main Question	(For STEAM Teachers) <i>How do you promote safe learning environment?</i>	(For School Heads, College Deans, and Other Officials) <i>How do you ensure safe learning environment?</i>
Probing Points	1. How do you ensure safety in STEAM activities and processes such as laboratory works? 2. How do you monitor student activities and engagement during your class? 3. Do you think student consultation is helpful? Why? Any relevant experience/situation? 4. How do you assign and monitor student responsibilities?	1. How do you ensure safety in STEAM activities and processes such as laboratory works? 2. How do you monitor STEAM classes and their activities? 3. Do you require your STEAM teachers to conduct student consultation? Do you think this is helpful? Why?
Theme: Attainment of Learning Outcomes		
Main Question	(For STEAM Teachers) <i>How you promote awareness and attainment of learning outcomes?</i>	(For School Heads, College Deans, and Other Officials) <i>How you promote awareness and attainment of learning outcomes?</i>
Probing Points	1. How do you ensure that your learning outcomes are clear to your learners? 2. How do you keep your learning outcomes apparent in your teaching strategies? 3. Do you think it is helpful to engage your learner in formulating your learning outcomes? 4. How do results of your assessment help you plan for your classes? 5. How do you sustain the knowledge in the prescribed curriculum and competencies? 6. How do you select your assessment tools? Do you follow a criteria in the selection of what technology to integrate in a lesson?	1. How do you ensure that the learning outcomes are clearly communicated by your STEAM faculty to the learners? 2. What are the major indicators that you use to determine if STEAM teachers visibly include the learning outcomes in their teaching strategies? 3. Do you advocate involving STEAM learners in the process of formulating the learning outcomes? 4. What scheme (departmental, or school-based) do you implement in using assessment and feedback system to inform improvement of practice and curriculum? What do you think are the probable strengths and weaknesses of this scheme? 5. Do you extend help to your STEAM teachers in selecting your assessment tools?





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Theme: Knowledge of STEAM and STEAM related fields		
Main Question	<b><i>(For STEAM Teachers)</i></b>  <i>On a scale of 1 to 10 (10 being the highest and 1 being the lowest), how do you rate your content knowledge on STEAM?</i>	<b><i>(For School Heads, College Deans, and Other Officials)</i></b>  <i>On a scale of 1 to 10 (10 being the highest and 1 being the lowest), how do you rate your STEAM teachers' content knowledge on STEAM?</i>
Probing Points	1. Do you think you have sufficient preparations (in terms of content) to teach STEAM courses?  2. What other fields do you think are necessary in learning and teaching STEAM? How do you rate your content knowledge in each of these fields?	1. Do you think your STEAM teachers have sufficient preparations (in terms of content) to teach STEAM courses?  2. What other fields do you think are necessary in learning and teaching STEAM? How do you rate your STEAM teachers' content knowledge in each of these fields?



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# PRE-OBSERVATION DOCUMENTS

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## PRE-OBSERVATION QUESTIONS

Observation Date: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time End: \_\_\_\_\_

School: \_\_\_\_\_

Teacher: \_\_\_\_\_

Subject to be Observed: \_\_\_\_\_

Level: \_\_\_\_\_

Course Title (if applicable): \_\_\_\_\_

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In the pre-observation session, the researcher-observer should obtain information from the pre-identified STEAM Educator concerning his or her class goals, students, and particular teaching style. An interview schedule provides a brief, structured way of obtaining such information and includes the following questions:

1. Briefly, what will be happening in the class I will observe?
  
  
  
  
  
  
  
  
  
  
2. What is your goal for the class? What do you hope students will gain from this session?
  
  
  
  
  
  
  
  
  
  
3. What do you expect students to be doing in class to reach stated goals?





Subject: \_\_\_\_\_  
No. of Students: \_\_\_\_\_

Date of Observation: \_\_\_\_\_  
Time of Observation: \_\_\_\_\_

Session Guide	
Learning Goals/Objectives	<i>(Please list all learning objectives for the session observation)</i>
Subject Matter	<b>Lesson</b> <i>(Please list the topic(s) for the session observation):</i>
	<b>Concepts</b> <i>(Please list all concepts that you intend your students to learn for the session observation):</i>
	<b>Skills</b> <i>(Please list all skills that you intend your students to learn for the session observation):</i>
	<b>Values</b> <i>(Please list all values that you intend your students to learn for the session observation):</i>
	<b>Materials/Tools</b> <i>(Please list all tools and materials that you plan to use for the session observation):</i>
	References:





Republic of the Philippines  
Philippine Normal University  
The National Center for Teacher Education  
Manila



Learning Activities	<b>Major Teaching Strategies</b> (Please list all teaching strategies that you plan to use for the session observation):
	<b>Routine Activities:</b>
	<b>Lesson Proper:</b> (Please sequence in bullet or number format how you will deliver your lesson)
Evaluation	Please indicate here (in numbered or bullet form) how will you gauge if your students learned all intended concepts for the session:

Prepared by:

\_\_\_\_\_  
(Signature over printed name)

\_\_\_\_\_  
(Date)



Dear STEAM Teacher,

This Technology Integration Checklist can be used to document the nature of you and your students' use of technology in the classroom. We request that you take time in identifying which among the identified list you use in teaching STEAM courses.

Thank you very much.

The PNU Research TEAM

## TECHNOLOGY INTEGRATION CHECKLIST

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Specific Area (Please check):     Science     Technology     Engineering     Agriculture     Math

Directions: Please put a check mark on the technology you are integrating or you have integrated in your lessons.

- CB    (Chalkboard/whiteboard/SMART board)
- OP    (Overhead Projector/Opaque Projector)
- PP    (PowerPoint or other digital slides)
- CL    (Clicker Response System)
- D    (Demonstration Equipment, e.g. could include Chemistry demonstrations of reactions, physics demonstrations of motion or any other material being used for the demonstration of a process or phenomenon)
- DT    (Digital Tablet or any technology where the instructor can actively write on a document cameras as well as software on a laptop that allows for writing on PDF files)
- M    (Movie, documentary, video clips, or YouTube videos)
- Si    (Simulations that can be digital applets or web-based simulations and animations)
- WEB    (Website which includes instructor interaction with course website or other online resource other than YouTube videos. This can also include using website for student responses to questions in lieu of clickers)
- LDEM    (Use of equipment (e.g. lab equipment, computer simulation to convey course content)
- IAE    (Improvised apparatus or equipment)
- LA    (Learning applications, e.g. Kahoot)



Questions:

1. What are your basic intentions of using or integrating these technologies?
2. What were your major considerations in choosing or integrating these technologies?
3. When and what part of the lesson do you use these identified technologies?

Specific Technology	Lesson



Dear STEAM Teacher,

This checklist is aimed at determining the various techniques a STEAM Educator utilizes to assess the performance of the students. We request that you take time in identifying which among in the list you use in teaching STEAM courses.

Thank you very much.

The PNU Research TEAM

## ASSESSMENT CHECKLIST

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Specific Area (Please check):     Science     Technology     Engineering     Agriculture     Math

Directions: Please put a check mark in the box  which corresponds to the technique/s you are using to assess performance of your students.

- Quizzes (print/online)
- Long Test (e.g. Mid-term, Final examination)
- Course Homework
- Class Seatwork
- Class Discussion Participation/Recitation
- Research Project
- Case Study Analysis
- Observation of Field work
- Practical Test (e.g. actual demonstration, actual assembly)
- Portfolios (working, documentary, showcase)
- Products
- Journal (e.g. reflective)
- Assessment tools which are not in the list
