



## RESEARCH ARTICLE

### EXPLORING THE FACETS OF TEACHING GRADE IX- BIOLOGY AMIDST THE COVID-19 PANDEMIC

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#### ABSTRACT

**Background:** The academic year of 2020-2021 is confronted with challenges and adjustments as traditional modalities of handling classes shifted to the virtual world. In consonance with the successive diverse-perspectives and challenges teachers go through, quality instruction might be affected. **Objectives:** The objective of this research is to explore the different facets of teaching grade IX biology among teachers in the province of Isabela. **Methods:** This study utilizes the Descriptive-comparative approach of research as it deals with data that are described and compared between respondents' strata in terms of the variables present in this study. Participants are forty-one (41) Grade IX biology teachers across the selected municipalities of Isabela. **Results:** The study presented the usage of different modalities along with the many preparations for this academic year by investing greater time in creating instructional materials. Instructional plan mostly includes the usage of modules and Internet-aided instruction or recorded videos. The challenges presented in the study are all in moderately low level. **Conclusions:** This study greatly recognizes the role of professional development among teachers, as everyone is affected by this pandemic both on professional and personal lives, the relevance of these findings must transverse the need to address the following challenges and create programs that cater to develop and improve the conditions of teachers.

#### INTRODUCTION

The educative process has turned its tide since the spread of the deadly coronavirus placing the whole world under a seizure of pandemic, however, as challenging it may be, education must continue enclosed with necessary tools, strategies, and innovations to carry on learning procedures amidst these challenging times, hence the phrase, education in the new normal. This situation paves greater calling and larger responsibilities for teachers as they are the very person that would make learning efficient. Teachers provide knowledge and skills in engaging ways even in the situation of a pandemic, teachers shift from face-to-face modality into virtual teaching in which transmission of learning is done through recorded sessions and online searches (Torres, 2020). Also, educators must provide learners with rigorous, integrated and personalized learning experiences having structures and interventions intended to help them in the learning process (Stack, 2014). Amongst all of these roles in the new normal system of teaching, teachers as facilitators of learning are exposed to numerous challenges, societal pressure and mindsets that may affect their perceptions, point of view and techniques in approaching instruction. In this manner, it is noted that society demands tons of flexibility among teachers during this unprecedented global experience. Moreover, conflicts may arise among workers and learners in the education sector given the facts of having limited resources

and protracted exposures to stressful circumstances (Inter-agency Network for Education in Emergencies, 2020). Teachers at this scenario are asked to attend many webinars and seminars in order to cater demands of quality instruction; teacher training to online instruction, blended learning and distance learning is also recommended in order to adjust to the new instructional format (Toquero, 2020 as cited by Tria, 2020). A reinforcement along pedagogy and technology is a must as the system goes transition to new normal; from the four corners of the classroom to the virtual reality of technology. Thus, every learning institution needs to study how successful online learning is in providing quality education and outcomes-based education to students (Basilaia & Kavadze, 2020 as cited by Tria, 2020). In between all of these challenges, teachers mediate at the center of the pandemic and learning system. Studies reveal that teacher's role on these challenging moments focused on ways of transmitting learnings and developing interventions for the new normal (Singh, 2020). This study, on the other hand, explores teacher's experiences, different factors or challenges teachers commit into for the instructional planning and teaching Biology in the new normal. Further, this also investigates the extent of such factors and perceptions of facilitators in Biology education. This study aims to explore the different facets of teaching Grade IX biology in terms of challenges, expectations, and perceptions of teachers amidst the pandemic of COVID -19. Specifically, it ought to answer the following questions.

1. What is the most utilized learning modality?

2. How did the teachers respond in the shift to new normal set-up of teaching?
3. In a descriptive manner, in what ways are the respondents to teach the topics on Grade IX Biology (Circulatory and Respiratory Systems, Genetics, Biodiversity and Photosynthesis and Cellular Respiration) among their students?
4. In what extent are the different challenges affect the respondents in teaching Biology in the new normal, specifically:
  - Environmental
  - Self- Motivational
  - Resources
  - Tech Orientation, and
  - Interventions or Learning Modalities Employed
5. Are there any significant differences between the respondent’s strata (Public Schools vs Private Institutions) in terms of the different challenges involved in teaching Grade IX Biology?

Thus, determining these facets of teaching and knowing whether teachers are on good conditions to teach Biology can lead to quality, inclusive, and accessible education for every student.

## MATERIALS AND METHODS

**Design:** This research study uses the Descriptive-comparative approach as it sought to describe the data being collected, analyzed using inferential which is used to obtain a general image of the accumulated data from teachers’ responses, and compare teacher’s strata based on their responses. In addition, both descriptive and content analysis are used to explore the perspectives of teachers in terms of their responsiveness and instruction on the lessons of Grade IX- Biology.

**Environment:** All respondents included in the study are across selected municipalities of the third (3<sup>rd</sup>) to sixth (6<sup>th</sup>) legislative districts of Isabela which researcher’s contact is prevailing.

**Samples and Sampling Procedure:** Forty-one (41) Grade IX teachers are selected using stratified sampling which comprises of two major strata, at least twenty (20) grade IX science teachers are considered both from private and public institutions chosen randomly. It is important to note that, since the municipalities involved vary on scale and on number of respondents, scaling is done to equalize the number of probable respondents.

**Instrumentation:** The study utilized a survey questionnaire which is comprised of four parts: letter and informed consent, descriptive survey for profiling, open-ended questions pertaining to the teachers’ responses done on this pandemic and a detailed description of intended or planned instruction for teaching Grade IX Biology, and a checklist in a four-point Likert scale. Further, validity and reliability tests are conducted to ensure suitedness of the data gathering material in realization of this study. Lastly, the material is encoded on Google forms for easy and smoother administration.

**Treatment of Data:** The perceptions of respondents are clustered using thematic analysis meanwhile, in terms of the challenges, the mean value is used to determine whether the mean value of a factor is high or low. In addition, the Shapiro-Wilk test for Normality is used to determine whether the data set is in normal distribution or not, the result revealed that the factors of Environmental and Technological Orientation are not in normal distribution, thus non-parametric measure of difference is used specifically Mann-Whitney Test meanwhile the factors of Self-Motivation, Resources and Interventions are normally distributed, thus, parametric test specifically T-Test for Independent samples is utilized.

## RESULTS

This study sought to explore the facets of teaching biology amidst the pandemic. Grade IX teachers across 3<sup>rd</sup> to 6<sup>th</sup> districts coming from both public and private institutions are asked to participate in the study by answering a survey questionnaire.

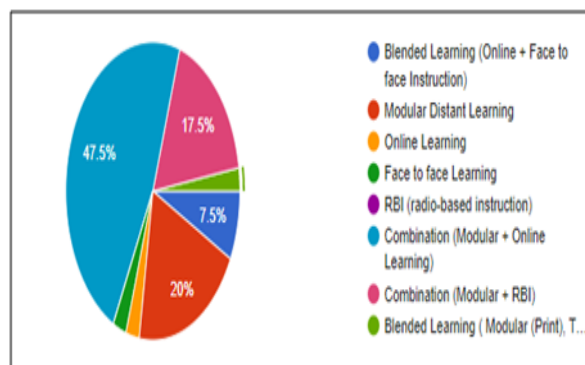


Figure 1. Frequency Count on the Learning Modalities Utilized

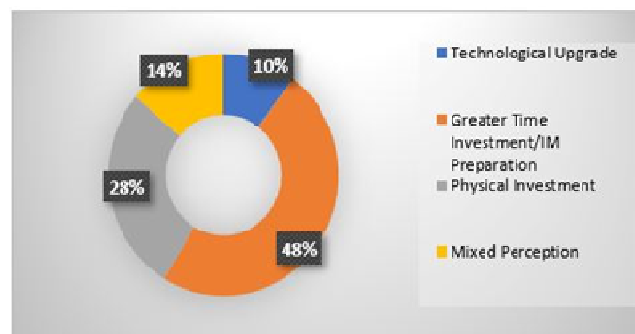


Figure 2. Responses of Teachers in the New Normal

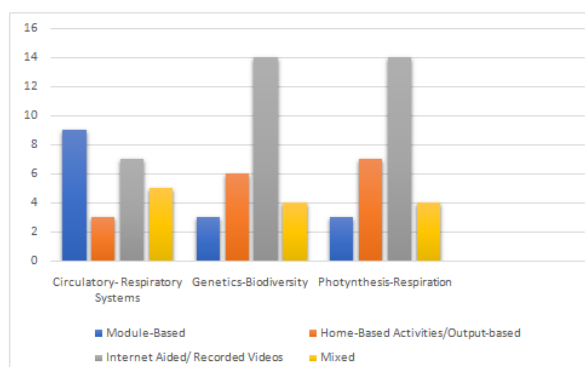


Figure 3. Techniques Utilized by Teachers in teaching the concepts in Biology

**Table 1. Mean Value on the level of Challenges affecting the Grade IX Teachers**

Challenges	Mean Values (Teachers)			Interpretation
	Private School	Public School	Mean	
Environment	1.99	1.97	1.98	Moderately Low
Self-Motivation	1.73	1.63	1.68	Moderately Low
Resources	2.13	2.27	2.2	Moderately Low
Tech Orientation	2.06	2.06	2.06	Moderately Low
Intervention	2.24	2.32	2.28	Moderately Low

**Table 2. Value of Significant Differences among Respondent's Groups in terms of Challenges**

Challenges	Value of Significance	Interpretation (compared to the margin of error, 0.05)
Environmental	0.822	Not Significant
Self-Motivational	0.430	Not Significant
Resource	0.316	Not Significant
Tech-Orientation	0.603	Not Significant
Intervention/ Learning Modalities	0.630	Not Significant

Values obtained through T-Test for comparison on SM, R, TO while Mann-Whallis Test for Comparison on E and I/LM.

The results of the study revealed that respondents used varied modalities in teaching Grade IX Biology, however, the most prevailing modality being utilized is the combination of modular and online Learning having 47.5% of the respondents utilizing it. Teachers tend to prepare for this academic year by investing greater time in creating instructional modules such as modules, recorded videos, and activity sheets. In terms of instruction, teachers opted to teach the topic on biology in various ways accompanied by the modalities they are currently using; for the circulatory and respiratory systems, module-based is employed having 38% of teachers agreeing into it, for genetics and biodiversity, Internet aided/ Recorded videos activities having 52% of the teachers using it to deliver the lesson, same value and technique is observed for teaching the concept of photosynthesis and cellular respiration. Further, the challenges presented in the study are all in moderately low level in which mean values are ranging from 1.68 to 2.28; the lowest value is obtained from the parameter of self-motivation and the highest is observed on the parameter of intervention being used by teachers. It is notable that teachers both from public and private institutions has the lowest values and highest values on self-motivation and intervention, respectively. Lastly, no significant difference is observed between the two groups in terms of their perceived level of challenges in teaching grade IX biology, thus, the level of challenges or the extents of effects are relatively the same in each groups.

## DISCUSSION

Since Grade IX is under the supervision of the Department of Education, where the same department circulated that Modular Learning is employed across the country, thus, contextualized modules. Teachers opted to use online platforms such as Facebook, Google classrooms and the likes to guide and supervise the learning process.

Meanwhile during the month of July (2020), DepEd spearheaded the printing of Self-Learning Modules that are distributed across the country (DepEd, 2020). Lastly, the technology devices, design of the program, choices of instructors, responsive curriculum, and supportive stakeholders are necessary and significant for the successful delivery of the lessons in an online environment (Barr & Miller, 2013). The adjustments done by teachers imply a big leap or change in their accustomed roles as teachers; it transverse from the four corners of the room to the virtual classrooms. This data also implies the essence and the role of professional development among our teachers and to his/her students.

The need for autonomous learning requires that teachers shift to be designers and facilitators of learning instead of the sage on the stage (Lie, A., 2020). Moreover, these adjustments must take note that education stakeholders have to accept the fact that what matters is not the completion of the written curriculum coverage but the recognition of students' diverse needs and discovery of possibilities to meet such needs through resources other than teacher themselves (Anita Lie et al., 2020). The selection process of pointing specific strategy to be used in instruction is solely dependent on many factors, teachers tend to choose the easiest and comforting means of delivering lesson that could cater the necessary competencies that are needed to be imparted. The Department of Education has released prior the start of the academic year the most essential learning competencies (MELCs) which enumerates the necessary competencies needed to be done within a time frame which is stipulated on the DO 12 s 2020. Further, the MELCs are part of the agency's response to develop resilient education systems, especially during emergencies, and will enable DepEd to focus instruction on the most essential and indispensable competencies (Alcober, N., 2020). New normal has set paced for everyone to be creative on implementing necessary deliveries of lesson, usage of online tools to assure that lesson plans, videos, tutorials, and other resources are available for some students and probably, most teachers. Radio and TV are also very powerful tools (Saavedra, J., 2020). Meanwhile, among the few strategies that can be implemented, asynchronous and synchronous class can be implemented to suffice the needs of students (Daniel, J. 2020).

The study revealed that teachers are more affected in terms of the interventions or learning modalities implemented by the school which is in consonance to the results of data that narrates teachers investing greater time preparing modules and investing greater time on preparation of instructional material however, regardless of these challenges, the data implies that the teachers still seem to be confident and motivated to teach amidst the hardships they encounter. Online delivery can present barriers to the teachers since they need to acquire online-driven competencies in planning, implementing, and assessing the performance of their students, providing teachers with adequate training courses can assist them to effectively implement the courses through electronic delivery (Toquero, C., 2020).

## CONCLUSION

The study showcases that in response the need to shift from the traditional means of education, the system took its way on the virtual world which necessitated the used of different learning management systems (LMS) that accompanied the different modalities in teaching grade IX biology.

Moreover, teachers having undergone necessary response to teaching Biology despite these hard times created more work and a big leap or change in their accustomed roles as teachers; it transverse from the four corners of the room to the virtual classrooms. This new normal, however, created both opportunities and challenges; challenges have a notable effect on the overall teaching process which implies a lag on the education system; teachers and student simultaneously have hardships in the teaching and learning practice this new normal, however, regardless of these challenges, data imply that teachers still seem to be confident and motivated to teach amidst the hardships they encounter. Teachers from public and private institutions despite having different rules and different school policies, the challenges affecting them are on relatively same level which only follows the rule that everyone is affected by this pandemic both on professional and personal lives. The data set in relation to other studies clearly disproves the idea that private institutions have significant difference with the ones working on public institutions however, limited to the challenges presented above, outside of such factors may imply difference. Mutual programs for developing the statuses of institutions and teachers may be employed to cater these happenings, by these way learning conditions is also elevated to students, thus, mutual benefits is obtained. This study greatly recognizes the role of professional development among teachers, the relevance of these findings must transverse the need to address the following challenges and create programs that cater to develop and improve the conditions of teachers

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The author declares that there's no conflict-of-interest present in this study, its respondents, and its researcher. Funding was provided by the Department of Science and Technology through scholarship program.

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CBPSME Capacity Building Program for Science and Mathematics Education

**COVID-19:** Corona Virus Disease 2019

**DOST:** Department of Science and Technology

**DepEd :** Department of Education

**DO :** Department Order

**MELCs:** Most Essential Learning Competencies

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