



Difficulties of the Grade Four Pupils towards Accomplishing Experiment-Based Learning Performance Tasks in Science in the New Normal

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Abstract

This study determines the difficulties of the grade four pupils towards accomplishing experiment-based learning performance tasks in Science in Parsolingan Elementary School for the school year 2021-2022 with the new normal education. It employed a mixed method of quantitative-qualitative research design. In gathering the data, survey through a questionnaire was used. Arithmetic mean was used to treat the data gathered. Results showed that the greatest difficulty faced to the least were the Needed Materials (M= 3.79), Task Instructions (M=3.69), Completion Time (M=3.63), Home Environment (M=3.57), and Learning Support (M=3.30). These findings led to suggest that teachers shall consider seeking support from internal and external stakeholders for the provision of required materials for the experiment-based learning performance tasks in Science to help the grade four pupils in optimising the execution of experimental processes and skills needed.

Keywords: experiment-based; grade 4 pupils; performance tasks; Science

Introduction

The ongoing COVID-19 pandemic remains to pose a challenge in teaching, learning, and assessment needs of the pupils under the new normal education setting. With the school's continued adoption of distance learning mode of instruction, pupils keep learning using DepEd's self-learning modules (SLMs) through the online assistance of teachers, TV, and radio-based instructions and are evaluated based on their accomplished written works and performance tasks which form their quarterly grades.

Among the subjects in school, it is Science that requires experiment-based learning performance tasks. These are given as authentic assessment because they help teachers in improving the teaching and learning processes (Shalev et al., 2018). They

are authentic assessment tools that measure higher-order thinking skills and data-driven instruction which optimise learning (Abbot & Wren, 2016). If these were done properly and accomplished on time, these experiment-based learning performance tasks are good indicators of authentic learning.

According to K to 12 Science Curriculum, Science learning centres are around these three domains: (1) comprehension and utilisation of empirical knowledge in the local and global settings whenever possible; (2) execution of experimental processes and skills; and (3) promotion and manifestation of a scientific way of thinking and behaviour. Thus, these are Science knowledge, Science skills, as well as Science attitudes and values that pupils must possess and master even in the new normal education setting.

In this case, pupils' understanding of Science is fulfilled efficiently when they perceive and figure out the scientific knowledge by themselves. Then, these pupils' close observation and experimentation spearhead the development of their scientific cognition, values, and competence. Hence, efforts to ensure that the pupils themselves are the ones carrying out the provided experiment-based learning performance tasks in Science this school year 2021-2022 are that they are completely accomplishing these tasks on time. Moreover, all the necessary materials for the experiment-based tasks are available at the pupils' home and must be given more attention.

Ideally, every pupil is capable to accomplish the experiment-based learning performance tasks because all of them are expected to fulfill the minimum basic competencies established by the DepEd in the Basic Education Learning Continuity Plan (BE-LCP) under DepEd Order No. 012, s. 2020 on Most Essential Learning Competencies (MELCs) to progress on the next grade level.

However, there are many factors that contribute why the pupils do not perform the required minimum experiment-based learning performance tasks within the quarter. These unidentified problems of the pupils significantly influence their commitment to learning. Schendel & Tolmie (2017) as cited by Mangali G. et al. (2019) stressed that unaccomplished performance task was an indication of an unsuccessful performance due to its non-conformity to the assessment tool, while its incompleteness was a proof that the deep understanding of the subject matter was not attained. Unaccomplished performance tasks impede the progression of the lesson, disallows the teacher to measure real understanding, and deprive the pupils the chance to develop true understanding and creativity. Teaching and learning suffer happen when a pupil fails to accomplish a performance task because it

leaves a teacher with no accurate measure of the level of understanding.

In Parsolingan Elementary School, the frequency count and percentage distribution of grade four pupils who accomplished the experiment-based learning performance tasks in Science were lower (frequency range: 14-19, percentage range: 33%-44%) and did not even reach 50% of the total number of pupils in class compared to the pupils who were unable to accomplish (frequency range: 24-27, percentage range: 56%-67%). These baseline data showed that the grade 4 pupils were struggling or were facing great difficulties in accomplishing the experiment-based learning performance tasks in Science because of a lot of factors.

Therefore, the researcher takes the initiative to delve on determining the difficulties of the grade four pupils towards accomplishing experiment-based learning performance tasks in Science in Parsolingan Elementary School for the school year 2021-2022 with the new normal education.

Methodology

The study utilised the mixed-method research design. The quantitative part of the study focused on the computed mean data about the difficulties of the grade four pupils towards accomplishing experiment-based learning performance tasks in Science in the new normal era in Parsolingan Elementary School using the survey questionnaire. The qualitative part of the study focused on the transcribed data from the direct responses of the pupils in the focus group discussion to contextualise the quantitative part and gave it a more detailed examination. The mixed method was then appropriate in this research since this method involved collecting, analysing, and integrating quantitative (survey) and qualitative (focus group) research.

Instrument

Survey through a questionnaire was used to gather the needed data. A questionnaire made by the researcher was used to determine the

difficulties that pupils faced towards accomplishing experiment-based learning performance tasks in science in the new normal. The first part of the questionnaire was composed of twenty (20) statements wherein the five variables have four (4) items each. This part was scored through a five-point Likert Scale, depending on the frequency the respondents identified the difficulties faced towards accomplishing experiment-based learning performance tasks in science in the new normal. The second part of the questionnaire was comprised of five (5) open-ended questions to help contextualise the first part and gave it a more detailed response.

Results and Discussions

Difficulties faced by the grade four pupils in accomplishing experiment-based learning performance tasks in Science

This table presents and describes the computed mean data about the difficulties of the grade four pupils towards accomplishing experiment-based learning performance tasks in science in the new normal in Parsolingan Elementary School along with the following variables such as Tasks Instructions, Needed Materials, Completion Time, Home Environment, and Learning Support.

Table 1 showed the mean responses of the grade four pupils pertaining to each item under the variable Task Instructions which affected their accomplishment of the experiment-based learning performance tasks in Science in the new normal era. With a range of values from the least (3.53) to the highest (3.86) and a grand mean of 3.69, it showed that the mean responses in all items fall within the range of 3.50 – 4.49 which had the equivalent descriptive rating of *Agree*. This signifies that the grade four pupils perceive the tasks instructions as difficult to follow and to understand on their own especially when *“the instructions do not provide accurate or specific description of the experiment-based learning performance tasks to be accomplished.”* Their *Agree* responses in all items reveal that the

experienced difficulty in the task instructions has a direct influence on their ability to complete the experiment-based learning performance tasks in Science because this affects their confidence, motivation, pacing of learning, and interest in starting and finishing the experiment-based learning performance tasks in Science.

Table 2 showed the mean responses of the grade four pupils pertaining to each item under the variable Needed Materials which affected their accomplishment of the experiment-based learning performance tasks in Science in the new normal. With a range of values from the least (3.63) to the highest (4.00) and a grand mean of 3.79, it showed that the mean responses in all items fall within the range of 3.50 – 4.49 which had the equivalent descriptive rating of *Agree*. This signifies that the grade four pupils perceive the needed materials to be unavailable, incomplete, costly, and too many to prepare by themselves especially when *“the required materials for the experiment-based learning performance tasks need to be bought and the family has no budget for those.”* Their *Agree* responses in all items reveal the current and real situation of the pupils in their homes wherein the basic needs, such as food and paying the bills are the top priority. While this factor (needed materials) may hinder their accomplishment of the experiment-based learning performance tasks in Science in the new normal, it can be seen as an opportunity to tap their resourcefulness trait wherein the use of alternative materials that are available and which correspond to the required materials for the experiment-based learning performance tasks can be tried as a viable option.

Table 3 showed the mean responses of the grade four pupils pertaining to each item under the variable Completion Time which affected their accomplishment of the experiment-based learning performance tasks in Science in the new normal. With a range of values from the least (3.49) to the highest (3.74) and a grand mean of 3.60, it showed that the mean responses range from *Neutral*

(2.50 – 3.49) to *Agree* (3.50 – 4.49). These signify that the grade four pupils perceive the completion time as too short and difficult for them to finish on time especially when there is “*Lack of well-managed time and these coincide with other tasks at home.*” Their *Neutral* and *Agree* responses reveal their poor management of time due to procrastination and home distraction or the trouble in maintaining a schedule because they need to be the helpers at home especially in doing the household chores.

Table 4 showed the mean responses of the grade four pupils pertaining to each item under the variable Home Environment which affected their accomplishment of the experiment-based learning performance tasks in Science in the new normal. With a range of values from the least (3.42) to the highest (3.72) and a grand mean of 3.57, it showed that the mean responses range from *Neutral* (2.50 – 3.49) to *Agree* (3.50 – 4.49). These signify that the grade four pupils perceive the home environment as not conducive and had no sufficient space to move freely to accomplish the experiment-based learning performance tasks especially when “*The home lacks good arrangement and had a lot of distractions resulting to divided attention and inability to accomplish the experiment-based learning performance tasks.*” Their *Neutral* and *Agree* responses reveal the lack of a designated space at home that diminishes too many distractions by family members, noise, chores, or television and that encourages focus or concentration on accomplishing the assigned experiment-based learning performance tasks in Science.

Table 5 showed the mean responses of the grade four pupils pertaining to each item under the variable Learning Support which affected their accomplishment of the experiment-based learning performance tasks in Science in the new normal. With a range of values from the least (3.19) to the highest (3.37) and a grand mean of 3.30, it showed that the mean responses in all items fell within the range of 2.50 – 3.49 which had the equivalent descriptive rating of *Neutral*. This

signifies that the grade four pupils perceive the learning support as a way to peace and balance in accomplishing the experiment-based learning performance tasks in Science in the new normal. Their *Neutral* responses in all items reveal equal or fair amount of attention, guidance, assistance or help from parents or guardians when needed.

Table 6 showed the average of the mean responses of the grade four pupils pertaining to the five (5) variables that affected their accomplishment of the experiment-based learning performance tasks in Science in the new normal. The average mean responses were ranked from the smallest average to the biggest average to present the variables as difficulties that would hinder grade four pupil to accomplish experiment-based learning performance tasks in Science. From the greatest difficulty faced to the least are the Needed Materials (M= 3.79), Task Instructions (M=3.69), Completion Time (M=3.63), Home Environment (M=3.57), and Learning Support (M=3.30). The ranking shows that the Needed Materials is the greatest difficulty leading to unaccomplished experiment-based learning performance tasks in Science.

Table 1. Difficulty Faced by Grade Four Pupils in the Task Instructions

No.	Task Instructions	Mean	Interpretation
1	The instructions in the experiment-based learning performance tasks are difficult to understand.	3.72	Agree
2	The instructions do not provide accurate or specific description of the experiment-based learning performance tasks to be accomplished.	3.86	Agree
3	The instructions show no relevant samples to serve as guide in accomplishing the experiment-based learning performance tasks.	3.65	Agree
4	The step-by-step instructions in accomplishing the experiment-based learning performance tasks are hard to follow.	3.53	Agree
	Grand Mean	3.69	Agree

Table 2. Difficulty Faced by Grade Four Pupils in the Needed Materials

No.	Needed Materials	Mean	Interpretation
1	The needed materials for the experiment-based learning performance tasks are not available at home.	3.63	Agree
2	The materials needed for the experiment-based learning performance tasks that I have are incomplete.	3.72	Agree
3	The required materials for the experiment-based learning performance tasks need to be bought and the family has no budget for those.	4.00	Agree
4	The needed materials for the experiment-based learning performance tasks are too many to prepare.	3.81	Agree
	Grand Mean	3.79	Agree

Table 3. Difficulty Faced by Grade Four Pupils in the Completion Time

No.	Completion Time	Mean	Interpretation
1	The experiment-based learning performance tasks are difficult to finish on time	3.63	Agree
2	The time set to complete the experiment-based learning performance tasks are too short	3.49	Neutral
3	Lack of well-managed time to complete or accomplish the experiment-based learning performance tasks	3.74	Agree
4	The time to do the experiment-based learning performance tasks coincide with other tasks at home	3.65	Agree
	Grand Mean	3.63	Agree

Table 4. Difficulty Faced by Grade Four Pupils in the Home Environment

No.	Home Environment	Mean	Interpretation
1	Home environment is not conducive for doing the experiment-based learning performance tasks.	3.42	Neutral
2	The home had no sufficient space to move freely to accomplish the experiment-based learning performance tasks	3.44	Neutral
3	The home had a lot of distractions resulting to divided attention and inability to accomplish the experiment-based learning performance tasks	3.70	Agree
4	The home lacks good arrangement for successful accomplishment experiment-based learning performance tasks	3.72	Agree
	Grand Mean	3.57	Agree

Table 5. Difficulty Faced by Grade Four Pupils in the Learning Support

No.	Learning Support	Mean	Interpretation
1	Parents/guardians have no desire and no ability to teach or help in accomplishing the experiment-based learning performance tasks	3.19	Neutral
2	No further explanation and relevant samples received from teacher or parents/guardians in accomplishing the experiment-based learning performance tasks	3.37	Neutral
3	Poor guidance and assistance from parents/guardians in accomplishing the experiment-based learning performance tasks	3.30	Neutral
4	Lack of strict supervision from teacher or parents/guardians in accomplishing the experiment-based learning performance tasks	3.33	Neutral
	Grand Mean	3.30	Neutral

Table 6. Ranking of Variables Based on the Average of Mean Responses in the Difficulties Faced by the Grade Four Pupils in Accomplishing Experiment-based Learning Performance Tasks in Science.

Difficulties Faced by the Grade Four pupils in accomplishing experiment-based learning performance tasks in Science	Grand Mean	Interpretation
Learning Support	3.30	Neutral
Home Environment	3.57	Agree
Completion Time	3.63	Agree
Task Instructions	3.69	Agree
Needed Materials	3.79	Agree

Qualitative data from the direct responses in the focus group discussion were analysed to contextualise the quantitative findings and give them a more detailed examination.

1. What kind of contribution which can succeed in the accomplishment of experiment-based learning performance tasks in Science in the new normal?

".. nang dahil din po kay Mama ko po,... kumpleto po ako sa mga tasks na pinapagawa.." Pupil 5

".. dahil kumpleto po yung mga gamit ko para sa experiment, ...nire-ready po namin

".. needed materials po, ...yun po yung nakatulong, ... kaya ko po nagawa yung mga learning performance tasks sa Science.." Pupil 38

".. sa akin naman po, dahil sa tulong po ni Mama, ...kaya po nakumpleto ko po yung mga experiment.." Pupil 14

".. dahil po sa mga magulang ko po kaya po nakakapagpasa ako.." Pupil 18

ni Mama yung lahat ng mga kailangan sa performance tasks para magawa lahat at masagutan po lahat.." Pupil 40

".. learning support po, ...andyan po si Mama para tulungan ako.." Pupil 36

".. needed materials po, ...kasi po kapag naihanda na po yun, madali na lang pong gawin yung mga tasks namin sa Science, ...hindi na po ako nahirapan.." Pupil 7

The responses of the pupils indicated that learning support and needed materials contributed highly to the successful

2. What kind of difficulties have you faced towards accomplishing experiment-based learning performance tasks in Science? and

3. Among those mentioned difficulties, which one hinders you in accomplishing the experiment-based learning performance tasks in Science? Why?

".. sa time lang po, ...hindi ko po siya nagagawa kaagad, ...marami pong ginagawa

sa bahay, ...kaya late po akong nakakapagpass.." Pupil 42

".. sa needed materials sometimes po ako nahihirapan, ... lalo po kung wala kaming ganun sa bahay, ...kailangan pa pong bilhin.." Pupil 35

".. completion time po, ...kasi wala po minsan si Mommy ko po para po tulungan po ako.." Pupil 21

".. ako po hindi po kumpleto ng materials, ... nahirapan po ako dun sa last activity (changes happened in mixed solutions) kasi po kulang po yung materials ko.." Pupil 20

3. What can you do to accomplish the experiment-based learning performance tasks in Science? or Who do you think can help you in accomplishing experiment-based learning performance tasks in Science? Why?

".. pagsusumikapan pong gawin yung mga experiment, ...magtatanong po sa inyo (teacher) kung kailangan.." Pupil 40

".. magsisimula na pong gawin yung mga experiment, ...magpapatulong kapag kailangan po sa family member.." Pupil 42

".. makinig po nang mabuti sa inyo (teacher) o sa magulang, ...magtatanong po kung paano, ...kapag hindi kayang gawin o sagutin.." Pupil 18

".. gagawin yung best ko, ...makikinig nang mabuti, ...nae-explain naman po nang maayos.." Pupil 38

".. magfo-focus lang po sa mga tasks, ...kapag may hindi alam, dun po yung time para magtanong.." Pupil 20

".. magiging ready po para matuto, ...ihahanda po yung sarili, ...pati po yung mga kailangang gamitin.." Pupil 7

".. makinig nang maayos kapag online class, ...para alam kung ano po talaga yung dapat na gagawin.." Pupil 14

".. magpapatulong sa family, ...kapag hindi alam, ...kapag nahihirapan na.." Pupil 5

“.. magtatanong po kay Tita o kay Lola kapag hindi po alam..” Pupil 35

“.. kapag wala po si Mama, kay ate po hihingi ng tulong..” Pupil 36

Every grade four pupil strived for a successful accomplishment of the experiment-based learning performance tasks in Science. Their responses reflected that they knew what to do and whom to approach to ask for help in order to complete all the

4. Is there anything else would you like to say or add about the difficulties you face in accomplishing experiment-based learning performance tasks in Science in the new normal?

“.. mas maganda po kung face-to-face, ...para alam kung ano po talaga yung dapat na gagawin, ... maiintindihan po nang maayos..” Pupil 30

“.. busy po yung mga parents, ... nagtrabaho po, ...walang gagabay po.” Pupil 21

“.. walang sapat na pera pambili ng materials.” Pupil 17

assigned experiment-based learning performance tasks. If only difficulties in accomplishing the experiment-based learning performance tasks in Science could

be minimised, the execution of experimental processes and skills as well as the promotion and manifestation of scientific way of thinking and behaviour were easily achieved.

The grade four pupils emphasized from these responses that the difficulties they encountered were the challenge of communicating the performance tasks instructions during this time of teaching and learning in a remote online set-up, the problem for parents to provide this sort of hands-on assistance to them while working 8-to-4, and the lack of family budget to make the required materials available. These signify that plenty of considerations and strong online presence of the pupils are important to avoid the times of feeling helpless in accomplishing the tasks.

2. Proposed Action Plan to Address the Difficulties Faced by the Grade Four Pupils in Accomplishing Experiment-based Learning Performance Tasks in Science

This table presents the proposed action plan which will serve as a basis for undertaking appropriate measures and prioritising any initiative of improvement to enhance the Science teaching-learning-assessment delivery during the new normal.

Difficulties	Objectives	Actions to be Taken	Persons Involved	Success Indicators
Task Instructions The instructions do not provide accurate or specific description of the experiment-based learning performance tasks to be accomplished	Ensure that the grade four pupils understand the task instructions and are able to complete the experiment-based learning performance tasks easily	Create a Science Task Instruction Infographic that will clearly explain the steps of an experiment in digestible short words and with visual or picture format	Teachers , grade four pupils	The Science Task Instruction Infographic has helped the pupils 100% in understanding and following the instructions because the visuals explain clearly what the pupils have to do, how they have to do it, and when they have to complete the experiment-based learning performance tasks in Science, resulting to accomplishment of the experiment with 100% ease

<p>Needed Materials The required materials for the experiment-based learning performance tasks need to be bought, while the family has no budget for it</p>	<p>Provide the grade four pupils with complete and free materials to be used for the accomplishment of experiment-based learning performance tasks in Science</p>	<p>Conduct “Gamit Mo, Sagot Ko: ScienceEskwela Program” to raise complete experiment-based learning kits and distribute these to all grade four pupils especially to less fortunate pupils</p>	<p>Teachers , grade four pupils, Stakeholders</p>	<p>100% completion of the experiment-based learning performance tasks in Science because when the pupils have complete materials to be used for the experiment, they can engage with the assigned performance tasks more effectively and ultimately have more productive experiences</p>
<p>Completion Time Lack of well-managed time to complete or accomplish the experiment-based learning performance tasks</p>	<p>Improve the grade four pupils’ skills in scheduling and planning the things they have to do and complete the experiment-based learning performance tasks in Science</p>	<p>Implement “Do Not Disturb” time slots on the grade four pupils’ Master Schedule and block TV and computer time or cellphone game playing distractions during critical home learning sessions. Therefore, the experiment-based learning performance tasks can be completed on time</p>	<p>Teachers , grade four pupils, Parents</p>	<p>The Grade Four Pupils are becoming 100% better at managing their time because their implemented Master Schedule has helped them in eliminating distractions and allowing them to be more organised, confident, and focus on completing the experiment-based learning performance tasks ahead of the due dates</p>
<p>Home Environment The home lacks of good arrangement for successful accomplishment on experiment-based learning performance tasks</p>	<p>Make a conducive and dedicated learning space at home that can improve concentration and facilitate education, discovery, completion, and achievement</p>	<p>Parents and grade four pupils should set up a specific area at home designated for learning which creates a boundary for other family members in order to not disturb the pupils while studying</p>	<p>Teachers , grade four pupils, Parents</p>	<p>100% improved concentration and increased sense of willingness to do and complete all the experiment-based learning performance tasks in Science in their simple dedicated learning space at home. The area is quiet and void of any potential distractions and creates vibe at which the grade four pupils would feel as if they are actually studying in the classroom</p>

Recommendations

Based on the findings of the study, the following recommendations which can increase efforts for actions and the interest of future researchers on parallel research study are hereby offered.

1. On account of the findings on Task Instructions difficulty that *“the instructions do not provide accurate or specific description of the experiment-based learning performance tasks to be accomplished,”* strategic intervention from the initiative of the teachers to modify and develop the parts of the experiment-based learning performance tasks in Science according to the needs and preferences of the pupils shall be done to assist or guide the grade four pupils in the successful completion of their experiment-based learning performance tasks in Science.

2. On account of the findings on Needed Materials difficulty that *“the required materials for the experiment-based learning performance tasks need to be bought and the family has no budget for those,”* teachers shall consider seeking support from internal and external stakeholders for the provision of required materials for the experiment-based learning performance tasks in Science to help the grade four pupils optimise their execution of experimental processes and skills needed.

3. On account of the findings on Completion Time difficulty that there is *“lack of well-managed time and these coincide with other tasks at home,”* teachers and parents shall work hand in hand in planning and providing an effective and efficient study schedule for the grade four pupils to develop better time management and improve their level of performance, not only in Science but also in all subjects at school.

4. On account of the findings on Home Environment difficulty that *“the home lacks good arrangement and had a lot of distractions resulting to divided attention and inability to accomplish the experiment-based learning performance tasks,”* teachers and

parents shall work together, which may be talked on during Parent-Teacher meeting, in identifying, setting up, or creating a corner at home designated for the grade four pupils' learning space so that their individual learning and assessment process in the new normal setting become more effective and efficient.

5. The proposed action plan of this study could be modified and developed so that further solutions to the difficulties, challenges or problems that occur in terms of the learning processes and completion of experiment-based learning performance tasks of the grade four pupils in Science would be provided as relevant and valuable inputs. Moreover, it can alleviate their susceptibility to unaccomplished performance task.

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