Effects of Synchronous and Asynchronous Instruction on Learners' Reading Motivation During COVID-19 Pandemic

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Abstract
Education suffered greatly from the COVID-19 pandemic which necessitated the provision of distant, emergency instruction by teachers. While educational institutions work to reduce the possibility of community transmission, online learning has emerged as a vital lifeline. To reach students remotely and minimize disruptions to education brought on by the COVID-19 epidemic, the Department of Education in the Philippines has produced synchronous and asynchronous instruction for use at the elementary school level. When classes follow predetermined schedules and times, this is called synchronous learning. Students can finish their assignments at their own pace in asynchronous classrooms. This research study aimed to analyze the effects of synchronous and asynchronous instruction on learners' reading motivation during the Covid-19 pandemic. The researcher used the mixed method using a quantitative and qualitative approach. Purposive sampling was used in choosing the 110 participants from DepEd elementary schools. The data analysis used was mean and standard deviation for the qualitative, and thematic analysis for the qualitative data. The findings reveal that learners were interested and motivated while attending the synchronous and asynchronous mode of instruction during the Covid-19 pandemic. Reading motivation was discovered to be a strong indicator of reading ability using synchronous and asynchronous instruction. It implies that reading motivation is a key element that supports the development of these reading skills and is implemented as part of the new standard teaching for the kids in the Department of Education or DepEd in the Philippines. In conclusion, synchronous and asynchronous instruction is effective in reading motivation.

Keywords: Asynchronous, Synchronous, Motivation

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Introduction

The COVID-19 pandemic significantly affected education, leading to the need for remote instruction by teachers and educators. Despite the challenges, there were instances of innovative teaching approaches worldwide (Ferdig et al., 2020). The global impact of the COVID-19 outbreak led to widespread closure of schools, prompting UNESCO to recommend the use of distance learning and open educational platforms to continue teaching remotely (UNESCO, 2020-03-04). Online learning became crucial for education during efforts to prevent community transmission (Murphy, 2020). In response to the pandemic, the Department of Education (DepEd) developed synchronous and asynchronous instruction for elementary school students. Synchronous learning follows set schedules, with both teachers and students participating in real-time activities, while asynchronous classes allow students flexibility in completing their work within a specified timeframe.

Moreover, the implementation of this new instructional approach in DepEd emphasizes the importance of reading motivation for students. Enhancing reading abilities is crucial, and research suggests that intrinsic motivation plays a more significant role than extrinsic motivation in predicting reading success (Guthrie et al., 1999; Gottfried, 1990). Instructors face the challenge of motivating students, as active participation is essential for comprehensive learning (Rotgans & Schmidt, 2011). Reading motivation encompasses both extrinsic (external rewards) and intrinsic (personal interest) factors (Deci & Ryan, 1985; Deci et al., 1991). Ultimately, intrinsic motivation proves more predictive of reading success in elementary and middle school students (Guthrie et al., 2000).

Student motivation tends to decline in elementary school, making traditional instruction less effective (Hatter, 1981; Wigfield et al., 1997 cited in Guthrie, Wigfield & VonSecker, 2000). Influential educators like John Dewey and Jean Piaget advocated the constructivist approach, suggesting that knowledge is best created through experience rather than passive learning (Kim, 2005 cited in Johnson and Cuevas, 2016). Reading requires motivation, as it's a challenging activity that kids can choose to engage in or avoid (Baker and Wigfield, 1999).

Research indicates that older students are less motivated to read, and motivation significantly predicts reading skills (Gottfried et al., 2001; Marcoulides et al., 2008; McKenna et al., 1995; Smith et al., 2012 cited in Locher, Becker, & Pfost, 2019). Negative experiences can reduce habitual motivation, and students' reading motivation is influenced by their experiences (Locher, Becker, & Pfost, 2019). Deci and Ryan's Self-Determination Theory (SDT) emphasizes the need for autonomy in understanding variations in students' reading motivation (Locher, Becker, & Pfost, 2019). Education plays a crucial role in developing students' intrinsic motivation to read (Locher, Becker, & Pfost, 2019). Boys may perceive less value in reading than girls, affecting their motivation (Gambrell and Marinak, 2007).

Reading-related rewards may enhance intrinsic motivation by combining the desired activity with a reward, creating a supportive classroom environment (Gambrell and Marinak, 2009). Student motivation to read impacts academic achievement across subjects (Johnson and Cuevas, 2016). Inquiry learning, particularly student-driven approaches, can increase motivation and critical thinking (Johnson and Cuevas, 2016). The research gap lies in the lack of studies on synchronous and asynchronous instruction for primary students. The current study aims to fill this gap by analyzing the impact of these methods on learners' motivation to read during the COVID-19 epidemic.

Related Literature

Research proves that motivation is a crucial factor, influencing nearly all aspects of human behavior (Murayama, 2018). In education, motivation is particularly important, as university students' grades are positively linked to their enjoyment of subjects like mathematics (Schukajlow & Krug, 2014). While motivation is recognized as significant, there's limited research for a comprehensive understanding of it. The Self-Determination Theory (SDT) by Deci and Ryan identifies competence, relatedness, and autonomy as key elements of motivation. This theory gave rise to the Intrinsic Motivation Inventory (IMI), a multidimensional scale validated for measuring motivation (Drew, 2020; Ostrow & Heffernan, 2018). The IMI assesses Interest/Enjoyment, Perceived Competence, Effort/Importance, Pressure/Tension, Value/Usefulness, and Relatedness, providing a comprehensive view (Drew, 2020; Ostrow & Heffernan, 2018). Limited studies use these 6 subscales to measure motivation. Measuring motivation is challenging due to its diverse factors and subtle nature. By employing the 6 subscales mentioned, the study aims to assess and quantify students' motivation during the COVID-19 pandemic.

Interest/Enjoyment and Motivation

Interest, according to Hidi & Renninger (2006), is a motivational factor that describes the connection between a person and an object. This aspect has a strong link to academic achievement, capable of sparking and maintaining academic behavior (Eccles & Wigfield, 2002; Hidi & Ainley, 2008; Krapp, 2002; Renninger et al., 2015; Schukajlow & Krug, 2014; Trautwein et al., 2019). Enjoyment is the most common positive emotion in the classroom, yet there are few studies on its connection to academic achievement. Including this in the study's subscales provides insights into students' intrinsic motivation since it is the only self-reported motivation scale.

Both interest and enjoyment contribute to intrinsic motivation. Interest is the primary emotion for intrinsic motivation, initiating attention and exploratory behavior. Enjoyment, on the other hand, sustains activity continuation and persistence, contributing to both intrinsic and extrinsic motivation (Schukajlow & Krug, 2014; Izzard, 1977; Reeve, n.d.).

Perceived Competence

Perceived competence is how good a student feels about learning, and it's related to satisfaction with performance (Marsh, Craven & Debus, 1999; Yeung, Craven, & Kaur 2014; Reeve, n.d.). Although it's a motivation determinant, there's little research connecting it to motivation and other subscales. Competence Motivation Theory and Self-Determination Theory support the role of perceived competence in motivation. In Competence Motivation Theory, the degree of approval or disapproval is a key aspect, directly related to a child's mastery attempts. Similarly, Self-Determination Theory states that feeling incapable creates an unpleasant experience, and people desire to feel competent. Feeling competent increases the likelihood of excelling in a task (Drew, 2020; Ostrow & Heffernan, 2018). Demonstrating competence leads to a self-perception of success and boosts persistence (intrinsic motivation) in activities where past performance was good. Lack of competence results in feelings of failure, diminishing interest in activities. Without competence feedback, interest declines, and individuals explore other activities that pique their curiosity (Drew, 2020; Reeve, n.d.; Williams & Gill, 1995).

Effort/Importance

Academic effort is a crucial element in motivational research, but there's limited study on students' perceived effort and its link to motivation and academic performance. Understanding motivation in organizations is clearer when looking at its component—efforts. According to Yale University Professor Victor Vroom's Expectancy Framework, workers' perceptions of their effort matter as it relates to their performance and outcomes. Internalization and self-regulation happen when people engage in activities they find useful or valuable. Effort/importance, along with other subscales, is vital in measuring students' motivation as one of its essential components.

Pressure/Tension

Pressure/Tension, a motivation subscale from the IMI, is considered an intrinsic motivation negative predictor (Ostrow, K. S., & Heffernan, N. T. 2018). Muza, Muhammad, and Aliero's study in 2020 found a significant relationship between academic stress and academic motivation, both intrinsic and extrinsic (r=0.706 and r=0.632, respectively). Another study by Sarouni, Jenaabadi & Pourghaz in 2016 revealed a significant and negative connection between mental pressure and academic achievement motivation. This means that as mental pressure increases, academic achievement motivation decreases.

Value/Usefulness

Utility value is about how someone sees a task as useful and relevant to their life or future goals. In education, this is crucial because the more value someone sees in a task, the more motivated they are to engage in it. According to Harackiewicz (2008), perceived utility value and interest are significant predictors of students' course interest and grades. Several studies show a positive link between the perceived usefulness of studying and students' persistence and academic performance (Harackiewicz, Tibbetts, Canning, & Hyde, 2014). Recognizing the importance of value/usefulness in students' motivation and achievement, Urdan and Turner (2005) suggest that academic activities should be developed in ways that are relevant and personally meaningful for students.

Relatedness

Relatedness is about the sense of belonging and meaningful connections (Escandell & Chu, 2021). It goes beyond individual connectedness and includes harmony and inclusion in group settings, satisfied through personal connections and open conversations between students and instructors (Vansteenskiste et al., 2020, as cited by Escandell & Chu, 2021). This subscale in studies assesses friendship connections and interpersonal interactions (Ostrow, K. S., & Heffernan, N. T., 2018). In the Self-Determination Theory, relatedness is seen as one of the psychological needs. According to this theory, student-instruction relatedness fosters both intrinsic and extrinsic motivation and improves academic performance (Vansteenkiste & Ryan, 2013, as cited by Escandell & Chu, 2021). Studies supporting the Self-Determination Theory indicate that satisfaction of relatedness, along with autonomy and competence, leads to better academic motivation internalization. For example, Jang et al.'s study cited by Niemic & Ryan (2009) showed a positive correlation between satisfying these three needs and students' academic achievement. Another study on instructor-student relationships (Vansteenkiste & Ryan, 2013, as cited by Escandell & Chu, 2021) found that greater intrinsic

motivation and academic success result when psychological needs are met through quality relationships, regardless of culture, age, or gender.

Methodology

Research Design

The researcher used the mixed method using a quantitative and qualitative approach. Purposive sampling was used in choosing the 110 participants from DepEd elementary schools. The data analysis used was mean and standard deviation for the qualitative, and thematic analysis for the qualitative data.

Sampling Procedure

The researcher used purposive sampling to select 110 DepEd teachers from elementary schools in Iligan City, Philippines, focusing on experts in the cultural subject.

Participants

The participants were 110 elementary DepEd teachers assigned to the divisions of Iligan City and Lanao del Norte. A letter was sent to the respective Division Superintendents asking for their permission and support in the study. After gaining their approval, the same process was also done in asking the permission of the principals of the respective schools.

Instruments

The participants completed the Intrinsic Motivation Inventory (IMI), a scale supporting the Self-Determination Theory by Deci and Ryan (Ostrow and Heffernan, 2018). The IMI has 6 subscales—Interest/Enjoyment, Perceived Competence, Effort/Importance, Pressure/Tension, Value/Usefulness, and Relatedness, with a total of 16 items. Othman (2011) notes that incorrect item bundling can affect the scale's accuracy. Using the Likert Scale, participants rate their agreement with statements on a scale of 1 to 5: 1=Strongly Disagree, 2=Somewhat Disagree, 3=Neutral, 4=Somewhat Agree, and 5=Strongly Agree (Trochim & Donnelly, 2007, as cited by Othman et al., 2011). To determine the Motivation score, items for each subscale are summed, identifying areas needing improvement. Eight items (1, 2, 6, 7, 10, 12, 13, and 16) require reverse coding before scoring and analysis. A higher score indicates greater motivation (Sundre, 2000).

Interest/Enjoyment
This subscale consists four items from the Questionnaire (numbers 1-4). It seeks to assess the students' attitudes towards the activities conducted in synchronous and asynchronous mode during the pandemic.

Perceived Competence
The second subscale has two items (numbers 5-6), and it measures students' satisfaction with their performance of the tasks.

Effort/Importance
This subscale has 2 items in the questionnaire (numbers 7 and 8.) It assesses students' opinion of whether they exerted effort in the activities and if they find the importance of performing well in the activities.

Pressure/Tension
The fourth subscale, Pressure/Tension is the only negative predictor in the IMI questionnaire. It seeks to assess if students feel anxious and pressured while doing the activities. It has 2 items placed in numbers 9 and 10.

Value/Usefulness
Value/Usefulness is the fifth subscale consisting of 2 items (numbers 11 and 12). It assesses students' opinions if they feel that the activities/tasks are important and beneficial to them.

Relatedness
The Relatedness subscale has 4 items placed in items 13 to 16. It seeks students' perceptions of the closeness and sense of connection they feel with their classmates while in a synchronous and asynchronous mode of instruction during the pandemic.

The questionnaire's Internal Consistency and Reliability were assessed through the Cronbach Alpha Test. According to Nunnally & Bernstein (1994), as cited by Othman, et.al., (2011), a scale's Cronbach alpha coefficient should be at least 0.70 to indicate a strong correlation between a scale and itself. It yielded an $\alpha = 0.821$. This means that the questionnaire has good reliability/internal consistency.

$$a - (\frac{k}{k-1})(\frac{s_y^2 - \sum s_i^2}{s_y^2})$$

$$s_y^2 - 78.74$$

$$\sum s_i^2 = 17.69$$

$$a = (\frac{k}{k-1})(\frac{s_y^2 - \sum s_i^2}{s_y^2})$$

$$a = (\frac{16}{16-1})(\frac{78.74 - 17.69}{78.74})$$

$$a = (\frac{16}{15})(\frac{61.05}{78.74})$$

$$a = (1.067)(0.77)$$

$$a - 0.821$$

Procedures

Not all teachers were present on the school premises during the data gathering because the pandemic prompted scheduling among teachers. Some of them were also on leave. In order to gather the data needed, the questionnaires along with the consent forms were left to the school heads to be distributed to the teachers. The researchers then scheduled another school visit for the questionnaire retrieval. Questions of the same subscales are arranged in the questionnaire, consecutively. Eight of the items-- numbers 1,2,6,7,8,12,13 and 16 are stated

in negative sentences. Before proceeding to compute the mean and standard computation, items in negative construction are reverse coded first.

Results and Discussion

For a Likert scale's results to be valid, the items' means and standard deviations should be roughly equivalent (Othman, 2011). The means and standard deviations are in close proximity with a range of 2.53-3.85 and 0.88 and 1.30, respectively.Moreover, the rule of thumb when using standard deviation for Likert scale is that its maximum and minimum standard deviation should be around 2:1. (Julious, 2005, as cited by Othman, et. al., 2011). The study yielded a maximum standard deviation of 1.30 and a minimum of 0.88 which is near the 2:1 ratio. The following are the results for each subscale:

Interest/Enjoyment

Interest refers to an individual learner's interaction with his/her environment, or other aspects of it. According to Krapp, (2002), as cited by Roth & Hsu (2008), in terms of innate abilities, little can be done about it, that is why those who show interest in increasing academic performance recognizes the impact of the learner's interest. Enjoyment, on the other hand, is also considered to be related with motivation (Paton, et. al, n.d.; Navarro et al., 2016; Hashim, Grove and Whipp 2008; Wallhead and Buckworth 2004). Hence, a high score in the Interest/Enjoyment subscale is a good indicator of learner's motivation.

Table 1: Mean and Total Mean Score with SD for the Interest/Enjoyment Subscale

Statements	Mean	Std. Deviation	Verbal Interpretation
The pupils did not enjoy doing the activities	3.34	1.14	Neutral
The pupils find the activities uninteresting.	3.49	1.11	Neutral
The pupils find the activities fun.	3.73	1.00	Somewhat Agree
The pupils think that the activities are quite enjoyable	3.71	1.00	Somewhat Agree
Overall	**3.57**	**0.83**	**Somewhat Agree**

Legend: "1.00-1.50 Strongly Disagree", "1.51-2.50 Somewhat Disagree", "2.51-3.50 Neutral", "3.51-4.50 Somewhat Agree", "4.51-5.00 Strongly Agree".

The first subscale measured is interest/enjoyment, composed of four items which are assigned as items 1-4 in the questionnaire. After reverse coding items 1 and 2 which are initially phrased as negative statements, both yielded a neutral result (3.34, 1.14, and 3.49, 1.11, respectively.) Aside from the neutral responses in the first two questions, the remaining two questions (items 3 and 4) in the Interest/Enjoyment subscale result in Somewhat Agree Responses. Considering the four items in the said subscale, it is revealed that students Somewhat Agree that they feel interest and enjoyment while learning during this pandemic (3.57, 0.83).

Perceived Competence

Studies of motivation involve the measurement of competence and competence comes in many forms—whether the desire to be it, to appear in such a way to others, feelings of competence, or avoidance of incompetence feelings. (Urdan, 2005). For this study, the perceived competence subscale focuses on the definition given by Ostrow and Hefferman, 2018 which is the feeling of confidence and capability. A high perceived competence is a good indicator of a student's motivation. Moreover, according to Self-Determinator Theory, the higher the perceived competence, the more a student will internalize and excel in a given task.

Table 2: Mean and Total Mean Score with SD for the Perceived Competence Subscale

Statements	Mean	Std. Deviation	Verbal Interpretation
The pupils are satisfied with their performance of the tasks	3.72	0.88	Somewhat Agree
The pupils feel like they were not able to do well in the activities	2.97	0.95	Neutral
Overall	**3.35**	**0.68**	**Neutral**

Legend: "1.00-1.50 Strongly Disagree", "1.51-2.50 Somewhat Disagree", "2.51-3.50 Neutral", "3.51-4.50 Somewhat Agree", "4.51-5.00 Strongly Agree".

The second subscale measured is Perceived competence, composed of two items which are assigned as items 5 and 6 in the questionnaire. After reverse coding item 6 which is initially phrased as a negative statement, it yielded a neutral response (2.97, 0.95). Meanwhile, item 5 which measures students' satisfaction with their performance gave a Somewhat Agree response (3.72, 0.88). Considering the two items for the second subscale, the students' Perceived competence in this pandemic is Neutral.

Effort/Importance

Students' beliefs about the impact of their efforts on their performance affect their motivation to work hard according to an article from Carnegie Mellon University. Hence, given that Effort/Importance is one of the subscales of motivation, a high result in the effort/importance subscale is a good indicator of student motivation.

Table 3: Mean and Total Mean Score with SD for the Effort/Importance Subscale

Statements	Mean	Std. Deviation	Verbal Interpretation
The pupils did not put a lot of effort in the activities	2.97	1.08	Neutral
The pupils find the importance of doing well in the tasks	3.69	0.89	Somewhat Agree
Overall	**3.33**	**0.78**	**Neutral**

Legend: "1.00-1.50 Strongly Disagree", "1.51-2.50 Somewhat Disagree", "2.51-3.50 Neutral", "3.51-4.50 Somewhat Agree", "4.51-5.00 Strongly Agree".

Table three shows the result for the third subscale which is Effort/Importance. The said subscale is composed of two items, placed in statements 7 and 8. After reverse coding statement 7 which was initially stated using negative phrasing, it yielded a result of neutral (2.97, 1.08). Meanwhile, the other items resulted in Somewhat Agree. Considering the results of the two items for the Effort/Importance subscale, there is a Neutral response in terms of student's effort and the importance of the tasks given (3.33, 0.78). Hence, the students neither placed a lot or minimal effort in the activities.

Pressure/Tension

Pressure/Tension has an inverse relationship with achievement motivation (Sarouni, Jenaabadi & Pourghaz, 2016). Hence, lower levels of pressure/tension (higher levels of relaxation) correspond to increase in academic achievement motivation. Hence, in the interpretation of data for this study, the item stated to indicate pressure/tension was reverse-coded. After reverse coding, a high score for this scale has now a direct relationship with student motivation.

Table 4: Mean and Total Mean Score with SD for the Pressure/Tension Subscale

Statements	Mean	Std. Deviation	Verbal Interpretation
The pupils were relaxed when doing the activities	3.58	1.06	Somewhat Agree
The pupils were pressured when doing the activities	3.30	1.00	Neutral
Overall	**3.44**	**0.76**	**Neutral**

Legend: "1.00-1.50 Strongly Disagree", "1.51-2.50 Somewhat Disagree", "2.51-3.50 Neutral", "3.51-4.50 Somewhat Agree", "4.51-5.00 Strongly Agree".

Table four shows students' feelings of Pressure/Tension while learning in asynchronous and synchronous modes during the pandemic. The Pressure/Tension subscale has two items placed in numbers 9 and 10 of the questionnaires. Given that the subscale yielded a neutral interpretation (3.44, 0.76), it was revealed that students are neither relaxed nor pressured while learning using the said modes of learning.

Value/Usefulness

Even if a task is unenjoyable, if it has a utility value to the students (meaning they see how the task relates to their future goals), they will still value the outcome it produces, according to Wigfield (1994), as cited by the University of Connecticut. Hence, learners see the activities' importance or long-term benefits as beneficial for them. In this data, a high score for value/usefulness is a positive indicator of student motivation.

Table 5: Mean and Total Mean Score with SD for the Value/Usefulness Subscale

Statements	Mean	Std. Deviation	Verbal Interpretation
The pupils realize that the activities are important	3.85	0.90	Somewhat Agree
The pupils did not realize that the activities they did are beneficial to them	3.04	1.15	Neutral
Overall	**3.44**	**0.85**	**Neutral**

Legend: "1.00-1.50 Strongly Disagree", "1.51-2.50 Somewhat Disagree", "2.51-3.50 Neutral", "3.51-4.50 Somewhat Agree", "4.51-5.00 Strongly Agree".

When it comes to the value/usefulness of the activities, there was also a neutral interpretation (3.44, 0.85). However, in terms of the activities' importance, a favorable response was observed (3.85, 0.90).

Relatedness

This subscale refers to people's needs to be connected with one another (Drew, 2020). Satisfaction with this subscale leads to better internalization of academic motivation. (Vansteenkiste & Ryan, 2013, as cited by Escandell, & Chu, 2021.) Hence, relatedness has a direct relationship with motivation.

Table 6: Mean and Total Mean Score with SD for the Relatedness Subscale

Statements	Mean	Std. Deviation	Verbal Interpretation
The pupils feel distant to their classmates	2.53	1.30	Neutral
The pupils feel close to their classmates	3.19	1.18	Neutral
The pupils are positive of having a chance to interact with classmates more often	3.45	0.96	Neutral
The pupils would prefer it if they would not have to interact with their classmates in the future	3.38	1.12	Neutral
Overall	**3.14**	**0.69**	**Neutral**

Legend: "1.00-1.50 Strongly Disagree", "1.51-2.50 Somewhat Disagree", "2.51-3.50 Neutral", "3.51-4.50 Somewhat Agree", "4.51-5.00 Strongly Agree".

The table shows the respondents' feelings of relatedness while learning during the pandemic. It is shown that the respondents are neutral regarding their experience of feeling-relatedness as a motivation while learning during the pandemic with an overall weighted mean of (3.14, 0.69). The respondents are found neutral on the statements "The pupils feel distant to their classmates" (2.53, 1.30), "The pupils feel close to their classmates" (3.19, 1.18), "The pupils are positive of having a chance to interact with classmates more often" (3.45, 0.96) and "The pupils would prefer it if they would not have to interact with their classmates in the future" (3.38, 1.12).

Conclusion

The results of each subscale show that students feel interest/enjoyment while attending the synchronous and asynchronous mode of instruction during this pandemic. It means that the activities and tasks the students undertake in the said modes of instruction are interesting and enjoyable enough. It is a good indicator of motivation. However, in terms of the other subscales- Perceived Competence, Effort/Importance, Pressure/Tension, Value/Usefulness, and Relatedness, neutral findings were revealed.

Given that a neutral result was yielded for five out of six subscales, activities that enhance students' perceived competence should be given emphasis for synchronous and asynchronous instruction. Moreover, it is also important for learners to see the importance of the task at hand and the effects of their efforts on their performance. The instruction should also be designed to enhance the sense of connection between learners and learners to teachers. Lastly, teachers should strive to provide a learning environment that produces less pressure/tension.

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