

School Interventions for Learning Continuity and Pupils' Cognitive Gains

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ABSTRACT: School interventions serve as essential approaches to ensure learning continuity during unforeseen disasters and calamities. This study aimed to determine the significant relationship between the school interventions and teachers' perception of pupils' cognitive gains and to identify which school interventions predict pupils' cognitive gains. Employing a descriptive correlational and causal research designs, a self-made survey questionnaire that passed the validity and reliability tests was conducted to 139 randomly selected teachers using Raosoft calculation from six schools in the Division of Gingoog City. The quantitative data were analyzed using Mean, Standard Deviation, Pearson's Product Moment Correlation and Multiple Linear Regression. Findings revealed that school interventions for continuity learning are highly implemented and pupils' cognitive gains are highly observed. Modular distance learning shows a weak positive correlation. All the dimensions of school interventions for learning continuity either singly or in combination, do not predict the teachers' perception of pupils' cognitive gains. Thus, school interventions for learning continuity, though helpful, do not guarantee that pupils are serious in their studies. To completely understand the nature of success in the school interventions for learning continuity, it is recommended that future study may look into the contextual elements to consider in the school interventions for distance learning.

KEYWORDS: cognitive gains, modular distance learning, school interventions

I. INTRODUCTION

Natural disasters and other calamities frequently interfere with schools' regular operations, so different school interventions solutions must be put in place. Enhancing educational quality, reducing learning loss, and guaranteeing fair access to education for all pupils, especially in the face of future disruptions. Disruption of classes negatively impacts pupils' performance by causing a loss of instructional time and leading to lower academic achievement.

Implementing educational continuity during unforeseen disasters and calamities is necessary for uninterrupted learning. The concept of educational continuity may seem simple, but due to its level of complexity, it can be difficult to apply and assess its practice. Since the country is currently experiencing significant reform on a global level, the need for educational continuity is even more urgent. Since education was forced to change, there has been much discussion on the effectiveness of different school interventions. Lectures and readings are examples of primarily receptive learning-based disciplines that often adapt well to online and distance learning environments. The conversation emphasized the need for specialized educational approaches to guarantee skill acquisition irrespective of the method of learning (Hutson et al., 2023).

Furthermore, according to Hernandez (2021) for both teachers and pupils, school interventions provide easy accessibility and a flexible schedule. It promotes the continuing importance of regular education and opens constant interaction. School interventions save time and money while increasing protection against travel problems. While pupils can gain independence and multitasking abilities, teachers can make use of a variety of teaching options and platforms that promote cooperation and integration.

To lessen the impact of educational loss, DepEd Order No. 022, s. 2024, was issued to provide guidelines on class and work suspensions in schools during typhoons, and tropical cyclones, heavy rainfall and flood, earthquakes, power outages, extreme heat, low air quality and emergencies and hazards. DepEd has emphasized the use of Learning and Service Continuity Plans (LSCPs) to minimize disruptions to the academic process. The LSCP mandates that field offices and schools identify suitable Alternative Delivery Modes (ADMs) for instruction to ensure that pupils may access learning resources even during emergencies. Blended learning, modular distance learning, online education may be used in these ADMs, depending on the specific needs and local conditions.

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However, despite its numerous benefits, teachers typically encounter several challenges that prevent blended learning from being successfully adopted and used. These difficulties include low self-efficacy and resistance from teachers, which result from their inexperience or uneasiness with new instructional approaches. Furthermore, strict academic regulation difficulties frequently result in an increased workload and institutional challenges for teachers. A significant lack of preparedness is evident, especially when it comes to teachers' general readiness and insufficient digital infrastructure. Teachers' intentions for blended learning may be disrupted by these compounding problems, which could result in low levels of faculty adoption (Kumar et al., 2021).

Notwithstanding that by allowing pupils to learn at their own speed and creating a self-directed learning environment, modular instruction surpasses traditional teaching. Through practice tasks, this method offers instant feedback and reinforcement, which greatly increases pupils' motivation and capturing their interest. A more personalized educational experience that suits different learning needs and styles is made possible by modular training, which divides knowledge into small portions. Because of the adaptability of modular learning, teachers can quickly spot and help pupils in areas where they might be having difficulty. Additionally, by encouraging active engagement and improving knowledge retention, this approach makes learning easier and interesting. Pupils are guaranteed a thorough and flexible learning experience because of the structured yet flexible nature of modular training (Ambayon & Millenes, 2020).

According to Basar et al. (2021) online education works well in several contexts. Nonetheless, there are still issues and obstacles in putting online learning into practice. These include the high cost of internet packages, problems with technology, pupils' attitudes, and inadequate internet connectivity at homes, schools, and campuses. For online education to become fully open to everyone, policymakers must place a high priority on funding easily accessible and cost-effective internet services. Training teachers and pupils to use technology effectively can address challenges related to skills and attitudes.

For this reason, the researcher aimed to determine the significant relationship between school interventions for learning continuity and teachers' perception of pupils' cognitive gains across six schools in the Division of Gingoog City. The method of instruction delivery whether blended learning, modular distance learning or online education have influenced teachers' perception on their cognitive gains. This study offered evidence-based insights that are essential for improving school interventions for learning continuity.

This study reflected Jean Piaget's Constructivism Theory as cited by Erawati and Adnyana, (2024) who emphasized that knowledge is constructed through direct experience and social interaction. The implementation of constructivist principles in learning aimed to create an environment that supports pupils' active exploration and deep understanding. Under this concept, teachers become facilitators who help pupils solve challenging real- world issues rather than just lecturers. Through practical exercises pupils are able to organize and incorporate new material into their own cognitive frameworks going beyond rote memorization.

By putting the pupils at the centre of the learning process, constructivism has a big impact on blended learning, modular distance learning and online classes. They are encouraged to build their own expertise using appropriate educational resources. Additionally, according to constructivism, learning is an active, internal process in which people create new information by relating it to what they already know. Through involvement, teamwork, and practical experimentation, this method places a strong emphasis on pupils' engagement. Constructivism serves as a theoretical framework that directs the development and implementation of successful school interventions (Walden University 2024).

According to Tong et al. (2022) with adaptable and interesting training, blended learning increases pupils' engagement. It benefits teachers as well as pupils by combining the best features of in-person and online education. Research suggests that when compared to traditional classrooms, blended learning environments result in higher academic accomplishment. Improved communication and assistance are the results of more teacher-pupil connection. Surveys and observations show that blended learning promotes improved self-study practices, optimistic attitudes towards learning, and general academic achievement.

On the other hand, the constructivist learning method views instructional modules as having substantial pedagogical benefits. They are made expressly to support pupils in actively developing their knowledge and skills through autonomous information processing. Modules' self-study content effectively encourages pupils to participate in the process by changing the emphasis from passive receipt to active involvement. Thus, pupils benefit from modular remote learning by gaining the essential independence to direct their own education and determine their own pace (Malipot, 2020).

As stated by Pribadi et al. (2021) applying a constructivist approach to online learning is important because it actively allows remote pupils to develop on course material in a meaningful way. By letting pupils to actively construct concepts they have learned through in-depth discussions with peers and teachers, this approach promotes learning. Pupils that actively participate in this online program also participate in extensive interactive learning with the course materials, their tutor, and their peers. This dynamic interaction turns passive receiving into active personal comprehension and reinforcing information.

II. METHODOLOGY

This study used correlational and causal research designs. Correlational design examines the relationships among several variables in a single group. This non-experimental method seeks to determine the relationship between these factors without changing any of them (Devi et al., 2022). Considering its capacity to gather and evaluate data in a thorough and impartial manner, a quantitative approach was chosen for this investigation.

This study was also causal research design since this study tried to investigate which school interventions predict singly or in combination the pupils' cognitive gains. Causal research design aims to determine cause-and-effect relationships. It manipulates the independent variable and controls for extraneous variables to see if changes in the independent variable result in changes in the dependent variable (Liu & Xu, 2024).

Statistical methods were used to gather, compute, analyze, and interpret quantitative data. For problems 1 and 2, inferential and basic descriptive statistics like Mean and Standard Deviation (SD) were used. Problem 3 utilized Pearson-Product Moment Correlation Coefficient, while Problem 4 employed Multiple Linear Regression.

III. RESULTS AND DISCUSSION

Problem 1. How do teachers assess the implementation of school interventions for learning continuity as to:

1.1. blended learning.

1.2 modular distance learning; and

1.3 online education?

Table 1 shows the overall school interventions for learning continuity implemented by the schools. It has an overall Mean of 3.96 with SD = 0.85, qualitatively described as Highly Implemented. The result implies that schools have successfully adapted these modalities into their practice. Its level of implementation suggests that these modalities are likely to contribute to improved learning experiences. School interventions that are widely used become important to educational continuity. The flexibility and reliability of these modalities in the face of unforeseen obstacles are demonstrated by their adaptation.

Table 1. Summary of School Interventions for Learning Continuity

Variables	Mean	SD	Qualitative Description
Blended Learning	4.20	0.78	Highly Implemented
Modular Distance Learning	3.76	0.95	Highly Implemented
Online Education	3.92	0.82	Highly Implemented
Overall	3.96	0.85	Highly Implemented

Note:4.51-5.00 Very Highly Implemented; 3.51-4.50 Highly Implemented; 2.51-3.50 Moderately Implemented; 1.51-2.50 Less Implemented; 1.00-1.50 Least Implemented

In line with Badulis, (2024) to guarantee continuous education by meeting the needs of both teachers and pupils, a strong Learning Continuity Plan (LCP) is essential. Since it has a direct effect on the quality of pupils' learning, it is important to prioritize the well-being of teachers and their ability to adjust to new teaching techniques. The LCP's professional development programs give educators the skills and confidence they need to deal with changing educational environments. Additionally, creating a cooperative and encouraging environment improve the relationships between teachers and pupils, encourage cooperation and improve performance. In the end, a properly implemented LCP ensures academic stability and promotes ongoing development for the whole school community.

Moreover, Blended Learning has the highest Mean of 4.20 with SD = 0.78, which is qualitatively described as Highly Implemented. The result suggests that blended learning is widely use in schools. It helps pupils do better in school. Educators agree that its implementation is effective and has promising ways to boost pupils' outcomes because of its flexibility, enhances engagement and personalizes experience. The combined approach in blended learning creates a balance that provides answer to pupils' needs and learning styles.

As stated by Alsalhi et al. (2021) as well as Dagoc and Oco (2024) through online models, blended learning promotes active learning, which has a favorable effect on pupils' accomplishment. Instead of allowing pupils to passively absorb information, this method encourages their motivation, engagement, and participation in creating their own knowledge. Due to blended learning's flexibility, pupils can study on their own and gain a deeper comprehension of the material outside of the traditional classroom. Their knowledge base grows because of this self-directed learning, which also promotes deeper topic investigation. It gives pupils more control over their education and increases their chances of succeeding academically.

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However, modular distance learning has the lowest Mean of 3.76 with SD= 0.95, but still qualitatively described as Highly Implemented. Using printed modules in modular distance learning offers flexible learning resources and structures to guarantee educational continuity. Pupils can advance according to their own pace and learning preferences, and it encourages independent learning. Regular remote teacher feedback and assistance keep pupils interested and help them overcome obstacles. Particularly in places with low resources or during times of disruption, modular distance learning is an essential tool for providing accessible and adaptable education.

According to Tanucan et al. (2023) the fundamental structure of modular distance learning is important to its usefulness, requiring proper module designs that effectively capture pupils' interests and accommodate their distinct learning styles. All the curricular learning competencies must be clearly expressed in these module contents, which should also be very relevant to the local context, individual needs, and living circumstances of the pupils. The community presence component shows a significant change in educational roles that goes beyond the courses themselves. This viewpoint emphasizes that pupils are unquestionably not solely responsible for their own learning in the modular distance learning modality. To create a conducive learning environment, parents, guardians, and the larger community must actively participate and work together.

Problem 2. How do teachers perceive the pupils' cognitive gains?

Table 2. Teachers' Perception of Pupils' Cognitive Gains

Indicators		Mean	SD	Qualitative Description
<i>I observe that the pupils...</i>				
1.	submit outputs on time.	3.73	0.89	Highly Observed
2.	express ideas correctly.	3.72	0.90	Highly Observed
3.	possess problem solving skill.	3.69	0.98	Highly Observed
4.	sustain their interest in school.	3.75	0.93	Highly Observed
5.	lead classmates/group to excel.	3.75	1.05	Highly Observed
6.	connect lessons to everyday life.	3.91	0.89	Highly Observed
7.	can do tasks/activities by themselves.	3.78	0.95	Highly Observed
8.	have improved their reading proficiency level.	3.60	0.99	Highly Observed
9.	make use of digital tools and resources.	3.96	0.90	Highly Observed
10.	develop their critical and creative thinking skills.	3.73	0.95	Highly Observed
Overall		3.77	0.94	Highly Observed

Note: 4.51-5.00 Very Highly Observed; 3.51-4.50 Highly Observed; 2.51-3.50 Moderately Observed; 1.51-2.50 Less Observed; 1.00-1.50 Least Observed

Table 2 presents the teachers' perception of pupils' cognitive gains. It reveals an overall Mean of 3.77 with SD = 0.94, qualitatively described as Highly Observed. Thus, data indicate that pupils are doing great in school. Result reveals that most pupils generally have similar learning experience since their scores are close to the average. It suggests that pupils' cognitive gains are directly observable. Teachers can easily see how pupils are performing and keep track of their progress.

Through creating a conducive learning environment by the teachers, it motivates pupils to examine themselves and control their own behavior and learning. Pupils get the necessary abilities to independently set their own goals. This emphasis on awareness and self-control is essential for equipping pupils to deal with the changing and dynamic demands of modern society. Additionally, when teachers actively support these abilities, they create a strong culture of ongoing development within the learning community. By seeing every obstacle as a chance for improvement, pupils learn to accept responsibility for their own development. Ultimately, creating lifelong pupils who are ready for success in the future depends on this individual goal-setting skill, which is based on teacher direction (García-Toledano et al., 2023)

Thus, indicator 9, *I observe that the pupils make use of digital tools and resources*, has the highest Mean of 3.96 with SD = 0.90, qualitatively described as Highly Observed. The result demonstrates that pupils are embracing and using digital tools and resources effectively on their studies. Educational resources provide pupils with interactive and personalized learning experience that traditional methods failed to offer. Engaging with accessible digital tools and resources make lessons more fun and allow continuous progress monitoring thus contributing to positive results.

Based on Kerimbayev et al. (2023) the integration of modern technologies creates an effective and flexible educational environment. These tools, including electronic platforms and virtual classrooms, enrich learning experience by making it more

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interactive and engaging for pupils. Multimedia materials and communication tools provide diverse ways for pupils to absorb information and collaborate. The use of technology also facilitates personalized learning, empowering pupils to control the pace and timing of their studies. This adaptability ensures education can be tailored to individual needs. Technological advancements are reshaping education to be more dynamic and learner focused.

Meanwhile, indicator 8, *I observe that the pupils have improved their reading proficiency level*, has the lowest Mean of 3.60 with SD = 0.99, still qualitatively described as Highly Observed. Data reveal positive results in terms of proficiency level among pupils. The results provide concrete evidence of the positive effects of school interventions, confirming the methods and resources used to support pupils' growth. The data encourage continued focus on literacy program because it meaningfully contributes to pupils' academic foundation which is reading proficiency.

Teachers observed that pupils' overall level of reading fluency is significantly influenced by their motivation to read. The availability of interesting and varies reading materials that suit a variety of interests and ability levels is an important factor influencing this fluency. Additionally, it was believed that teacher's careful application of efficient reading techniques positively increased pupils' reading speed accuracy. The pupil's family environment's constant and proactive support offers crucial reinforcement that has a good effect on reading habits. The educational environment's ongoing, cooperative assistance, which promotes a culture of reading practice, is equally crucial. When combined, these elements-motivation, tools, tactics and all-encompassing support-act as a potent catalyst for significantly improving pupil's reading fluency (Guerrero, 2025).

Problem 3. Is there a significant relationship between the school interventions for learning continuity and teachers' perception of pupils' cognitive gains?

Table 3. Correlation Analysis Between School Interventions and Teachers' Perception of Pupils' Cognitive Gains

Variables	r-value	p-value	Description	Decision on Ho	Interpretation
Blended Learning	0.114	0.180	Negligible	Accept	Not Significant
Modular Distance Learning	0.171	0.045*	Low	Reject	Significant
Online Education	0.081	0.342	Negligible	Accept	Not Significant

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows Pearson's correlation test between the schools' educational strategies and pupils' cognitive gains. The test reveals a weak positive correlation between the dependent variable and one of the independent variables which is the modular distance learning that indicates low correlation. If the correlated independent variable changes its direction the pupils' cognitive gains will also change in the same direction yet slightly or inconsistently. Thus, two variables with weak correlation might still be influenced by external factors, or their relationship could be coincidental.

In addition, the other two independent variables in schools' educational continuity show no correlation which are the blended and online learning. If two variables have a correlation of zero, it indicates that they are not related in any way. In other words, knowing the value of one variable does not give us any idea of what the value of the other variable may be.

Additionally, Table 6 took the analysis at the independent variable level by looking at the correlation test while holding the dependent variable constant at a time. As can be seen from the same table, only modular distance learning is significant at 0.05. In summary, taking it at the coefficient level, this schools' educational modality is correlated to the teachers' perception of pupils' learning outcome, with a *p* value less than 0.05. Thus, the correlation analysis yielded that the null hypothesis test (Ho1) was rejected. With the finding weak positive correlation. Though it offered flexibility, modular distance learning often fails to provide real-time interaction which makes it difficult to get questions to be answered right away. For many pupils, the main problem contributing to inequality is the lack of access to technology and support at home. On top of that assessment is difficult in modular distance learning making it hard to determine actual knowledge and stop academic dishonesty.

According to Abude (2021) modular distance learning has several benefits, including meeting a range of learning requirements and letting pupils' study at their own speed. This strategy has led to positive changes to methods of teaching. However, studies show that it has a negative effect on pupils' academic achievement. Parents' educational backgrounds, and too many activities affect how well they can mentor their children. The difficult nature of putting this learning modality into practice is shown by these difficulties.

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Problem 4. Which of the dimensions in the independent variable predicts singly or in combination the teachers' perception of pupils?

Table 4 presents regression analysis that predict the pupils' cognitive gains. It is hypothesized that the three (3) predictors will be positively or negatively associated with the learning outcome of the pupils where $\beta = 0$ as null and the alternative of $\beta \neq 0$. That explains whether the independent variables are good predictors of the pupils' learning outcome. Results show that only 3.2% of the variance is explained by the three (3) predictors $F(139) = 1.491$, $p = 0.220$. The overall regression model is not statistically significant at the 0.05 level. Moreover, the regression model does not significantly predict the dependent variable. Modular Distance Learning comes closest to being significant, but still above the 0.05 threshold.

Taking it in the coefficient level, the independent variables are not good predictors for the teachers' perception of pupils' learning outcome with a p value lesser than 0.05. Hence, the regression analysis yielded that the null hypothesis test (H_0) was accepted. With the following findings, no linear relationship exists between the variables as can be reflected in Table 4.

Table 4. Regression Analysis Between the School Intervention for Learning Continuity and Teachers' Perception of Pupils' Cognitive Gains

Independent Variables	Unstandardized Coefficients		Standard Coefficient Beta		Sig.
	B	Std. Error		T	
(Constant)	3.210	0.478		6.714	0.000
Blended Learning	0.029	0.168	0.023	0.171	0.106
Modular Distance Learning	0.225	0.138	0.212	1.628	0.106
Online Education	0.103	0.163	0.083	0.635	0.527
	R=0.179		R²=0.032	F=1.491	Sig.=0.220

a. Dependent Variable: Pupils' Learning Outcome

b. Predictors: (Constant), Blended Learning, Modular Distance Learning, Online Education

School interventions, while helpful, yet they do not serve as a guarantee for improved grades in pupils. There are many factors that could influence the implementation of these methods such as pupils' interest, availability of resources and well-planned lessons. The effectiveness of these methods depends on how they are used and adapted to pupils' learning needs. Choosing a method to fit in does not end there. Teachers must create interesting and helpful learning experiences in any methods possible.

According to Lee and Ross (2020) the concept of educational continuity is complex and guarantees pupils' simple, continuous learning experiences. Potential errors in its execution and assessment can result from its complexity, which stems from the many variables involved, such as curricular integration, care coherence, and consistent supervision. It is necessary to define clearly which elements are being examined during program assessments to assess and improve educational continuity. Planning program evaluations and gathering relevant data is simplified by concentrating on a particular aspect, such as supervision, curriculum, or continuity of care.

IV. CONCLUSIONS

Based on the findings of the study, the following conclusions are drawn.

1. Schools ensure for a learning continuity amid calamities that may come. It shows the system's resilience and flexibility during the shift to distance education.
2. Pupils have developed more than the basic skills as perceived by the teachers.
3. School interventions ensure learning continuity yet they do not serve as a guarantee for improved grades in pupils.
4. Teachers' perception of pupils' cognitive gains are not due to the school interventions implemented. Their perceptions might be influenced by factors beyond just the implemented school interventions, such as individual pupils' characteristics, prior knowledge and home environment.

V. RECOMMENDATIONS

The following recommendations are provided for consideration in relation to the findings and conclusions.

1. To sustain the high implementation of the different school interventions for learning continuity, the schools may produce different learning modalities that if internet connections lost, alternative materials can still deliver learning tasks.
2. Teachers may continue encouraging pupils to develop their expected cognitive gains.

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3. Teachers may prepare engaging and accessible Learning Activity Sheet (LAS) in advance, ready for immediate use during class suspensions. Additionally, feedback can be provided through online platforms, and module design may be improved by making sure the content is easy to comprehend, concise, and interesting.
4. Teachers may engage families in the learning process through regular communication and workshops to help parents support their children's education at home.
5. Conduct further study to identify the most significant factors that influence cognitive gains in different school interventions.

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