Assimilating Flocabulary in Contracting the Interest and Understanding of Grade 7 Students in Science Materials

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Abstract

In today's educational landscape, the challenge of sustaining student engagement and comprehension in Science education amidst dwindling attention spans and diverse learning needs has become increasingly evident. This research investigates the efficacy of integrating music-infused learning, specifically utilizing Flocabulary, to enhance student engagement and comprehension in Science education. This study explores how music can invigorate classroom dynamics by drawing on theoretical frameworks such as the Progressive Expansion Principle and Drive-Reduction Theory, which emphasize the importance of emotional resonance and personal fulfillment in learning. The experimental design involved 40 Grade 7 students from Dr. Yanga's Colleges Inc., divided into control and experimental groups, to assess the impact of Flocabulary on interest and comprehension. Statistical analyses revealed that students exposed to Flocabulary exhibited significantly higher levels of interest and comprehension than those exposed to traditional audio-visual methods. The findings suggest that integrating music into pedagogy, particularly through platforms like Flocabulary, can effectively enhance student engagement and comprehension in Science education, paving the way for innovative approaches to teaching and learning.

Keywords: student engagement; comprehension, flocabulary, educational innovation

1. Introduction

Evidence from a typical classroom environment presents one phase of life's reality: the de-escalation of students' attention in various academic activities, more likely in heeding new lessons. Disengagement from actively listening to esteemed educators invariably leads to a decline in the absorption of presented materials aligned with the school curriculum and subsequent assessments. Recent studies have elucidated the pivotal role of students' genuine enthusiasm in sustaining their attention, aligning with Kelly's findings in 2023.

Numerous factors contribute to students' superficial academic engagement. Oversights such as neglecting to empathize with their interests and preferences undermine their cognitive involvement in classroom activities. Research, such as Brigs' work in 2009, underscores the value of incorporating varied teaching techniques, which naturally captivate students and enhance their learning retention.

Both internal and external factors contribute to slipping grades, ranging from personal issues like exam anxiety to pedagogical shortcomings such as failure to ensure comprehension of the given material. Particularly in Arabian society, teachers have identified a high prevalence of school failure among students, citing reasons such as hyperactivity, inattention, and disruptive behavior, highlighting the urgent need for tailored interventions.

Recent assessments, such as the National Diagnostic Test in the Philippines conducted in 2004, reveal alarming statistics regarding students' proficiency levels, indicating a significant lag behind international standards, with only a minuscule percentage achieving satisfactory scores. Similarly, studies have indicated a concerning trend wherein a substantial proportion of students pursuing science majors either switch to alternative subjects or fail to obtain degrees, as noted by Goldberg in 2008.

This prompts a crucial question for educators: Can the allure of science education be sustained as students' progress through higher grades? The incorporation of music into pedagogy presents a promising avenue for enhancing learning experiences. Drawing on the success of educational hip-hop programs like Flocabulary, which not only aid memory retention but also foster confidence and critical skills, educators are increasingly exploring innovative approaches to rekindle students' passion for learning (Newton, 2017).

However, the benefits of music-infused learning should extend beyond early childhood education. As advancements in various fields continue to flourish, education must adapt to keep pace with evolving societal needs. Therefore, modern education should harness the power of music to invigorate classrooms, ensuring that the rhythm and rhymes of learning resonate throughout students' academic journeys, enriching their educational experiences and preparing them for the challenges of tomorrow.

1.1 Theoretical Underpinnings

Progressive Expansion Principle:

During adolescence, marked by rapid physical growth and subsequent mental and physical exhaustion, significant changes occur in both physical and mental spheres. Emotions play a pivotal role during this developmental stage, as highlighted by Parker (1915) and reiterated by Oudyk et al. (2019) who emphasize the formation of individual identity and preferences, including "good taste and artistic discrimination."

The use of Flocabulary in the study aligns with this principle, suggesting that emotionally resonant music can enhance student engagement by eliciting desired emotional responses. Moreover, the transitions in students' ages play a crucial role, as their evolving perspectives broaden their interest in academic lessons over time.

This principle underscores the enduring effectiveness of music in students' academic practices, even as they transition between grade levels. Despite initial excitement during the early stages of education, music continues to serve as a source of academic excellence, as noted by Poulsson and Smith (1913) as cited by Kelly et al. (2023).

The Progressive Expansion Principle asserts that music remains valuable for engaging students in education, supporting the notion that complex language and concepts are built upon elementary ideas over time (Parker, 1915; Oudyk et al. 2019).

Drive-Reduction Theory

The Drive-Reduction Theory, pioneered by behaviorists such as Clark Hull (1950) and further elaborated by Kenneth Spence, emphasizes the importance of satisfying needs to reduce internal tension. This theory posits that those drives, from basic needs (primary drives) to personal fulfillment (secondary drives), influence arousal and motivation.

While primary drives address fundamental human needs, this study focuses on secondary drives, particularly personal interests and social identity, which can significantly impact students' engagement with academic subjects. Educators can foster enthusiasm and create meaningful connections to the curriculum by tapping into individual interests.

Flocabulary, for example, engages students and provides an outlet for their diverse skills and interests. Educators can cultivate a genuine desire to learn and engage with academic materials by identifying and leveraging students' sources of fulfillment.

The Drive-Reduction Theory offers valuable insights for classroom practice, emphasizing the importance of understanding students' motivations and interests. By aligning instructional strategies with students' drives,

such as incorporating Flocabulary to harness their interest in music, educators can effectively capture students' attention and facilitate meaningful learning experiences.

1.2 Conceptual Paradigm

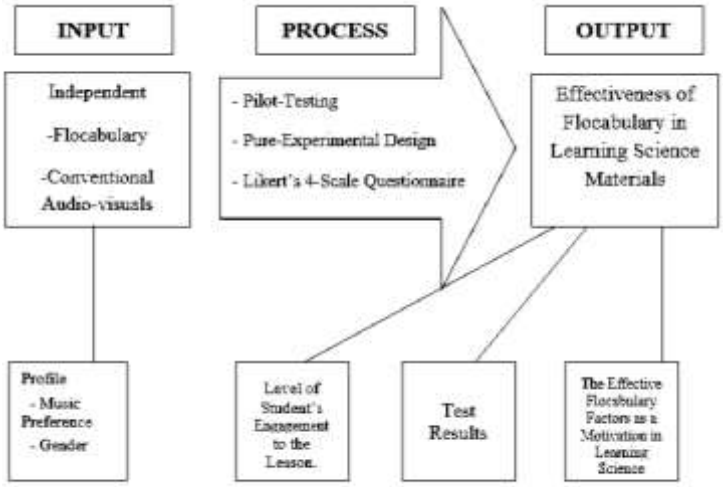

Fig. 1. Conceptual Paradigm

As illustrated in Figure 1, the effectiveness of Flocabulary in learning science materials served as the dependent variable, measured through expected outputs such as students' understanding based on their test results, the level of engagement with the presented audio-visual content, and the factors contributing to Flocabulary's effectiveness as an educational tool. These outputs were influenced by the inputs—the use of Flocabulary and the profiles of the chosen participants, including their music preferences and gender.

The researcher first conducted a pilot test. Then, they determined the relationship between the variables using a pure-experimental design and 4-point Likert scale survey questionnaires.

1.3 Hypothesis

The researcher assumes that Vocabulary factors are ineffective and will not establish enthusiasm in class. This will also disadvantage the students in achieving higher test results. Furthermore, there will be no significant differences in the understanding ability and interest of the participants who watched Vocabulary from those who watched conventional audiovisuals.

1.4 Statement of the Problem

This study intends to confirm the effectiveness of Flocabulary as the most effective method of understanding science materials.

1. What is the profile of the subjects in terms of:
    - Gender
    - Music Preferences
2. What is the Science comprehension ability of the control group participants in watching conventional audio-visuals?
3. What is the Science comprehension ability of the experimental group participants in watching Flocabulary audio-visuals?
4. Is there a significant difference in the comprehension ability of the participants who watched the usual audio-visuals and Flocabulary?
5. After watching the usual audiovisuals, how can the control group participants describe their interests in science lessons?
6. How are the experimental group participants' interests in science lessons described after watching Flocabulary?
7. Is there a significant difference in the interest of the participants in the control group and the experimental group?
8. What are the factors of Flocabulary that contribute to its effectiveness?

1.5 Scope of the Study

The scope of the research was limited to Grade 7 students of DYCI. The experimental and control groups comprised students from two different sections and genders. Students who participated were chosen by using Simple-Random Sampling within the school. The selection of participants is guided by the set standards of the researcher, which include:

a. The participant should be a DYCIan.
b. The participant should be a Grade 7 student

1.6 Review of Related Literature

The review of related literature underscores the multifaceted role of memory, music, and student engagement in the educational process. Memory, essential for learning retention, is influenced by emotional connection and environmental stimuli (Terry, 2023). Research indicates that short-term memory, often verbal and episodic, differs from long-term memory, enhanced by sensory modalities like smell, visual imagery, and touch.

Students frequently encounter difficulties in subjects like science, leading to high dropout rates and shifts to other majors (Safdar, 2013). Filipino-American students have shown significant challenges in math and science standardized tests, highlighting a need for more engaging and effective teaching strategies.

One major barrier to student success is the difficulty in recalling information. Techniques such as active involvement and brisk teaching paces have been suggested to enhance memory recall and student engagement (Williams, 1993; Gutierrez et al., 2016; Magana, 2024). The integration of music into lessons has emerged as a promising strategy. Music evokes emotional responses and aids in memory retention, as demonstrated by activities where students create soundtracks related to their lessons (Ferroni, 2016).

The historical use of rhythm and rhyme in oral traditions, such as in ancient Greek literature, illustrates the effectiveness of rhythmic poetry in memory retention. Modern applications, like Flocabulary, leverage these principles by using hip-hop and rap to engage students and facilitate learning. Neuroscientific research

supports this approach, showing that music activates brain regions associated with memory and emotional processing (Liswanag, 2011; Blood & Zatorre, 2005; Menon & Levitin, 2005).

In the Philippines, the deep cultural appreciation for music, particularly hip-hop, aligns well with the educational potential of programs like Flocabulary. The popularity of platforms like musical.ly and Fliptop Rap Battles demonstrates Filipino youth's strong connection with music. This cultural context suggests that integrating music into education can significantly enhance student engagement and learning outcomes.

In summary, the reviewed literature supports using Flocabulary as an effective educational tool. Educators can improve student engagement, memory retention, and academic performance by harnessing music's emotional and cognitive benefits, particularly hip-hop. This approach is particularly relevant in contexts where traditional teaching methods have proven less effective, offering a culturally resonant and scientifically backed strategy for enhancing education.

2. Methodology

This study employed a quantitative research design with an experimental approach to evaluate the effectiveness of Flocabulary in teaching Science to Grade 7 students. The research was conducted at Dr. Yanga's Colleges Inc. in Bocaue, Bulacan, involving two sections of Grade 7 students, divided into experimental and control groups through simple random sampling.

2.1 Research Design

The study used a quantitative experimental design to assess the impact of Flocabulary on students' learning and interest. The experimental group used Flocabulary's audio-visual materials, while the control group used traditional audio-visual methods. This design allowed the researcher to measure the effectiveness of Flocabulary in enhancing student engagement and comprehension of Science materials.

2.2 Research Locale

The study was conducted at Dr. Yanga's Colleges Inc., which was chosen for its convenience and diverse student population, particularly new transferees from various public schools in Bulacan.

2.3 Participants

The participants were 40 Grade 7 students from two sections, divided equally into experimental and control groups. The selection was done using simple random sampling to ensure fairness and avoid preconceptions.

2.4 Research Instruments

The researcher used two audio-visual materials: traditional for the control group and Flocabulary for the experimental group. The effectiveness was measured using Likert scale surveys and post-test evaluations. These instruments were validated by professionals with backgrounds in thesis writing and teaching Science. A pilot test ensured the reliability of the questionnaires and assessments, with Cronbach's Alpha values indicating high reliability.

2.5 Procedure

After pilot testing, the researcher administered the audio-visual materials to both groups. Surveys and post-test evaluations were conducted to measure student engagement and comprehension. The experimental group's responses were analyzed using a 4-point Likert scale, and a similar scale was used for the control group. The post-test consisted of 10 questions to assess understanding.

2.6 Statistical Treatment of Data:

Percent - used to identify the equivalent value of the participants' scores (control group and experimental group)

Formula % = f/N x 100
Wherein;
% = percent
f = frequency
N = total number of participants each group

Mean- used to get the average of the scores in each group

Formula M = ∑fw/N
Wherein:
∑Fw = summation of the scores
N=total number of participants each group

Z-test- used to determine if there is a significant difference between the two group mean
Formula

$$t = \frac{M_1 - M_2}{\sqrt{\left[\frac{\left(\Sigma X^2 - \frac{(\Sigma X)^2}{N_1}\right) + \left(\Sigma Y^2 - \frac{(\Sigma Y)^2}{N_2}\right)}{N_1 + N_2 - 2}\right] \cdot \left[\frac{1}{N_1} + \frac{1}{N_2}\right]}}$$

Wherein:
X_1=mean of control group
X_2= mean of experimental group
S_1 = standard deviation of control group
S_2 = standard deviation of experimental group
N_1 & N_2 = total number of participants
∑ = summation
X = mean

2.7 Ethical Consideration

To uphold ethical standards before the assessment, the researcher ensured the confidentiality of participants' identities and obtained written assent from each participant before experimenting. Informed consent was also obtained from the participants' advisers and the school department. The consent letter detailed the purpose of the study. It sought permission from the Senior High School Student Affairs Office, ensuring that the researcher would adhere to the expected ethical conduct throughout the research.

2.8 Data Gathering Procedure

To ensure the reliability of the instruments, the researcher validated them before data collection. Collaboration with the Student Affairs Director of the Senior High School Department was established to obtain approval for conducting the research study in the selected sections. Letters of intent were sent to the advisers to seek their permission to participate. The Grade 7 students for the academic year 2023-2024 were

divided into experimental and control groups, selected through simple random sampling to ensure fairness. Videos on types of rocks were viewed simultaneously for both groups. Following the viewing, instruments were distributed for data collection. Data analysis was then carried out using Microsoft Excel and SPSS.

3. Results and Discussions

This chapter provides the quantitative analysis and interpretation of the data obtained through assessments and questionnaires given to both the experimental and control groups. Simple and comprehensive tables are presented throughout this chapter to provide data discussions.

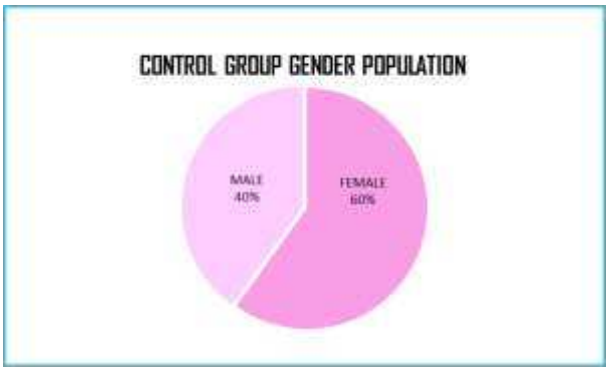

Fig. 2. Gender Population in the Control Group

The gender division among the 40 joint group participants is 2:3, randomly drawn from the sections of 7-Iustisia and 7-Agape. Forty percent (40) represent the Male population of the control group, while 60% encompass the female respondents.

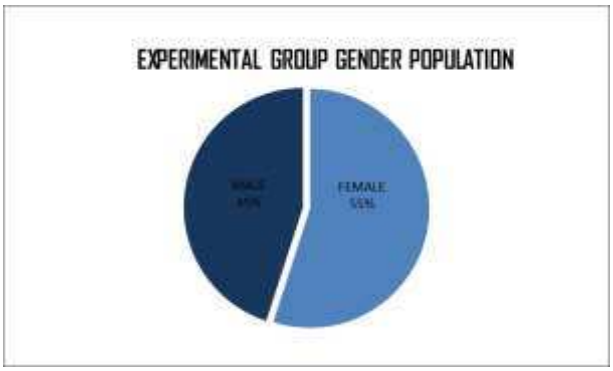

Fig. 3. Gender Population in the Experimental Group

The chart above comprehensively states that the female participants are the dominant respondents in the experimental group, covering a percentage of fifty-five (55). Like the control group, 20 students from Iustisia and another 20 respondents from Agape are merged to have a balanced experimental group. Moreover, at least half of the students in the class comprise the male population, having 45% of the population.

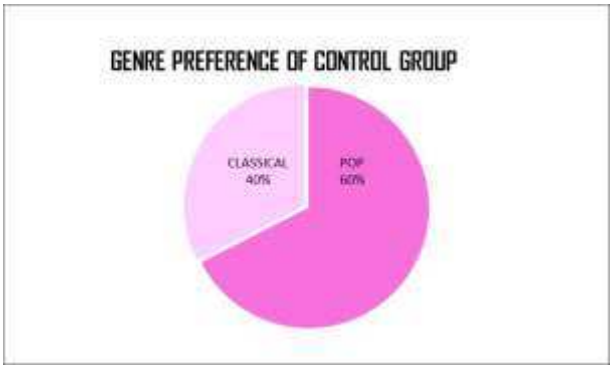

Fig. 4. Genre Preference of Control Group

Having diverse choices in music has reflected the study regarding how many students can relate to one blatant characteristic of Flocabulary, which is having the upbeat tempo parallel to popular music. Nevertheless, it is known that the two types of music are classical and popular. Rock, Jazz, Folk, Country, R&B, and EDM are all included in the latter part mentioned earlier. In line with the chart above, only 40% of the participants listen to classical music. While a percentage of sixty (60) are Popular Music listeners.

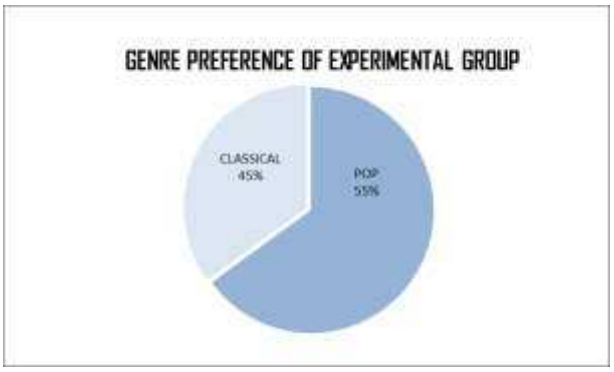

Fig. 5. Genre Preference of Experimental

Similar to the control group, the genre preference of the participants in the experiment is still ruled over by the Pop music listeners. A percentage of fifty-five (55) took up the whole proportion of the students. On the other hand, at least 45% of the student population listens to another kind of music, which is classical.

After the interpretation of the measurements, the results conform to the statistics of InfoGram (2016) says pop music is the most paid genre, streamed, and accessible as the music industry progresses.

Table 1. Level of Comprehension of the Control Group.

Level of Comprehension	Frequency	Percentage
Excellent (90-100%)	0	0
Above Average (70-80%)	9	22.5.5%
Average (50-60%)	12	30%
Below Average (30-40%)	19	47.5%
Poor (10-20%)	0	0%

The performance of students in the control group, as illustrated in the table above, reflects the impact of audio-visual aids on learning outcomes. After presenting a simple audio-visual segment about types of rocks to the 40 participants, the data indicates that no students achieved either poor or excellent performance. The highest percentage of participants fell into the below-average category, with scores ranging from 3 to 4 correct answers. Specifically, 47.5% of the control group scored below average, equaling 19 students. Meanwhile, 30% of the students reached an average level, and 22.5%, or 9 students, achieved an above-average performance.

These findings align with research by Karlsson (2018), who noted that students struggle with retention when educational content fails to engage them effectively. Shepherd (2005) further supports this, stating that students are more successful in recalling information and show greater enthusiasm for learning when their interests are adequately addressed. Additionally, the audio-visual approach did not adhere to the strategies proposed by Williams (1993), Gutierrez et al. (2016), and Magana (2024), which advocate for brisk-paced teaching to maintain student attentiveness and responsiveness.

Table 2. Level of Comprehension of the Experimental Group.

Level of Comprehension	Frequency	Percentage
Excellent (90-100%)	5	12.5%
Above Average (70-80%)	13	32.5%
Average (50-60%)	15	37.5%
Below Average (30-40%)	7	17.5%
Poor (10-20%)	0	0

This table presents the performance of participants in the experimental group who watched an audio-visual program enhanced by Flocabulary. Following the viewing, assessments were administered to measure students' comprehension abilities. Among the 40 participants, five students (12.5%) attained excellent scores, contrasting with the control group, where no students reached this level. Meanwhile, seven students (17.5%) scored below average. Additionally, thirteen (32.5%) achieved above-average scores, and 15 (37.5%) attained average scores.

These findings align with the Drive-Reduction Theory by Clark Hull and Kenneth Spence, which posits that individual "drives" can benefit students initially lacking interest in a subject. Flocabulary, for instance, fosters interest in learning science by integrating music into lessons, serving as a drive that enhances students' comprehension of the material. Janata (2009), discussed how specific brain regions are musically inclined and function as mediums for acquiring new information. The locus coeruleus and hypothalamus, crucial for emotion, memory, attention, and dopamine escalation, enhance alertness and attention—factors significant for memory recall and information processing.

Furthermore, studies by Blood and Zatorre (2001), Nakamura (2018), Menon and Levitin (2005), Koelsch (2006), and Ashby (1999) indicated that the nucleus accumbens, a brain region responsible for coping with stress, is activated in response to music, similarly to the locus coeruleus. This suggests that incorporating music into learning leverages common student interests, facilitating memory retrieval and enhancing learning outcomes.

Table 3. Comparisons of Control and Experimental Group.

Item	Mean	Standard Deviation	Verbal Interpretation	Actual Rank
Happiness	2.4	.84	Low	2
Engagement	1.7	.54	Low	5
Curiosity	2.1	.91	Low	3
Eagerness	2.8	.96	Moderate	1
Awakeness	1.9	.87	Low	4
Grand Mean= 2.19 (Low)				

This table compares the mean scores of the control and experimental groups on the post-test. The control group achieved a mean score of 5.025 with a standard deviation of 1.72, whereas the experimental group, which utilized Flocabulary, had a mean score of 6.18 and a standard deviation of 1.86. The probability value is less than 0.05, indicating a low percentage of errors. Furthermore, the Z-critical value is less than the Z-test result for the experimental and control groups, which rejected the null hypothesis that posited no significant difference in comprehension abilities between the participants who watched the Flocabulary video and those who watched conventional audio-visuals.

The observed difference in mean scores between the two groups underscores the superior performance of the experimental group. This finding is consistent with Rappaport (2017), who found that students exposed to Flocabulary showed increased engagement and enjoyment in learning vocabulary and unfamiliar words. The experimental group in Rappaport's study demonstrated higher levels of involvement and enthusiasm than the control group, which watched standard audio-visuals. Similarly, Britton (2016) reported that integrating music into lessons significantly enhanced student engagement, particularly with challenging and unfamiliar vocabulary.

Moreover, Phan (2017) emphasized that students value educators who connect with their interests, fostering a more engaging and respectful classroom environment. Educators can significantly improve motivation and learning outcomes by incorporating elements that resonate with students, such as music. This approach facilitates higher test scores and cultivates a positive and empathetic classroom culture.

Table 4. Level of Interest Factors of the Control Group

Control Group Mean Score	Standard Deviation	Experimental Group Mean Score	Standard Deviation	Z	Z-Critical Value	P-Value	Decision
5.025	1.61	6.18	1.86	2.95	1.96	.0032	Reject Ho

This table presents the results of a 4-point Likert scale measuring the control group's interest level across factors such as Happiness, Engagement, Curiosity, Eagerness, and Awakeness. These factors are essential in assessing the extent of the control group's interest in the usual audio-visual materials about types of rocks.

The results indicate that student engagement, with a weighted mean of 1.7, is the lowest-ranked factor, suggesting minimal interest in the usual audio-visual presentation. This is followed by Awakeness, which has a weighted mean of 1.9, indicating a high likelihood of students feeling sleepy during the viewing. However, the standard deviation of 0.87 shows some variation among students.

Happiness and Curiosity are also low, with weighted means of 2.9 (SD = 0.84) and 2.1 (SD = 0.91), respectively. The highest-ranked factor is Eagerness, with a weighted mean of 2.8 and a standard deviation of 0.96, showing some desire to learn despite the overall low interest levels.

Overall, the control group's interest is rated low, indicating that conventional audio-visuals fail to engage students effectively in learning science materials. These findings align with Hamp-Lyons (2011), who noted that ineffective audio-visuals are often slow and unengaging. González-Vera & Hornero Corisco, (2019) highlighted that such materials can lead to student boredom and passive learning, contrary to the goal of active engagement. Furthermore, Schunk, Pintrich, and Meece (2014) emphasized that students often find academic learning valueless when it does not connect with their goals and interests, which is evident in the control group's lack of engagement.

Table 5. Level of Interest of the Experimental Group

Item	Control Group Mean Score	Standard Deviation	Experimental Group Mean Score	Standard Deviation	Z	Z-Critical Value	P-Value	Decisions
Happiness	2.4	.84	3.6	.58	5.56	1.96	0.0000000271	Reject Ho
Engagement	1.7	.54	3.3	.56	10.62	1.96	0	Reject Ho
Curiosity	2.1	.91	2.8	.83	2.83	1.96	0.004	Reject Ho
Eagerness	2.8	.96	3.3	.81	2.06	1.96	0.04	Reject Ho
Awakeness	1.9	.87	3.4	.71	6.03	1.96	0.0000000016	Reject Ho
Grand Mean	2.19		3.3		0.93	0.17	0.36	Reject Ho

Table 5 presents the measured interest aspects regarding the participants' outlook on the given science material after incorporating Flocabulary in the classroom. The overall mean of 3.3, labeled "Very High," is divided into five categories.

The first category, Happiness, ranked highest among other factors. After viewing the audiovisual, students' happiness was interpreted as "Very High," with a mean of 3.6 and a standard deviation of 0.58

The second highest rank was Awakeness, with a mean of 3.4 and a standard deviation of 0.71, which can be interpreted as "Very High."

Next, Engagement and Eagerness both had a weighted mean of 3.3. However, engagement's standard deviation was 0.56, while Eagerness's was 0.81, both factors being interpreted as "Very High."

Lastly, the Curiosity of the participants towards the lesson was interpreted as "Moderate" with a mean of 2.8 and a standard deviation of 0.83.

These results align with Britton (2016), who promoted the pervasive use of music, specifically hip hop, in the classroom. The study indicates that incorporating students' passions into lessons significantly enhances their enthusiasm and engagement, leading to better academic practices while having fun. This emotional impact is crucial for young pupils' academic excellence.

Table 6. Comparison of Interest Factors in the Control and Experimental Group

Item	Mean	Standard Deviation	Verbal Interpretation	Actual Rank
Happiness	3.6	.58	Very High	1
Engagement	3.3	.56	Very High	3.5
Curiosity	2.8	.83	Moderate	4
Eagerness	3.3	.81	Very High	3.5
Awakeness	3.4	.71	Very High	2
Grand Mean- 3.3 (Very High)				

Having an equal Z-critical value of 1.96 among the five factors, obtaining a higher Z-test value is crucial in determining the difference in interest levels between participants in the control and experimental groups.

The first aspect measured was the happiness of Grade 7 participants in both groups. The Z-test result for this factor was 5.56, with a P-value of 0.000000271, indicating a significant difference.

Another factor, Awakeness, showed a Z-test result of 6.03 and a P-value of 0.0000000016, also greater than the alpha value, demonstrating a significant difference between the two groups.

Although the differences in Curiosity and Eagerness between the groups were weaker, they still exceeded the Z-critical value. The P-value for Curiosity was 0.004, with a Z-test result of 2.83, while Eagerness had a P-value of 0.04 and a Z-test result of 2.06.

Lastly, Engagement showed a Z-test value of 10.62 and a P-value of 0, indicating a substantial difference. This result highlights the high level of disengagement in the control group compared to the experimental group using Flocabulary.

Based on the significant differences observed in the five interest factors between the control and experimental groups, the researcher rejected the null hypothesis, which stated no significant difference in interest factors between those who watched conventional audiovisuals and those who participated in the Flocabulary program.

These findings align with Ferroni (2016), who advocated using music and soundtracks to combat student disengagement. The positive outcomes of using music in the classroom suggest it effectively fosters emotional connection and interest among learners. Additionally, these results support the Progressive Expansion Theory, which posits that music remains beneficial in academic practices across different grade levels, helping maintain students' attention and interest regardless of age.

Table 7. Effectiveness Level of Flocabulary; Graphic Visual Factors.

Item	Mean	Standard Deviation	Verbal Interpretation	Actual Rank
2.Students are fascinated in learning the lesson because of the visuals	3.2	.82	Agree	2
9. Students appreciated the lesson because of the visuals	3.4	.57	Strongly Agree	1
10. Students are **capable to** learn the lesson with the use of the video only	2.8	.88	Agree	3
Grand Mean	3.1		Agree	

The table shows the results of surveys regarding Flocabulary's visual factors and their connection to the effectiveness of audiovisuals. The findings indicate that most respondents appreciated the material due to the visuals in the video, with this factor having a weighted mean of 3.36, verbally interpreted as "Strongly agree." This factor received the highest ranking with a standard deviation of 0.60.

Additionally, some students found the lesson fascinating, equivalent to responding "Strongly agree." This factor had a weighted mean of 3.16, a standard deviation of 0.82, and ranked second. Meanwhile, most participants agreed they could learn the given lesson using the audiovisuals alone, with the third factor having a mean of 2.76 and a standard deviation of 0.88.

Poulsson and Smith (1913) suggested that while music can introduce children to the joyous learning environment, students must extend their vocabulary and improve their language skills through various materials. Music should aid students in interpreting their lessons and comprehending the text. Furthermore, graphical visuals should enhance students' imagination and better portray the lessons.

These results highlight the significance of incorporating engaging and effective visual elements into educational materials to enhance student comprehension and interest.

Table 8. Effectiveness Level of Flocabulary: Hip-Hop Music Factors

Item	Mean	Standard Deviation	Verbal Interpretation	Actual Rank
1. Students retained the lesson because of the music rhyming of words.	3.1	.57	Agree	3.5
3. Students enjoyed the lesson because of **the** music.	3.6	.64	Strongly Agree	1.5
4. **Students** like music with high tempo.	3.2	.81	Strongly Agree	2
5. **Students** comprehended the lesson because of **the** music.	3	.78	Agree	4
6. **Students** are singing the lesson repetitively because of **the** Last Song Syndrome.	2.4	.76	Disagree	5

7. Students find the significance in listening to the lesson's video	3.6	.71	Strongly Agree	1.5
8. Students appreciated the importance of music because of the lesson.	3.1	.70	Agree	3.5
Grand Mean	3.1		Agree	

The table above presents the students' perspectives on the effectiveness of music within the audiovisual used in a specific science lesson. The highest weighted mean is 3.6, indicating that students "strongly agree" on the importance of music in the Flocabulary program. Additionally, students strongly agreed on the enjoyment factor brought about by incorporating music into the classroom environment, with standard deviations of 0.71 and 0.64, respectively, both ranked 1sts.

Moreover, most participants preferred high-tempo music, with a weighted mean of 3.2 and a standard deviation of 0.81, also verbally interpreted as "strongly agree." This aligns with the cultural context, as the country is known for its natural delight in integrating music into various activities. These results suggest that music can effectively alleviate student discomfort and serve as a strategy to capture their attention (Ferroni, 2016).

Following these factors are the appreciation and retention of the lesson content due to music usage, with a mean of 3.1, indicating that most students agreed with the statements. Students acknowledged that they understood the video better because of the music. The cultural recognition of Hip-Hop in the Philippines, through activities such as battle leagues, shows, and media-played songs, also supports this appreciation. This aligns with the explanation in "101 Ways to Improve Your Memory," which states that students can recall lessons more successfully and become more passionate about learning if the environmental input eases them.

However, the factor measuring the occurrence of Last Song Syndrome (LSS) after listening to the music scored only a mean of 2.4, with students disagreeing on singing the lesson repetitively. Karlsson (2018) explains that memory retention can be limited, with an average capacity of seven elements at a time, which might explain why students did not experience LSS.

Summary of Findings

Several key findings emerge based on the analysis and interpretation of the gathered data. First, the interest levels in the control group, exposed to conventional audio-visuals, were notably low, indicating a significant disengagement with the Science material presented. Conversely, the experimental group, utilizing Flocabulary, exhibited substantially higher interest levels across various factors such as Happiness, Engagement, Curiosity, Eagerness, and Awakening, suggesting a positive response to the innovative program. Similarly, comprehension levels in the experimental group were markedly superior, with a higher proportion of students achieving excellent and above-average scores than the control group. This disparity underscores the effectiveness of Flocabulary in enhancing interest and comprehension among students.

Furthermore, a comparison of interest levels between the control and experimental groups revealed a significant difference, with the experimental group exhibiting a substantially higher level of interest following the Flocabulary lesson. Similarly, comparing comprehension levels between the two groups confirmed a significant disparity, with the experimental group outperforming the control group. These findings led to the rejection of the null hypothesis, affirming the effectiveness of Flocabulary in improving interest and comprehension levels.

Moreover, the effectiveness of Flocabulary factors, particularly its engaging visuals and Hip-Hop music, was evident, with students expressing high levels of appreciation and enjoyment. The use of high tempo music and the rhyming characteristics of Hip-Hop contributed to enhanced engagement and retention of understanding among students. Interestingly, despite the musical integration, students did not exhibit the Last Song Syndrome (LSS), suggesting a balanced approach to integrating music into the learning process.

The study highlights the significant benefits of utilizing Flocabulary in the classroom, including increased interest, comprehension, and student engagement. The combination of engaging visuals and Hip-Hop music is an effective tool in enhancing learning outcomes and fostering a positive learning environment

4. Conclusion

Based on the researcher's gathered results, several conclusions have been formulated. Firstly, using Flocabulary significantly increases students' interest in the subject material. This program also enhances students' comprehension abilities in science. Moreover, students in the experimental group who watched Flocabulary were more interested and engaged in the lesson than those in the control group who watched the usual audiovisuals. Furthermore, the experimental group performed better in post-assessments than the control group. There is a significant difference in the comprehension abilities of participants who watched Flocabulary versus those who learned from traditional audiovisuals. Additionally, there is a notable difference in the interest levels of participants who used Flocabulary compared to those who used standard audiovisuals. Finally, the music and graphic visual factors in Flocabulary greatly contribute to the effectiveness of the audiovisuals.

5. Recommendations

Based on the study's findings, the researcher would like to recommend the following.

- For Teachers: Students' anticipated interest will drive effective learning across various academic areas, such as Science, History, English, and Mathematics. Flocabulary can engage students and facilitate the efficient acquisition of new information.
- For Students: Engaging and exciting learning experiences should continue into adolescence, where dominant emotions during activities can have a lasting impact. Recognizing the benefits of diverse interests in the classroom will enable educators to maximize student engagement and enhance learning outcomes.
- For the Institution: Programs like Flocabulary should be piloted at Dr. Yanga's Colleges Inc., particularly given the large population of music enthusiasts, especially those who enjoy Pop. Additionally, the administration should consider launching activities summarizing learned lessons through various musical elements, such as melody, beat, and rhyming lyrics.
- For Future Researcher: Future studies should explore the diverse materials offered by Flocabulary to obtain more comprehensive and reliable findings. Researchers could also investigate the impact of Flocabulary's new feature that allows users to customize the song's pace.
- For Hip-Hop Artists: The talent in crafting lyrics on various life topics and producing content for a wide audience provides a strong foundation for collaboration with Flocabulary. Such partnerships could showcase artistic talent in an academic context, benefiting education locally and globally.
- For the Producers of Flocabulary: Consider diversifying the mediums for uploading new lesson videos. Specifically, materials should be available to learn a country's native language and history, expanding the program's accessibility and relevance.

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