EIKI

Contents

Forewords

Dear reader,

Greetings and welcome to the fourth and final issue of the "Journal of Effective Teaching Methods" for the year 2023. As we close another chapter of this journal, we take a moment to reflect on the remarkable journey we've shared over the year, filled with invaluable contributions, insightful research, and a shared commitment to advancing the art and science of teaching.

This journal has always been a dynamic space, embracing the ever-changing education landscape. With each passing issue, we've been witness to a growing body of knowledge, an expanding community of educators, and a wealth of innovative approaches that continue to shape the way we teach and learn. As we conclude this year's publications, we do so with a deep sense of gratitude for your unwavering support, your dedication to educational excellence, and your continued passion for the transformative power of teaching.

In this fourth issue of 2023, you will find a curated collection of articles that represent the cutting edge of educational theory and practice. From innovative classroom techniques to the latest research findings, these contributions reflect the commitment of educators to adapt, innovate, and enhance the learning experiences of their students. As we look back at the incredible progress in teaching methods, we also look forward to the opportunities and challenges that await us in the field of education.

The "Journal of Effective Teaching Methods" is not just a repository of knowledge; it is a community of educators, researchers, and thought leaders who come together to inspire, challenge, and support one another. It is a testament to the tireless efforts of educators worldwide who strive to make the world a better place through the transformative power of education.

As we step into the future, let us continue to foster the spirit of collaboration, innovation, and the pursuit of excellence. The knowledge shared within these pages is a springboard for further exploration and discovery in the realms of pedagogy, curriculum development, and educational research.

I would like to express my deepest appreciation to the authors, reviewers, and readers who have contributed to the success of this journal in 2023. Your passion and dedication have made this journal a vital resource for educators, and your collective commitment to educational excellence is a driving force for positive change in the world of teaching and learning.

As we close the final issue of this year, I want to extend my warmest wishes for the holiday season and the year ahead. May it be a time of reflection, rejuvenation, and inspiration as we continue our shared mission to improve education and positively impact the lives of learners around the globe.

Thank you for being a part of this remarkable journey, and I look forward to what the future holds for the "Journal of Effective Teaching Methods."

Warm regards,

Nataliya Bhinder, Editor-in-Chief

Doctor of Pedagogical Sciences, Professor

Original research article

Knowledge, Perception, Utilisation and Attitude Towards Social Media-Based Learning as Predictors of Students' Academic Achievement in Geography

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Abstract: This study examined the predictive power of knowledge, perception, utilisation, and attitude toward social media-based learning on students' academic achievement in geography. Adopting a correlational research type and population proportion to size sampling technique, 975 respondents were selected from thirty-nine schools. Assessment of Social Media Knowledge (KR20 = 0.73), Geography Achievement Test (KR20 = 0.82), Social Media Perception (α =0.86), Perceived Social Media Utilisation (α = 0.72), and Social Media Attitude Scales (α = 0.83) were used to collect and analysed by descriptive statistics and multiple regression. Fifty percent (50%) of the respondents use social media-based learning for academic purposes. Positive linear relationship exists between the predictor variables and the criterion variable. The four predictors accounted for 9.9% of the student's achievement in Geography. Knowledge of social media β = .266; t (617) = 6.936) was most influential, followed by attitude (β = .157; t (617) = 3.031) in predicting students' achievement in Geography, while perception and utilisation were not statistically significant at 0.05 significant level. Conclusively, students are encouraged to use social media for academic purposes in order to excel in geography and, perhaps, in other subjects.

Keywords: knowledge, perception, utilisation, attitude, social media-based learning

1. Introduction

Geography is considered one of the subjects in the natural and social sciences and has always attracted fewer students than other subjects in schools. This can be demonstrated by two groups of students with a secondary school education. According to Okwilagwe (2002), geography is seen as a difficult subject from secondary school students to university and adults in higher education. In developing countries, as can be understood from the study of Neathery (1991), it has been observed that the natural and social sciences, especially geography, have never fully achieved their goals; Boylan (1996); Dick (1997); Rivard and Straw (2000); Mattern and Schau (2002), it is a method that punishes students for low academic performance and ensures that students perform well in lessons. Researchers in the region also attributed this change to poor student performance, which was linked to many factors, most notably teacher qualifications, academic year (Okwilagwe, 2002), students. number of talents, gender and class (Falaye, 2006), lack of manpower (Adinna, 1988; 1988; Yalokwu, 1990), lack of teaching opportunities in and outside the classroom for geography courses (Yalokun ,1990).

Over the years, the way geography is taught to students has changed from a lecture-based approach to an innovative and participatory approach that has recently included the use of information technology. According to Okwilagwe (2011), these include: simulations, roleplaying, discussions, inquiries, projects, and exploration strategies: practical and nonvisual. While exploratory teaching strategies involve the teacher directly teaching and supervising students, nonexploratory teaching allows students to freely choose research, where the teacher is the facilitator and facilitator. Simulation as a teaching strategy in geography lessons is a way of presenting ideas, problems, problems, and realities of past and present economic

life to students, it is copied and effective in conveying geographical information (Okwilagwe, 2011). These strategies improve students' learning and performance in the field and other subjects as they facilitate data collection.

The list of other relevant strategies goes on and on, but despite the many strategies teachers can use, academic performance in the field does not seem to improve significantly (WAEC, 2013). The potential impact of using existing and versatile technology as a way to teach the field to improve student learning over time. Shortly after the turn of the millennium, new ways of changing the way users interact with websites began to emerge. In 2004, the term "Web 2.0" became a new term for the Internet and became popular among websites that allow users to interact with each other as contributors to website content. These new features, which facilitate user participation, collaboration and interactive information sharing, differ from traditional websites that restrict the display of information (McLoughlin & Lee, 2007). Web 2.0 is now used by many social media sites that rely heavily on user engagement to create, manage and share content. The new information society has enriched classroom learning, accelerated by the globalization of business, communication and computer technology. New social information technologies in these software systems provide support for intelligent collaboration.

In particular, blogs, Wikipedia, and other social media sites are about learning and are useful tools for building knowledge, skills, and relationships (Shirky, 2003). Newell (2009) argues that more and more information can be obtained from social media studies. Social media is an umbrella term for mobile and web technologies that "create interactive networks where individuals and communities share, collaborate, chat and update online chat content" (Kietzmann & Kristopher, 2011). The term social media can also be defined as a platform that promotes social interaction between online groups (Shirky, 2003). In Dron (2007)'s view, this means that social media as a form of control and structure will emerge from the communication process, not from creation, generation, as a result of the social group.

The main "relationship" of this social media supports the development of a learning environment that allows students to connect, discuss and share ideas to be effective and useful. In this context, learning using these resources is considered to have the potential to contribute to changes in teaching and learning as we know it (McLoughlin & Lee, 2007). Thus, social media tools such as wikis, blogs, and discussion forums provide multiple learning opportunities by encouraging and promoting knowledge sharing, exchange, and discovery (Baird & Fisher, 2006). The academic community has been slow to adopt these resources, as many of these sites are often blocked by school Internet filtering software (Deibert, Palfrey, Rohozinski, & Zittrain, 2008). However, the huge popularity of these social media sites has led teachers to explore how these tools can contribute to education.

According to Baird & Fisher (2006), ten years before the new millennium, a new age of student-centered, technologically and socially richly resourced teaching has become important and promising, changing teaching and male pedagogy. This has led many school teachers to continue to seek strategies to foster student collaboration and collaboration inside and outside the classroom. User settings often vary from user to user. Social network users engage in many activities on a site and their motivations for using a site vary. Connecting with friends, finding motivation, playing games and sharing photos are just some of the ways students use social media that can affect their work, study hours and more.

However, over the last decade, technology has gradually been introduced into the classroom and much of the course content is now available on the web. People from all walks of life, including education, have now become social media users. Social media is said to improve education, but the basis of social media use is the user's thinking, knowledge and use that is personalized and different to others. Advertising is considered useful and easy to use as it facilitates communication and social interaction in education. Social media literacy refers to thoughts, feelings, emotions, beliefs, judgments and/or predictions about social media learning. While some users agreed on the impact of social media on students' learning, others disagreed, arguing that social media hinders education. Although people seem to misunderstand about the potential impact of social networking sites (SAS) on student learning, it is necessary for teachers and students to interact in this way. Students also believe that these learning tools allow them to share their knowledge in the classroom. Research by Churchill (2009) shows that the use of blogs or 'blogs' (social media) in education supports safety education, especially in subjects that require research such as the field.

Social media literacy is another variable used to indicate how much social media content a person has. In schools, organizations, etc. knowledge is always a conversation. Wiig (2000) defines knowledge as the ability of individuals and organizations to understand and act

effectively. In learning and learning work environments, professionals gather the best information to achieve their goals. Knowledge creation is not about gathering knowledge, it is about achieving goals.

Although knowledge and information seem to mean the same thing, this can be confusing. When information is true, knowledge is more than that. The new knowledge matches the existing knowledge in the mind and becomes new knowledge. Knowledge not only helps us solve everyday learning problems, but also enables us to respond to new situations, predict outcomes, and improve when necessary (Wiig, 2000). Having to grow, compete and work in an everchanging environment, a student will not let him give up the development of his own important skills that are more important for education.

Outside the academic context, information exchange between students is an important part of knowledge management. To facilitate knowledge management, Wiig (2000) argues that school management should be motivated to encourage innovation, learning and knowledge sharing. Its relationship with information is the use of social media. To use means to use or make use of something, or to receive as a function of something.

To ensure that the product works for a specific purpose or is used as designed. It is widely observed that many Nigerian secondary schools do not have ICT facilities, which hinders the use of social media in teaching, thus creating some barriers for students to access relevant resources and understand the relationship as a subject. In addition, it was found that most of the secondary schools do not have teachers who are knowledgeable about ICT, and this further affects the use of technology in teaching. For example, Okwudishu (2005) reported that the lack of access to some ICT equipment required for accessing social media in schools is an important factor hindering the use of ICT, not only by teachers and students. , how many people know, for example, one's knowledge of learning strategies, how accurate that person is about learning strategies.

Psychologists and educators emphasize the recognition that people's knowledge, emotions, practices, and social behaviours vary from person to person. If social media is used as a form of learning or effective learning, it is related to learning (Yusuf, 2005; Ofodu, 2007). When students are unaware of the many ways to improve learning available to them, it can negatively affect their learning. To further analyse this point, Estrom (1996) explained that when a student says "I will not understand the material" he meant more than content. Such a student will not be able to resist in any way, as he determines himself from his knowledge and knowledge of the learning strategies used in school activities. Students who are familiar with and understand social media as an educational concept will likely know how to use it. Effective learning through social studies can be awareness of social strategies as they are used. One of the main goals of teaching is to improve the performance of students in school subjects, especially those who have difficulties with academic and social skills, by using appropriate learning strategies. While earlier work such as Churchill (2009) devoted themselves to 'blogging' and its use in teaching and learning, Boyd & Ellison (2007) also studied social networking sites, context, history and science. As a result, they investigated a single variable between social relationships and student achievement and did not find much variation between different types of social relationships (such as social media, virtual worlds, blogs, and wikis) as predicted by Geography Academic Achievement.

It can be said that students are unique in terms of their knowledge of social problems, their way of seeing, using and behaving. The idea of this study is that social media can provide a better understanding of knowledge, understanding, use and behaviour, this study can be useful, quality education and the quality of education in the field can be increased. Therefore, this study investigated the knowledge, understanding, use and attitude towards learning in social media as predictors of students' learning in the field.

Research Questions

1.   What proportions of senior secondary school students own social media-based learning account(s) for academic purposes in Private Schools in Oyo State?

2.   Is there any statistically significant relationship existing among the predictor variables (perception, knowledge, utilisation of, and attitude towards social media-based learning) and students' academic achievement in Geography?

3.   Does the obtained regression resulting from a set of four predictors (Knowledge, Perception, Utilisation of and attitude towards social media-based learning) allow reliable prediction of students' academic achievement in Geography?

4.   Which of the predictor variable is most influential in predicting students' academic achievement in geography?

2. Materials and Methods

The study adopted an ex-post facto design of correlational research type. None of the variables of the study was manipulated. Only the correlations among variables were studied. A multistage sampling technique: population proportional to size was used to select schools from the existing five local government areas of Ibadan Municipality. Fifteen (15) schools from Ibadan North, eight (8) schools from Ibadan North East, Six(6) schools from Ibadan South West and Five (5) schools each from Ibadan South East and North West. Purposive sampling technique was used to select senior secondary school II classes from these schools. This is because a large proportion of Geography syllabus must have been covered by class and more so, the class was not preparing for any external examination. Lastly, simple random sampling was used to select twenty-five students from each of the schools selected. Nine hundred and seventy-five sampled students participated in the study. Five valid and reliable instruments with psychometric properties as follows: Assessment of Social Media Knowledge - ASOMEK (KR20 = 0.73), Social Media Perception Scale – SOMEPES (α =0.86), Perceived Social Media Utilisation Scale – PESOMUS (α = 0.72), Social Media Attitude Scale – SOMATAS (α = 0.83), and Geography Achievement Test – GAT (KR20 = 0.82) were used in the study for data collection. Data were from the participants collected with the assistance and cooperation of the sampled schools' Geography teachers. The consent and maximum cooperation of the participants were enlisted prior to their participation. The data collected were analysed using descriptive statistics and multiple regression analysis

3. Results

In terms of ownership of social media account among senior secondary school students, Table 1 presents that out of the 975 participants who responded to the item 52.8% of them own social media accounts of which 30.5% are males and 21.1% are females. 9.1% males and 17.2% females do not have social media account while 22.1% did not respond.

Table 1. Cross tabulation of gender by ownership for social media account

Gender	Ownership of Social Media account			
	Owners	Non-owners	Excluded	Total
Male	297	89	95	481
	30,5 %	9,1 %	9,7 %	49,3 %
Female	206	168	120	494
	21,1 %	17,2 %	12,3 %	50,7 %
Total	**503**	**257**	**215**	**975**
	51,6 %	**26,3 %**	**22,1 %**	**100 %**

Table 2 shows that students' perceptions of social media-based learning have positive significant relationship with attitude (0.216; p < .05) and perceived utilisation of social media-based learning (r = 0.109; p< .05). A positive relationship exist between attitude and perceived utilisation (r = 0.191; p<.05). The same is true of knowledge and achievement (r = 0.274; p< .05). Other correlation that exist are positive but low These are correlations between perception and achievement in Geography (r = 0.107; p< .05), perception and knowledge of social media (r = 0.083; p< .05), perceived utilization and knowledge (r = 0.066; p < .05) and between attitude and knowledge of social media-based learning (r = 0.087; p< .05) and between attitude and achievement in Geography (r = 0.134; p< .05).

Table 2. Correlation matrix of the predictor variables

Model	Variables	Achievement in Geography	Knowledge	Perception	Perceived utilization	Attitude
Correlations	Achievement in Geography	1,000				
	Knowledge	0,274	1,000			
	Perception	0,107	0,083	1,000		
	Perceived utilization	0,064	0,066	0,109	1,000	
	Attitude	0,134	0,087	0,216	0,191	1,000

The multiple regression correlation coefficient (R) (Table 3) shows that the linear combination of predictor variables on the students' achievement in Geography is 0.304, multiple R^2 is 0.092 and the Adjusted R square value is 0.087 or 8.7%. This means that the variation in students' achievement in Geography accounted for by the predictor variables is approximately 9.2%, statistically significant at $F_{(4,721)} = 18.363$; $p < 0.05$.

Table 3. Model summary and regression ANOVA

Model	Sum of squares	Df	Mean square	F	Sig
Regression	2093.733	4	523.433	18.363	.000*
Residual	20551.997	721	28.505		
Total	22645.730	725			
R = 0.304					
R Square = 0.092					
Adjusted R Square = 0.087					

*Significant at P < 0.05 level

Table 4. Regression coefficients

Model	Unstandardized coefficients		Standardized Coefficients	T	Sig
	B	Standard Error	Beta		
Constant	5.059	0.885		5.717	0.000
Knowledge	0.645	0.088	0.261	7.303	0.000*
Perception	0.014	0.008	0.062	1.708	0.088
Perceived utilization	0.007	0.001	0.023	0.622	0.534
Attitude	0.039	0.015	0.093	2.514	0.012

*Significant at 0.05 Alpha level

Table 4 shows that two of the independent variables contributed significantly to the prediction model at 0.05 level. Knowledge β = 0.261; t (721) = 7.303; p <0.05) was most influential followed by attitude (β = 0.093; t (721) = 2.514; p <0.05). Two of the independent variables do not contribute significantly to the prediction model for students' academic achievement in geography, these variables are perception β = 0.062; t (721) = 1.708; p >0.05) and perceived utilisation (β = 0.023; t (721) = 0.622; p >0.05).

4. Discussion

Ownership of social media accounts among secondary school students from the findings of the study indicated that having social media account is a necessity while to others, it is of lesser importance. The findings on ownership of social media account by gender indicate that male students are heavy users of social media facilities for academic purposes than the female students as indicated by students' responses. Findings here support a number of studies such as DeBell and Chapman (2006): Williams and Matern (2009); Friedman, (2013); Hendrix, Chiarella, Hasman, Murphy and Zafron (2009); Ofcom (2008); Dowdall, (2009). These studies investigated the extent of use of social media among the youth. In all, these studies found out that younger generation students are the extensive active users of social network sites.

Knowledge, perception, utilisation and attitude towards social media-based learning are important in predicting students' academic achievement in Geography holistically and is statistically significant at P < 0.05 level. Also, the findings on the amount of variance accounted for by the predictor variables (9.2%) indicate that the prediction model obtained is reliable and as further indicated by the multiple regression correlation R and R square. This result is in line with that of Hanushek, Kain and Rivkin (2005) who confirmed that perception is an important school factor responsible for students' poor achievement in senior secondary school subjects. Also, according to Willams and Merten (2009), university students are often found to be obsessed and addicted with their Facebook profile or Twitter page which they frequently accessed indicating their favourable disposition to social media. Also, Churchill's (2009) study showed that the use of weblogs or "blogs" in education facilitator a useful learning atmosphere in the area of sciences. Findings with respect to the contributions of the predictor variables indicated that two of the predictor variables (knowledge and attitude) contributed statistically and significantly to learning Geography. This finding is consistent with the pattern of associations reported by Gable, Ludlow, Kite & McCoach, (2010). In their study, they found that, interestingly, the knowledge of social media-based learning is a significant key determinant of students' academic achievement in college. The result of attitude towards social media-based learning agreed with Agwu's (2004) study which explained that positive attitude is important when helping learners to improve learning in the Nigeria school environment. The findings of this data also corroborate that of Adike (2008) who in his study on the causes of students' poor performance in WAEC from 2003- 2007 in Kaduna State, discovered that students' attitude and poor teaching facilities were significant causes of students' performance.

Conversely, findings indicate, however, that perception and perceived utilisation of social media based-learning do not contribute significantly to the prediction model of students' academic achievement in Geography. The result of this study supports the work of Jason and Niaz (2011) who found out that there was no statistically significant relationship between social network sites usage and GPA earned in a semester examination (fall semester) in the year 2010. However, it contradicts the finding of DeBell and Chapman (2006) and Boyd & Ellison (2007) who reported that adolescent and young adults are the heaviest users of computers and the Internet which has tremendously improve their academic achievement and that social media-based learning has become the latest online communication tool that allows these users to create a public or private profile to interact with people in their networks both for social and academic purposes.

5. Conclusions

The study findings established significant relationships between knowledge and attitude which consequently had predictive influence on students' academic achievement in Geography. Students are encouraged not to be satisfied with their knowledge of social media but are implored to have a change of perception as well as attitude towards social media-based learning. Also, teachers being an influential agent should teach through social media platform

which could be an explicit way of showing student the utilisation of social media for academic purposes.

Author Contributions

Software - Dr. Jinadu; validation - Prof. Okwilagwe; writing-review and editing – Dr. Jinadu and Prof. Okwilagwe.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest

The authors declare no conflict of interest.

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Research article

Empowering for the "Belt and Road": Teaching Applied Chinese as a Foreign Language at Guangdong Nongken University

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Abstract: This article explores the transformative initiatives undertaken by Guangdong Nongken (GK) Rubber, a prominent player in China's agricultural foreign cooperation, within the framework of the "Belt and Road" initiative. The GK Rubber School has engaged in a multifaceted approach to Chinese language education that not only imparts linguistic skills but also fosters a deep understanding of Chinese culture. The reforms discussed encompass curriculum, teaching objectives, and innovative teaching methods, with an emphasis on promoting sustainable learning. The GK Rubber School's dynamic integration of online and offline teaching, use of AR and VR technologies, and collaborative learning platform for instructors sets a precedent for excellence in the field of Chinese as a Foreign Language (CFL) education. This article highlights these innovative approaches that align with the objectives of the "Belt and Road" initiative, building bridges of understanding and cooperation between China and ASEAN countries.

Keywords: Guangdong Nongken, Belt and Road, applied talents, AR and VR technologies, Chinese as a Foreign Language

1. Introduction

Guangdong Nongken (Guangdong Nongken Group Co, n.d.), a prominent player in China's agricultural foreign cooperation, has actively engaged in various countries and regions along the "Belt and Road" initiative. The organization has undertaken substantial investments and implemented 47 overseas projects focused on high-value crops, including natural rubber, sisal, cassava alcohol, among others. These projects have been established in countries such as Singapore, Thailand, Malaysia, Indonesia, Cambodia, Laos, Benin, Ghana, and others. The company has made investments and undertaken the construction of 47 overseas manufacturing and operational projects in various countries including Singapore, Thailand, Malaysia, Indonesia, Cambodia, Laos, Benin, and Ghana. Based on insufficient statistical data, it is observed that the natural rubber sector in Guangdong Agricultural Reclamation is anticipated to generate over 40,000 employment opportunities, directly or indirectly, for the nations along the "Belt and Road" initiative. Additionally, this industry is expected to contribute an annual tax revenue of approximately 40 million U.S. dollar.

Simultaneously, GK Rubber has undertaken initiatives in ASEAN countries to establish the "GK Rubber School" with the aim of fostering the advancement of Chinese international education and the training of foreign language teachers. These endeavors have resulted in the creation of strong and vibrant bonds, characterized by unity, diversity, and a sense of warmth. This article aims to provide a comprehensive overview of the significant innovations, reforms, and proposals implemented by GK Overseas Rubber Schools, in conjunction with the local practices of GK Schools. The objective is to offer valuable insights and references for the teaching of Chinese as a foreign language. This endeavor aims to offer valuable perspectives for the field of Chinese language education and teaching, thereby assisting foreign language instructors in effectively conveying the narrative of China.

There are three notable innovations that have emerged in recent years. Each innovation will be named exactly in the following paragraph.

Guangdong Nongken has built a network of primary educational institutions in countries along the "Belt and Road" through its collaboration with the GK Rubber Overseas Company. This has been achieved through proactive engagement in cultural education, job and internship programs, as well as community development initiatives in the respective host nations. The introduction of the international Chinese language education system has facilitated a deeper comprehension of China among inhabitants of ASEAN countries, fostering a greater affinity for the nation. The "Confucius Institute of Mahasarakham University (GKR Mekong River) Practice Base", the "Laos Tai Hua Savannakhet Staff Primary School (GKR)", and the "Cambodia GKR Chunfeng Co. 'Rubber Forest School' in Cambodia", along with other GKR schools located abroad, have garnered significant acclaim from local governments and residents. These institutions have played a crucial role in fostering cultural exchanges between China and ASEAN countries, as well as strengthening the emotional bonds between the people of China and ASEAN countries s(Long et al., 2023; Xiu & Li, 2023; Yang et al., 2021; Liu et al., 2019).

Institutional innovation has a pivotal role in facilitating the deep integration of industry, academia, and research through the promotion of cooperation between reclamation and land.

Based on our field surveys, questionnaires, and visits, it has been observed that the state of international Chinese language teaching in Thailand, Cambodia, Laos, and Vietnam is commonly marked by a scarcity of Chinese language instructors, disparities in the proficiency levels of foreign language teachers, and a gradual decline in the availability of Chinese language courses. However, it is noteworthy that there is a growing demand among local students for the acquisition of Chinese language skills. Consequently, GK Rubber has incorporated educational assets through the implementation of the "Reclamation Cooperation" initiative and established a network of elementary educational institutions. This strategic move aims to foster mutual benefits between the reclamation efforts and local communities, while simultaneously advancing the integration of "Chinese + Vocational Education", "Chinese + Green Agriculture", and "Chinese + Chinese Language" programs. The organization has successfully implemented various projects, such as "agriculture", "Chinese language + sustainable development", and others. These initiatives have established a comprehensive framework for collaboration through the implementation of "Guangken + Confucius Institute" and "Guangken + Teaching Points". This framework has effectively achieved the objectives of integrating Chinese language education with vocational education, agriculture, and sustainable development. Additionally, it has fostered deep cooperation, served the community, and created mutually beneficial outcomes.

Driven by the institutional innovation of "Cooperation between Reclamation and Land", the project-based teaching method can be carried out. In recent years, activities such as "Silk Road Cup" Chinese Language and Culture Competition, China-Thai Teachers' Skills Competition, China-Thai Chinese Camp, etc. have been organized, which have strongly promoted the organic integration of theoretical learning in class and practical tasks outside class. These activities promote the organic integration of theoretical learning in the classroom and practical tasks outside the classroom and improve the practical ability of Chinese as a foreign language teacher to solve the problems they encounter in real life with correct concepts and methods. Guangken School is good at using task-based teaching as a carrier to enhance Chinese as a foreign language teachers' knowledge of their own subject matter, to continuously improve their teaching skills, and to strive to become application-oriented talents in line with the needs of the times. The task-based classroom teaching method originates from the teaching concept of student center (Liu & Su, 2018). The most common means of task-based teaching are brainstorming, collective discussion, communication and sharing, and PPT reporting. The Guangken Teaching Practice Base, however, can provide an exchange platform for the majority of young teachers, promote deep-level exchanges and cooperation between teachers of Chinese as a foreign language and local foreign language teachers, and continuously improve the teamwork and continuous learning ability of young teachers, thus promoting the deep integration of industry, academia, and research.

From the perspective of upgrading thinking, GK Rubber also considers that the training of young teachers should not only be good at "going out", but also think about how to better "come in". Therefore, GK Rubber regularly conducts Chinese language training courses for young teachers in Guangdong Agriculture, Industry and Commerce Vocational and Technical College, focuses on the improvement of the Chinese language quality of ASEAN local teachers, and gradually does a good job in the field of humanities education exchanges and cooperation, and devotes itself to building a bridge for Chinese language teachers both at home and abroad to learn the Chinese language and culture. At present, "Chinese Calligraphy",

"Chinese Paper Cutting", "Reciting Chinese Poetry", "Making Traditional Chinese Pastries", etc. are all part of the training program. "Chinese Calligraphy", "Chinese Paper Cutting", "Reciting Chinese Poetry", "Making Traditional Chinese Cakes", etc. are all permanent courses in the workshop, which are loved by international Chinese teachers. Simultaneously, via the collaboration of Chinese language instructors in delivering courses on traditional Chinese culture within the local community, the engagement within the classroom setting may be enhanced. Consequently, this initiative enables local students to gain a deeper comprehension of Chinese culture, thereby facilitating their ability to effectively convey the narrative of Chinese heritage.

2. Management innovation involves the utilization of advanced management concepts to facilitate the integration of interdisciplinary approaches

To enhance the curriculum construction, improve the effectiveness of teaching and training, and enhance the quality of Chinese language teacher training, GK Rubber employs a flexible approach by leveraging the advanced management advantages of state-owned enterprises. This is achieved by integrating the talent cultivation management model of enterprises into the education and training programs for young teachers. When implementing cross-border Chinese teacher training programs, the utilization of a curriculum management system and a lesson plan management system is employed to enhance operational efficiency and facilitate the comprehension of the learning progress of individual Chinese teachers by organizations and educational institutions. In addition, our organization engages in the development of methods for managing teacher-student relationships, while also offering tailored services aimed at fostering a positive and conducive environment for both educators and learners. At present, the program has rendered its services to a total of 120,000 students across 350 educational institutions. Moreover, it has successfully integrated its program model into the ongoing national high school curriculum reform. This integration has been achieved by using the vocational education strengths of Guangdong Nongken Rubber Company. The findings indicate that the "Enterprise + Government + Vocational Education" framework has the potential to enhance employment prospects for Chinese as a Foreign Language (CFL) teachers. Specifically, the data reveals a 64% rise in the proportion of teachers who express a desire to continue working in GDNK schools, and a 123% increase in those inclined to establish community based CFL programs in their hometowns.

"Competition + Training" is one of the characteristics of GKRS, which is mainly oriented to the real needs of the job market, and aims to improve the core competitiveness of Chinese language teachers, with the courses of "Chinese + Communication Studies", "Chinese + Chinese Painting". The training of skilled personnel is carried out in various forms, such as "Chinese + Communication", "Chinese + Chinese Painting", "Chinese + Music", "Chinese + Dress" and "Chinese + Makeup". We will also provide skill-based training in various forms, such as "Chinese + Music", "Chinese + Dress" and "Chinese + Makeup", so as to gradually realize the cultivation of "interdisciplinary" international Chinese language applied talents. At the same time, according to the Chinese language level of the young teachers, we will carry out the "Chinese-Thai Language Class", "Chinese Specialization Class", "Chinese Elective Class", "Chinese Cultural Experience Class" and "Chinese Language and Culture Class" in stages and grades. "Chinese Culture Experience Classes", so that the international education of Chinese as a foreign language can be carried out in a gradual and orderly manner. The "Chinese Language Class in the Rubber Forest of Cambodia" has gradually become a brand program, and over the past five years, it has exported a total of 173 Chinese language teachers to countries along the Belt and Road, and trained 53 specialized teaching staff for primary schools. Over the past five years, 173 Chinese teachers have been exported to countries along the "Belt and Road", and 53 teachers have been trained to specialize in elementary school. Through the project cooperation, the professional practice and teaching ability of foreign language teachers have been greatly improved. Over the past five years, more than 30 foreign language teachers have entered elementary school in Northern Thailand to engage in Chinese teaching, more than 50 students have become tour guides or engaged in social organizations, and thousands of people have entered GK Rubber Company Limited to become builders of the "Garden Factory", which has greatly improved the competitiveness of the program and became the builders of the "Garden Factory", which greatly promoted the local employment.

Driven by advanced management concepts, GK Rubber has improved nearly 50 sections of high-quality courses for each docking school, dispatched corresponding foreign language teachers to serve as lecturers and teaching assistants for the docking teaching practice sites, and the average number of classes held in the Confucius Institute of Mahasakan University each year has increased from 8 to 15, and the total length of teacher training has been extended from 184 to 15 hours. The total duration of teacher training has been extended from 184 to 206, and the number of elementary schools supported has increased from 3 to 15. At present, "Udonfu Tunya Village Primary School", "Doi Laodong Deng Primary School" and "Lakanglu School" are the main schools of GK Rubber. At present, "Wulongfu Tungye Village Primary School", "Do Laodong Deng Primary School" and "Lakanglu School" are the main targets of GK Rubber, for which a total of 11 high-quality teachers were trained. At the same time, GK Rubber cooperated with local enterprises to transform students' calligraphy works into creative products with new ideas based on traditional ancient scripts, so that "cultural creativity" empowers Chinese education. In this process, Guangdong Nongken is also gradually building up Guangken Rubber to become a new type of quality platform for Chinese language teaching, so that "Chinese stories" can be spread on a better platform.

3. Technological Advancement: The Implementation of "Digitalization" Enhances the Chinese Educational Environment

In the post-epidemic period, the adoption of "online teaching" has emerged as a novel approach for training Chinese language educators (Nie, 2023; Luo, 2023; Zhao & Liu, 2022). With the implementation of standardized measures for epidemic prevention and control, educational institutions have increasingly recognized the significance of the "online classroom". However, there are certain limitations associated with this mode of instruction, including reduced control and interactivity in online teaching, as well as a higher incidence of truancy and absenteeism. Based on survey and statistical data, during the epidemic, GDNK rubber school experienced a 17.8% increase in truancy rates and a 28.9% increase in dropout rates. In response to these challenges, GDNK has identified these critical areas in actual teaching and has made substantial investments in digital transformation to enhance classroom engagement, foster teachers' professional growth and long-term development, and continuously enhance the quality of online instruction.

In order to further improve the sense of accomplishment of teaching Chinese as a foreign language teacher and enhance the learning benefits of online courses for students, GKR has created a more vivid contextual atmosphere oriented to fun and three-dimensionality, promoting students' situational exchanges and enhancing their classroom participation. In Huey Na Dang Primary School in Guanjarong District, Sa Kaeo Province, Thailand, GK Rubber utilized its own financial and technological advantages to provide a vivid digital classroom, where the foreign language teacher used the Face Book platform to create a more vivid contextual atmosphere and promote students' situational exchanges to enhance their participation in the class, Foreign language teachers interacted with Facebook through "animated scenes", "Chinese song MVs", "intelligent Chinese games", etc., which gradually perfected the online teaching mode of foreign language teachers and improved their online teaching skills. With the continuous improvement of the "online" mode, the training of Chinese as a foreign language teachers can also be carried out better. Teachers can share their teaching achievements online and use the Internet to contact more peers for exchanges and sharing, making group lesson planning and communication no longer difficult. For example, foreign language teachers in Laos' Thai Hua Savannakhet Vocational Primary School (Guangken Rubber) have formed a "Teaching Mutual Aid Group" through the information network, and often carry out group discussions and academic exchanges in network meetings.

With the support of AR and VR technologies, GK School has developed a new application that helps Chinese language teachers learn the best Chinese teaching programs in the world from their own offices and have first-hand virtual contact with the teachers who teach the courses, which greatly breaks the boundaries of time and space, and allows young teachers to experience excellent teaching practices. At the same time, the 3D visual effects and 2D videos based on AR technology will enhance students' interest and improve their engagement, comprehension and memory. In order to make the "online classroom" more standardized,

GK Rubber has developed a small program to strengthen the management of the online teaching classroom by punching cards, so that more students can learn and feel something. At the same time, with the support of science and technology innovation, Guangken School has established a smart classroom database. In it, more than 30 sets of high-quality lesson plans and handouts, 58 videos of teachers' lectures, 82 course PPTs, 86 step-by-step cases of teaching Chinese phonetics, more than 4,000 pictures of electronic databases, more than 2,000 theoretical test questions, and 78 designs of course activities have been collected. At the same time, the company has also combined the latest technology to develop "cloud classroom" to enhance students' participation in the classroom. For example, the cloud class "Chinese Learning Class" held by GKRC Thainam Company in Yick Village, Phetchaburi District, Surat Thani Province has been very effective.

There are two significant reforms that have been implemented. The topic of discussion pertains to the reform of teaching objectives.

The teaching objectives of GK Rubber School encompass the acquisition of Chinese language skills in the domains of "Knowledge", "Learning", "Utilization", "Integration", and "Emotion". These domains encompass the development of knowledge, the cultivation of effective learning strategies, the practical application of language skills, the integration of language proficiency into various contexts, and the fostering of emotional engagement and personal value in language learning. The objective is to provide students with a strong proficiency in Chinese language and writing through classroom instruction, enabling them to effectively utilize writing skills in Chinese language-related tasks. In this context, students will employ many techniques, including the analysis of theories, the interpretation of character shapes, the recitation of poems, and the practice of experiential writing, in order to enhance their comprehension of the Chinese language and writing. The instructors will employ several methodologies, including academic study, character interpretation, singing poetry, and experiential writing, to further their comprehension of Chinese traditional culture and optimize their teaching effectiveness. It is desirable to enhance teachers' proficiency in utilizing digital network resources for online classroom instruction and gradually introduce students to independent learning in order to continually enhance their awareness and capacity for sustainable learning. The proposed approach involves the integration of the problem-based learning (Problem-Based Learning (PBL), n.d.) and project-based learning within the context of Chinese language instruction. This integration aims to develop a curriculum that embodies the distinctive features of Guangken and offers a range of exemplary courses.

In practical terms, this implies that students can acquire proficiency in Chinese character usage and develop their abilities in listening, speaking, reading, and writing for everyday situations through a comprehensive learning approach. The primary focus is on delivering detailed lectures and providing ample opportunities for practice. The ultimate objective is to enable students to successfully pass the HSK and HSKK examinations. This approach encompasses various aspects such as phonetic reading, stroke order practice, structural understanding, text comprehension, composition writing, as well as reading and writing skills acquisition. The primary objective of this curriculum is to attain proficiency in phonetics, enhance penmanship skills, develop a strong understanding of structural principles, engage with high-quality texts, cultivate effective essay writing abilities, and foster the ability to make thoughtful inquiries. In the context of integration, it primarily pertains to the capacity of Chinese educators to effectively amalgamate their individual talents and relevant professional expertise, while employing innovative thinking to facilitate instructional implementation. This approach aims to enable students to synthesize theoretical concepts more effectively with practical applications. Integration encompasses the amalgamation of theoretical instruction and practical application, the fusion of in-class exercises and extracurricular exercises, as well as the amalgamation of online and offline pedagogy. An illustration of this may be seen in the "Rubber Forest School" operated by the Guangken Rubber Chun Feng Company in Cambodia. This educational institution employs a project-based instructional approach, facilitating a meaningful integration of classroom learning with real-world applications through hands-on projects conducted on-site.

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The program is meant to facilitate the engagement of Chinese instructors in collaborative learning, fostering a spirit of cooperation. It aims to provide a platform for them to discuss and collectively showcase their teaching methods and creative strategies for teaching Chinese as a foreign language, thereby enhancing their professional development. Simultaneously, students will derive advantages from the curriculum in terms of dismantling disparities and attaining a genuine comprehension of Chinese culture. The educational institution arranges many competitions, including the "Teacher and Student Creative Design Competition", the "Teacher Skills Competition", and the "Top Ten Chinese Singers on Campus". The school aims to enhance students' cultural literacy and expressive abilities, enabling them to effectively promote the dissemination and preservation of traditional Chinese culture through the art of storytelling. The educational institution frequently arranges "essay contests" and "speech contests" as a means to facilitate students in producing literary compositions that authentically express their emotions.

Literary endeavors are frequently undertaken in order to facilitate the creation of authentic literary works by students. This serves the purpose of enabling a broader audience, including ordinary individuals, to recognize the existence of alternative and more valuable possibilities through these literary works. Consequently, the ultimate objective is to enhance the well-being of local residents and foster emotional connections between China and ASEAN nations.

4. Revision of Educational Curriculum

Unlike the Confucius Institute, the overseas GK Rubber School breaks away from the old teaching mode of reading from the book, and no longer mechanically teaches "concepts", "classification", "characteristics" and so on, but rather "attitude of learning", "perspective of thinking", "temperature of teaching", "latitude of teaching", "attitude of learning", "perspective of thinking", "temperature of teaching", "latitude of teaching" and "latitude of teaching". Instead, we focus on five major thinking latitudes: "attitude of learning", "perspective of thinking", "temperature of teaching", "latitude of teaching", and "precision of curriculum". More attention is paid to the reform of teaching content to strengthen the teachers' deep thinking on professional knowledge, and then improve the level of teaching practice. After the research, GK Rubber School has formulated a teaching program of 48 hours, combining "Traceability", "Guidance", "Expansion", "Transmission". The program combines five elements: "Traceability", "Guidance", "Expansion", "Transmission" and "Innovation". The teaching content can be restructured into four major modules, namely "the origin and characteristics of Chinese characters", "the use of Chinese language tools", "the use of logic in teaching and training", and "the use of communication in education and teaching".

The initial module provides an overview of the "origins and attributes of Chinese characters" and is primarily delivered through structured instruction. In this approach, students are initially presented with inquiries and prompted to explore the underlying reasons within a classroom setting. This pedagogical method aims to foster a more profound comprehension of the distinctive allure of Chinese culture. The second module focuses on the study of Chinese culture. The second module is to provide instruction on the utilization of Chinese tools to students.

5. Conclusion

In a world characterized by increasing globalization and interconnectedness, the educational initiatives undertaken by GK Rubber School stand as a testament to the power of innovative and comprehensive approaches to Chinese language education. The profound reforms in teaching objectives, curriculum, and teaching methods demonstrate the school's commitment to equipping students with linguistic skills and a deep cultural understanding.

As we move forward in the era of the "Belt and Road" initiative, the role of educational institutions like GK Rubber School in building bridges of understanding and cooperation between nations cannot be overstated. The school's dedication to enhancing local communities, fostering emotional connections, and promoting traditional Chinese culture through the

art of storytelling embodies the spirit of cultural exchange that underlies the "Belt and Road" initiative.

The GK Rubber School serves as a shining example of how education can transcend boundaries and contribute to a more interconnected world. It emphasizes that language is not just a means of communication but a conduit for building lasting relationships. In this endeavor, GK Rubber School inspires us to reach across borders, share our cultures, and embrace the richness of our shared humanity. The journey of learning is one of mutual enrichment, and in the context of the "Belt and Road" initiative, it is through such educational endeavors that we find the path to a brighter and more connected future.

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Action research

Integrating Critical Thinking by P4Cs Into EFL Classes Through Integrated Language Skills

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Abstract: This research aims to provide empirical evidence on the impact of integrating Philosophy for Children (P4C) strategies with English language teaching for EFL learners. While existing studies have extensively outlined the educational benefits of P4C across various educational contexts, limited research focuses on its application in ESL or EFL settings. Therefore, this study investigates the positive effects of integrating P4C into EFL classrooms, specifically in conjunction with integrated language skills activities. A total of 12 students, evenly divided between Istanbul and Muğla, participated in the study. The P4C group engaged in language skills activities integrated with P4C in their classrooms for four weeks, and the impact of these lessons was assessed using questionnaires. The study's results demonstrate that P4C interventions significantly reduced students' levels of English speaking anxiety, enhanced their motivation to learn English post-intervention, and improved both their receptive and productive language skills. These findings underscore the potential of P4C integration in EFL instruction, offering promising implications for language pedagogy and learner outcomes.

Keywords: Philosophy for Children (P4C), critical thinking, English as a foreign language (EFL), integrated language skills

1. Introduction

In Turkey, many students are confined to learning a foreign language solely within the confines of foreign language classes. Outside the classroom, they have limited opportunities to utilize the language or engage in practice. Within language classes, another challenge is encountered: the Foreign Language Exam (Yabancı Dil Testi - YKS/YDT), assessing grammar and reading comprehension, often neglects the essential productive language skills of speaking and writing, as well as listening comprehension. Additionally, numerous students perceive foreign language courses at school not as an opportunity to acquire language proficiency, but as an obligatory subject entailing an enduring process filled with incessant rote tasks and mandatory examinations.

This situation can be largely attributed to grammar-focused teaching methods and test-oriented study approaches (Chung, 2006; Wang & Savignon, 2001). However, language acquisition necessitates more than mere mastery of grammar rules—it entails learning a new way of life, enhancing self-expression, and developing critical thinking skills. In the 21st century, acknowledged and recommended by academics, educators, and leading figures in the business world, are the essential skills known as 21st-century skills, imperative for success across diverse sectors such as employment, economy, and education. At the forefront of these skills lies critical thinking, closely intertwined with analytical thinking, collaboration, and problem-solving skills (Flavell, 1976). A student equipped with critical thinking skills comprehends what, why, where, when, and how to undertake tasks, thus positioning themselves for success both in school and subsequent professional endeavors (Flavell, 1979). Many academics have proposed instructional methods to cultivate critical thinking in students, with Lipman's philosophical approach being one of these recommendations. Matthew Lipman, a philosophy professor, is a pioneer in the critical thinking movement in the United States.

During his tenure as a university professor in the 1960s, Professor Lipman recognized the inadequacy of his students' reasoning skills. He observed that the students were learning

what was presented to them but struggled to think independently. He had no doubt that something fundamental was amiss in their primary education. Subsequently, Lipman realized that university classrooms were too late to learn proper thinking. Stemming from this realization, Lipman initiated the pedagogy of Philosophy for Children (P4C). He established the Institute for the Advancement of Philosophy with Children (IAPC) and collaborated with numerous academics to develop the P4C program, which is now utilized in over 60 countries (Philosophy Foundation, 2022). According to Lipman (2003), the domains addressed by philosophy encompass our natural curiosity, desire to learn, and mystery. Philosophy engages individuals in a quest for understanding and aids them in comprehending many concepts.

In the instruction of English as a foreign language, educators strive to create a learning environment that engages students with meaningful tasks encouraging genuine language usage (Raoofi et al., 2014). Consequently, one of the most popular activities in foreign language instruction is encouraging students to communicate and exchange ideas. The present study builds upon the strengths of Lipman in developing the skills necessary for logical inquiry and associating abstract thinking with real-world problems. Additionally, it aligns Lipman's approach with the context of learning English as a foreign language.

2. Materials and Methods

This study was conducted with a total of 12 students, 6 from Istanbul/Büyükçekmece Atatürk Anatolian High School and 6 from Muğla/Fethiye Fatih Anatolian High School. The participating students are enrolled in the 12th grade language class.

The implementation of the study occurred outside regular class hours, during lunch breaks, or after school, in sessions lasting 40 minutes each, with willing students. The study spanned over 2 weeks and consisted of a total of 4 sessions.

Participating students completed two online surveys: a pre-test and a post-test. The pre-test comprised 2 multiple-choice questions and 11 agree/disagree statements (on a five-point Likert scale). The post-test included 3 multiple-choice questions and 11 agree/disagree statements (on a five-point Likert scale).

Half of the students who participated in the survey indicated that their public speaking anxiety diminished after the study.

Half of the students who participated in the survey expressed confidence that they could substantiate their advocated ideas after the study.

A significant majority of the students who participated in the survey indicated that they believed there was a notable improvement in language skills after the study.

3. Results

Upon reviewing the results of the comparative analysis of responses from participants of two different schools, it is evident that P4C sessions are beneficial in enhancing students' English language and critical thinking skills. The students reported a decrease in anxiety and difficulties related to their English language skills and critical thinking before the implementation.

P4C is a multifaceted program consisting of several components or elements. The current research findings are applicable to all programs. As previously mentioned, it was found that P4C had beneficial cognitive effects on high school students over an academic year. Therefore, we can conclude that P4C is an implementable program that all teachers worldwide should consider. The review of research studies found P4C to be highly reliable (Tian & Liao, 2016).

However beneficial and crucial in significantly enhancing students' critical thinking skills, P4C may not be applicable in primary and middle school level language teaching, preparing children for meaningful discussions, no matter how beneficial it may be or how much it improves students' critical thinking skills. While they may be experts in describing their pets, engaging in deep conversation might remain an elusive goal. It requires students to express their thoughts on concepts at a higher discourse level, presenting itself as a limiting aspect of the study.

4. Discussion

Facilitators may encounter certain challenges when implementing P4C strategies in EFL classrooms to enhance students' critical thinking skills through integrated language skills. One of the most commonly encountered issues is student responses.

Some students may prefer to avoid engaging in lengthy discussions and instead opt for short answers like "I don't know" or "I agree with my friend". In this situation, pressuring students for longer responses or to change their answers would not be appropriate. Instead, facilitators should accept the brief response and provide necessary guidance in the subsequent sessions. Asking another question about the same prompt or allowing the student to seek assistance from a peer would be a suitable approach.

At times, when a facilitator poses a guiding question, they might receive a completely irrelevant answer. In such cases, the facilitator should refrain from negative intervention and allow the conversation to flow. The topic is typically determined by the group, known as group dynamics. Students enjoy engaging in activities related to their interests and preferences. The facilitator can generate new questions about a new topic or students can create their own questions. The application was carried out with a small number of students, but the method may vary from class to class when implemented in crowded classrooms. While we may face challenges, we can also achieve many positive outcomes. For example, there might be students who shy away from speaking in front of the class, lack confidence in their language skills, and tend to withdraw further. However, observing their peers' ability to speak up might encourage them to give it a try.

Keywords can be written on the board to encourage students to speak and write. Additional stimuli, such as videos, pictures, songs, stories, or inviting individuals fluent in English (if possible), can be included in the lesson.

This approach can be applied not only in foreign language classes but also in many other subjects, as it enhances 21st-century skills. In fact, it should be used in various subjects. After all, education is holistic, and it is the responsibility of all teachers to ensure students acquire these skills. This method can be shared during meetings with teachers in our schools, and conducting a sample session with teachers' participation can convince educators from other disciplines about the effectiveness of the method, encouraging them to use it in their lessons.

Although this method may appear to be more useful for developing productive skills, it also enhances receptive skills, such as listening and reading, through the texts we read, dialogues we listen to, or conversations we engage in. It guides the students in giving correct answers to appropriate questions.

We should consider and design P4C applications as long-term processes. Sudden and rapid changes should not be expected overnight. Even if we cannot base our lesson plans entirely on P4C, we can allocate a portion of the lesson to such activities.

Theme-based outcomes can be a disadvantage for this method. Many outcomes are specific to a particular skill. Therefore, it may require adjustments to fit the outcomes in the program.

The facilitator should always bear in mind that being respectful and showing close attention is the unchanging rule of a P4C session. Consequently, they should accept the responses from the students and continue with the sessions. However, it's important to remember that every teacher knows what's best for their students. Teachers are better aware of the dynamics of their classrooms

5. Conclusions

This research paper sheds light on the challenges faced by Turkish students in their foreign language education, emphasizing the shortcomings of traditional grammar-focused teaching methods and test-oriented approaches. It highlights the importance of imparting not only language proficiency but also essential 21st-century skills such as critical thinking, problem-solving, collaboration, and analytical thinking. Matthew Lipman's Philosophy for Children approach is explored as a means to bridge this gap, adapting it to the context of English language learning.

The study conducted with a total 12 high school students demonstrated promising outcomes. It was evident that P4C sessions had a positive impact on students' English language skills and critical thinking abilities. Students reported reduced anxiety related to public speaking, increased confidence in articulating their ideas, and a notable improvement in their language skills.

The study suggests that P4C can be a valuable addition to foreign language education, enhancing students' critical thinking skills and language proficiency. However, it also

recognizes that implementing P4C may present challenges, such as student responses and the need for adjustments in crowded classrooms. Nonetheless, the potential benefits, including improved speaking and writing skills, receptive skills like listening and reading, and enhanced 21st century skills, make P4C a promising method to be considered not only in foreign language classes but across various subjects.

The research paper also underscores the importance of a long-term approach and flexibility in implementing P4C, acknowledging that it may not be suitable for every educational context. It encourages educators to explore and adapt this method to suit their specific needs and dynamics.

In essence, this study offers valuable insights into the potential of P4C to transform foreign language education by fostering critical thinking and language skills. It opens the door for further exploration and adaptation of innovative teaching methods to prepare students for success in an ever-evolving global landscape.

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Research article

Cross-Cultural Communication in English Interpretation Teaching of Higher Education: Challenges and Strategies

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Abstract: As globalization continues to advance, the importance of cross-cultural communication has become increasingly evident in various fields. In the context of college-level English major interpretation teaching, the cross-cultural perspective not only influences the quality of instruction but also plays a pivotal role in nurturing competent interpreters. This article aims to explore the significance of the cross-cultural perspective in college-level English major interpretation education, examine the challenges that arise, and propose corresponding teaching strategies.

Keywords: cultural perspective, college English major interpretation education, challenges, strategies, cross-cultural adaptability

1. Introduction

With the globalization and strengthening of international communication, the significance of English interpretation in various fields has increased. Interpreting education for college English majors plays an essential role in cultivating students' intercultural communication abilities and training English interpreters (Mazzei & Jay-Rayon Ibrahim Aibo, 2022). However, teaching English interpretation in a cross-cultural context faces challenges. Therefore, it is important to study interpreting teaching for English majors in colleges and universities from a cross-cultural perspective. Firstly, the cross-cultural perspective helps to understand the differences in English interpretation education across various cultural backgrounds. In a cross-cultural setting, cultural discrepancies between teachers and students can lead to misunderstandings, communication barriers, and ineffective teaching outcomes. By examining interpretation teaching from a cross-cultural perspective, we can comprehend these differences and provide valuable insights to enhance teaching effectiveness. Secondly, the cross-cultural perspective improves the adaptability of English interpretation teaching. Studying the teaching of English interpretation for college English majors from a cross-cultural perspective helps teachers better understand and meet the needs of students with different cultural backgrounds, enhancing the adaptability of teaching. Lastly, the cross-cultural perspective promotes the internationalization of English interpretation teaching. In the context of globalization, English interpreters need to demonstrate their skills on the international stage. By studying interpreting teaching for English majors from a cross-cultural perspective, teachers can train students to develop cross-cultural communication skills and a global vision (Corbett, 2003), enabling them to better adapt to the international English interpreting work environment. In conclusion, the cross-cultural perspective is essential for understanding and addressing the challenges associated with English interpretation education at the college level. By adopting this perspective, teachers can create a more effective and adaptable teaching environment, ultimately promoting the internationalization of English interpretation teaching and better preparing students for the global stage.

This article aims to investigate the challenges and strategies of teaching English interpretation at the college level from a cross-cultural perspective. The research objectives and content are as follows:

- Analyze the cross-cultural challenges in college-level English interpretation education, including the impact of cultural differences on interpretation teaching,

the cultural adaptation issues faced by teachers and students, and the obstacles in classroom management and communication.

- Discuss strategies for college-level English interpretation teaching from a cross-cultural perspective, such as enhancing teachers' cross-cultural awareness and abilities, incorporating cultural elements into interpretation course design, utilizing diverse teaching methods, and creating inclusive learning environments.
- Analyze the practical effects of college-level English interpretation teaching from a cross-cultural perspective based on real-life case studies, aiming to provide valuable references and insights for college-level English interpretation education.

This research employs a combination of literature review and empirical research methods. Firstly, a literature review is conducted to identify the cross-cultural challenges and strategies in college-level English interpretation education, providing a theoretical foundation for subsequent empirical research. Secondly, empirical research methods are employed to analyze a specific example of college-level English interpretation teaching practice, examining the practical outcomes of teaching from a cross-cultural perspective. The goal is to offer effective references and insights for college-level English interpretation education.

2. Cross-Cultural Challenges in College-Level English Interpretation Education

2.1 Impact of Cultural Differences on Interpretation Teaching

Cultural differences play a significant role in cross-cultural communication and have a profound impact on college-level English interpretation teaching. These differences are primarily observed in language, non-verbal behavior, values, and thinking styles (Mazzei & Jay-Rayon Ibrahim Aibo, 2022). The impact of cultural differences on interpretation teaching can be observed in several aspects as fellows:

- Language differences: There are significant variations in language expression and habits across different cultural backgrounds, posing challenges for interpretation instruction. For instance, when translating between English and Chinese, interpreters need to understand the grammar, vocabulary, and expression habits of both languages to avoid mistakes or improper translations.
- Nonverbal behavior differences: People from different cultural backgrounds exhibit variations in body language, facial expressions, posture, and other nonverbal behaviors. These nonverbal cues often have a significant impact on the interpretation effect. Therefore, interpretation teachers need to help students understand nonverbal behaviors in different cultural contexts to enhance cross-cultural communication.
- Differences in values and ways of thinking: Individuals from diverse cultural backgrounds hold distinct values and thinking patterns, which can create communication barriers. In the process of interpreting, interpreters must grasp the values and ways of thinking in different cultural contexts to accurately convey information during translation. Overall, recognizing and addressing these cross-cultural challenges in college-level English interpretation education is crucial for fostering effective communication and improving the quality of interpretation teaching.

2.2 Cultural Adaptation Issues for Teachers and Students

In college-level English interpretation teaching, both teachers and students encounter the task of overcoming cultural differences and achieving cultural adaptation (Edmund, 2008). The following paragraphs discuss the challenges faced by teachers and students in cultural adaptation. Teachers in interpretation education must first understand the needs and learning habits of students from diverse cultural backgrounds. This understanding is crucial for adjusting teaching methods and strategies accordingly (Jackson, 2018). Additionally, teachers need to enhance their own intercultural communication skills to effectively navigate cultural differences in their teaching. On the other hand, English major students must adapt to the cultural background and communication methods of English-speaking countries while also improving their cross-cultural communication skills. This includes understanding the etiquette, customs, and communication norms of English-speaking countries to effectively convey information during the interpretation process. To tackle these cultural adaptation

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challenges, it is important for both teachers and students to acknowledge and address them. By doing so, they can enhance their understanding and appreciation of different cultures, ultimately leading to more effective and successful English interpretation teaching in universities.

2.3 Classroom Management and Communication Barriers

In English interpretation teaching at universities, there are significant cross-cultural challenges related to classroom management and communication barriers. The following aspects highlight some of these challenges, with a particular focus on the differences in classroom management (Dai & Chen, 2017). Teachers and students from diverse cultural backgrounds have varying approaches to classroom management. For instance, in Western cultures, the teacher-student relationship is more egalitarian, whereas in Asian cultures, teachers hold more authority. As a result, interpretation teachers must understand and adapt to different cultural classroom management methods to effectively manage their classes. Additionally, communication barriers play an essential role in the teaching process. Language and cultural differences can pose obstacles to effective communication in interpretation teaching (Holliday, 2011). For example, in English-Chinese translation, interpreters must grasp the language expressions and customs of different cultures to avoid translation errors or inappropriate expressions. Moreover, differences in nonverbal behavior and values can also create communication barriers.

To address these challenges, interpretation teachers need to help students enhance their cross-cultural communication skills and develop an understanding of language, nonverbal behavior, values, and thinking patterns in various cultural contexts (Baraldi, 2009). Cultural differences may present challenges in various ways, such as language and expression, learning styles and teaching methods, values and belief systems, social etiquette and behavioral norms, and context and case selection. Students from different cultural backgrounds may have varying understandings and habits regarding language and expression. Therefore, teachers must adapt to students' language proficiency and expression styles to ensure comprehension of the teaching content and active participation in discussions. Additionally, cultures may differ in learning styles and teaching methods, with some prioritizing collective cooperation and interaction, while others emphasize individual independent learning. Teachers must understand students' learning styles and preferences and employ suitable teaching methods to optimize learning outcomes.

Cultural variations in values and belief systems can impact students' acceptance and understanding of certain teaching content (Xu, 2022). Hence, teachers must respect students' diverse perspectives and beliefs, creating an inclusive and respectful learning environment. Furthermore, cultural disparities in social etiquette and behavioral norms require teachers to guide students in adapting to local social norms, enabling them to integrate into the local culture and learning environment. The cultural backgrounds and assumptions embedded in textbooks and cases used for teaching may also vary. Therefore, teachers must ensure that the selected materials align with students' cultural backgrounds and experiences, facilitating their understanding and application of acquired knowledge. These challenges may vary depending on the teaching environment and student population. As a result, teachers should continuously learn and adapt, enhancing their cross-cultural teaching abilities to better meet students' learning needs. In conclusion, cultural differences significantly impact English interpretation teaching in universities. Teachers and students must overcome these challenges, achieve cultural adaptation, and improve their cross-cultural communication skills to effectively respond to the demands of globalization.

3. Teaching Strategies for English Interpretation in Higher Education from a Cross-Cultural Perspective

With the rise of globalization and increased international communication, the importance of cross-cultural communication has grown in both personal and professional settings. In the field of English interpretation teaching at universities, the development of cross-cultural communication skills has become a crucial aspect of the curriculum (Dollerup, 2002). This article aims to explore effective teaching strategies for English interpretation in universities, focusing on four key areas, such as enhancing teachers' cross-cultural awareness and abilities, incorporating cultural elements into interpretation course design, utilizing diverse teaching methods, and creating a diverse learning environment.

Teachers play a central role in interpretation teaching, and their level of cross-cultural awareness and abilities significantly impact the quality of instruction (Chen, 2021). Therefore, it is imperative for interpretation teachers to continuously improve their cross-cultural awareness and abilities in order to effectively guide their students. Specifically, interpretation teachers should focus on the following:

- Understanding the characteristics of different cultures: Interpretation teachers need to familiarize themselves with the specific characteristics of various cultures, including language, customs, values, and ways of thinking. This understanding enables teachers to better appreciate and respect cultural differences, thereby avoiding misunderstandings and conflicts.
- Enhancing cross-cultural communication skills: Interpretation teachers should strive to develop strong cross-cultural communication skills, encompassing language expression, non-verbal communication, and comprehension abilities. This will enable teachers to effectively communicate with their students and help them overcome barriers in cross-cultural communication.
- Integrating cross-cultural elements into teaching: Interpretation teachers should integrate cross-cultural elements into their teaching methods. This can be achieved by incorporating cultural backgrounds, customs, and etiquette from different countries into the curriculum. By doing so, students' cross-cultural awareness and abilities will be enhanced.

It is important for interpretation teachers to continually improve their teaching strategies and adapt to the ever-changing demands of cross-cultural communication. By doing so, they can ensure the success of their students in an increasingly globalized world.

3.1 Incorporating Cultural Elements into Interpretation Course Design

Designing interpretation courses is a crucial factor that impacts teaching effectiveness. From a cross-cultural perspective, interpretation course design should fully consider cultural elements to better cultivate students' cross-cultural communication abilities (Richards. 2001). The following points should be achieved in interpretation course design:

- Introduce cross-cultural communication courses. Incorporate cross-cultural communication courses within interpretation courses to help students understand the characteristics and differences of different cultures. This will enhance their cross-cultural awareness and abilities.
- Incorporate cultural elements into interpretation exercises. Integrate cultural elements into interpretation exercises by selecting topics related to different countries' politics, economy, culture, etc. This allows students to better understand information within different cultural contexts during practice.
- Foster students' cross-cultural analysis abilities. Cultivate students' cross-cultural analysis abilities to help them better comprehend and analyze communication phenomena within different cultural backgrounds. This will enhance their cross-cultural communication abilities.

Integrating cultural elements into interpretation courses is crucial for cultivating students' cross-cultural communication abilities (Griffin, 2017). Here are some strategies for designing interpretation courses: First, incorporate learning tasks with cultural elements. Design interpretation tasks that involve different cultural backgrounds. For instance, students can practice interpretation while considering the cultural characteristics, customs, and historical backgrounds of a specific country. This approach helps students better understand and convey information across cultures. Second, introduce language materials with cultural backgrounds. Select language materials that provide cultural background information for interpretation practice. These materials can include news reports, social media content, TV programs, and more. Students should understand and accurately convey the cultural information embedded in these materials. Third, promote cross-cultural comparative analysis. Introduce language materials from diverse cultures and encourage students to conduct comparative analysis. They should compare language expressions, etiquette habits, and other aspects between different cultures while practicing interpretation. Fourth, simulate cross-cultural

communication. Design simulated scenarios of cross-cultural communication to help students learn how to effectively communicate in different cultural contexts while interpreting (Rudvin & Tomassini, 2011). For instance, students can simulate interpretation scenarios at foreign business meetings to experience the challenges and develop skills in cross-cultural communication. Finally, encourage students to participate in cross-cultural activities. Motivate them to actively engage in cross-cultural exchange activities, such as international student exchange programs or visits to foreign embassies or cultural institutions (Beerkens et al., 2020). These experiences allow students to personally immerse themselves in different cultures and integrate their knowledge into interpretation practice.

By implementing these design strategies, interpretation courses can effectively cultivate students' cross-cultural communication abilities. This, in turn, will enable students to better understand and convey information in various cultural contexts during their actual interpretation work.

3.2 Diversification of Teaching Methods in Interpretation Education

To meet the diverse learning needs of students, it is essential for interpretation teaching to adopt a variety of methods. From a cross-cultural perspective, the following points should be emphasized:

- Utilize flexible teaching methods: Interpretation teaching can employ various approaches such as lectures, discussions, case analysis, and role-playing to cultivate students' cross-cultural communication abilities effectively.
- Incorporate modern educational technology: The use of multimedia and the internet can provide abundant learning resources and convenient environments for interpretation teaching, ultimately enhancing students' learning outcomes.
- Emphasize practical teaching: Practical application should be a focal point of interpretation teaching. Field visits, internships, and other hands-on experiences enable students to better understand cross-cultural communication and improve their abilities in this area.
- Create a diverse learning environment: The learning environment plays a significant role in interpretation teaching outcomes. It is crucial to create an inclusive and diverse environment that fosters cultural understanding and communication skills.

By incorporating these strategies, interpretation teaching can better cater to the diverse needs of students and equip them with the necessary skills for effective cross-cultural communication.

Table 1. Diversification of teaching methods and impact on interpretation teaching outcomes

Teaching methods	Impact on Interpretation Teaching Outcomes
Flexible methods	Cultivate students' cross-cultural communication abilities; Enhance students' engagement and understanding; Encourage active participation and critical thinking.
Modern technology	Provide rich learning resources; Facilitate convenient learning environments; Enhance students' access to information and knowledge.
Practical teaching	Improve students' practical application of cross-cultural communication; Enhance students' abilities through real-life experiences; Foster hands-on learning and skill development.
Diverse environment	Enhance cross-cultural communication abilities; Promote understanding and appreciation of diverse cultures; Provide opportunities for cultural exchange and collaboration.

From a cross-cultural perspective, it is necessary to create a diverse learning environment to cultivate students' cross-cultural communication abilities (Gonçalves & Carpenter, 2017). To achieve this, the following points should be considered:

- *Diverse student groups:* By forming student groups with members from different countries and diverse cultural backgrounds, students are provided with more opportunities for cross-cultural communication. This enhances their abilities in this area.
- *Organize cross-cultural exchange activities:* Students should be encouraged to participate in activities such as international academic conferences and cultural salons. These activities allow students to better understand the characteristics and differences of different cultures through actual communication, thereby improving their cross-cultural communication abilities.
- *Foster an open and inclusive learning atmosphere:* It is important to create an open and inclusive learning atmosphere in the classroom. This atmosphere should encourage students to express their opinions and ideas while respecting cultural differences. Such an environment helps improve students' cross-cultural communication abilities.

In summary, strategies for interpretation teaching in English majors from a cross-cultural perspective include enhancing teachers' cross-cultural awareness and abilities, integrating cultural elements into interpretation course design, using diverse teaching methods, and creating a diverse learning environment. These strategies contribute to improving students' cross-cultural communication abilities and their adaptability to the trend of globalization.

4. Analysis of Case Studies on Interpretation Teaching in Higher Education from a Cross-Cultural Perspective

4.1 Case Background and Context Description

The case study focuses on an English major interpreting course in a university, which course primarily consists of local Chinese students and the teacher with extensive experience in teaching interpretation. The objective of this course is to develop students' interpreting skills and cross-cultural communication abilities to adapt to the trend of globalization. The specific context of this case is an interpreting practice session, where the teacher assigns students the role of interpreters for an international conference. The theme of conference is "Environmental Protection and Sustainable Development", and it features government officials, scholars, and representatives from non-governmental organizations from different countries. The students are required to provide real-time interpretation based on the speakers' speeches.

To assist students in successfully completing the interpreting task, the teacher has implemented the following teaching methods and strategies: Firstly, cultural introduction, which means before the course commences, the teacher familiarizes students with the cultural backgrounds, etiquette, and communication styles of different countries. This enables students to better comprehend the content and emotions conveyed in the speakers' speeches, while also enhancing their cross-cultural awareness. Secondly, skills training, which means the teacher provides students with training in interpreting skills, encompassing listening practice, oral expression, and translation techniques. Additionally, practical tips are shared, such as handling speakers' accents and controlling speech pace. Thirdly, practice sessions, multiple practice sessions are organized by the teacher to help students acclimate to the interpreting process and the on-site environment before the conference commences. This also enhances their adaptability. Finally, real-time evaluation, which means throughout the interpreting process, the teacher offers real-time evaluation of students' performance, identifying their weaknesses promptly and providing guidance and suggestions for continuous improvement of their interpreting skills.

4.2 Case Analysis and Reflection

Through the analysis of this classroom practice case, several strengths and weaknesses can be identified. Strengths can be included as cultural introductions have enhanced students' cross-cultural awareness by familiarizing them with the cultural backgrounds and communication styles of different countries. Skills training and practical exercises have improved students' interpreting abilities and adaptability. Real-time evaluation has been beneficial in identifying students' problems and providing guidance for improvement. While the weaknesses can be identified as the difficulty of the interpreting task in this classroom practice is relatively high, which places high demands on students' interpreting skills and adaptability, which may lead to feelings of frustration for some students. The lack of introduction of local cultural elements in the classroom practice may result in insufficient understanding of local culture by students, affecting the development of their cross-cultural communication abilities. There may be some shortcomings in the organization and management of the classroom practice, such as time scheduling and equipment debugging, which may affect students' performance and the quality of interpreting.

Based on the analysis of the above case descriptions and the related advantages and disadvantages, it can be seen that in future interpreting teaching, the difficulty and complexity of interpreting tasks should be adjusted appropriately according to students' actual situations and levels, to avoid feelings of frustration and excessive pressure (Yang, 2020). Additionally, when introducing cultural elements, attention should be paid to maintaining a balance between local culture and foreign culture, helping students better understand and adapt to different cultural communication styles. In terms of the organization and management of classroom practice, attention should be paid to details and efficiency, ensuring the smooth progress of interpreting practice and improving students' interpreting skills and cross-cultural communication abilities.

5. Conclusions

This study explores the teaching of English interpreting in college from a cross-cultural perspective, aiming to provide valuable insights and strategies for interpreting teaching. The research findings indicate that the teaching of English interpreting in college faces many challenges from a cross-cultural perspective, including cultural differences, language proficiency, teaching methods, and insufficient resources. To address these challenges, the study proposes the following strategies which can be included as strengthening cross-cultural awareness. Teachers should guide students to develop correct cross-cultural awareness, respect cultural differences, and cultivate students' ability in cross-cultural communication (Leonardi, 2022). And then, improving language proficiency which means teachers should focus on cultivating students' language proficiency, especially in oral expression and listening skills, to lay a solid foundation for interpreting teaching. Furthermore, adopt diversified teaching methods which means the teacher should use diversified teaching methods according to students' actual situations and the requirements of interpreting tasks, such as cultural introduction, skills training, practice exercises, and real-time evaluation. Besides these above, how to enrich teaching resources also plays an essential part in the whole process. Teachers should continuously enrich teaching resources, including textbooks, faculty, venues, equipment, etc., to provide students with more learning opportunities and practice platforms.

Through this study, the author believes that future research can be expanded in the following areas, including in-depth research on the cultural differences in interpreting teaching, further exploring the differences and challenges of interpreting teaching in different cultural backgrounds, and providing more targeted strategies for cross-cultural interpreting teaching. In addition, it is necessary to explore language proficiency development in interpreting teaching, conduct in-depth research on the role and cultivation methods of oral expression and listening skills in interpreting teaching, and provide effective ways to improve the quality of interpreting teaching. In the process of practical teaching, it is also necessary to improve interpreting teaching strategies, combine various teaching methods based on actual situations, and provide more diverse and comprehensive teaching strategies for interpreting teaching. If conditions permit, the research scope can be expanded from interpreting teaching in English

majors in universities to other fields, such as business interpreting, political interpreting, etc., in order to test the universality of the research conclusions. In addition, it is necessary to increase empirical research, that is, to conduct in-depth exploration of the challenges and strategies in interpreting teaching through case studies, action research, and other methods, in order to improve the credibility and validity of the research. Introduce theories from other disciplines, combine theories from education, linguistics, intercultural communication, and other relevant disciplines, and explore the problems and challenges in interpreting teaching in depth, in order to provide more theoretical support for interpreting teaching. Strengthen international cooperation and communication, promote the development of interpreting teaching in China by learning from advanced ideas and experiences in international interpreting teaching through international academic exchanges and cooperative research. In the era of rapid development of intelligent technology, pay attention to the application of technology in interpreting teaching, explore the application of technology in interpreting teaching, such as online teaching platforms, virtual reality, augmented reality, etc., and provide new approaches and means for interpreting teaching.

6. Acknowledgements

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Research article

The Role of Feedback in Teacher Professional Development

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Abstract: This paper examines how professional development (PD) facilitators obtain feedback about the effectiveness of sessions they facilitate, and to what extent feedback is an integral part of their planning. Three professional development facilitators with varying degrees of experience served as participants in this study. One-on-one semi-structured interviews was used to collect data, and the data were analyzed utilizing an interpretative phenomenological approach (IPA). The findings showed that the participants obtained feedback from teachers using different methods before, during, and after their professional development sessions. The facilitators used feed-back to plan and check the effectiveness of their sessions, and feedback was an integral part of their professional development work.

Keywords: teacher professional development, feedback, effective professional development, facilitators, trainers

1. Introduction

Positive outcomes of professional development on educators have been cited repeatedly in the literature. For example, professional development has been found to advance instruction and student learning (Darling-Hammond & Richardson, 2009; Fishman et al., 2017; Garet et al., 2001; Guskey & Yoon, 2009; Heller et al., 2012; Popova et al., 2022; Voerman et al., 2015). Some researchers focus on factors that make professional development more effective (Fishman et al., 2017; Garet et al., 2001; Guskey & Yoon, 2009; Heller et al., 2012) and have pointed out some key features such as the content relevance, expert support, sustained duration of the PD, and hands-on learning opportunities for teachers that make the teacher professional development effective (Darling-Hammond et al., 2017; Desimone, 2009; Kang et al., 2013; Kennedy, 1998; Mundry, 2005; Shulman, 1998; Thurlings & den Brok, 2017). Among the factors cited in the literature as a key player in the professional development effectiveness equation is feedback (Darling-Hammond et al., 2017; Dickinson & Brady, 2006; Hertz et al., 2022; Snyder & Wolfe, 2008).

Duijnhouwer (2010) defines feedback as "information provided by an external agent regarding some aspect(s) of the learner's task performance, intended to modify the learners' cognition, motivation and/or behavior for the purpose of improving performance" (p. 16). Specific and goal-oriented feedback is the type of feedback that has been found to be the most effective in improving learning among those receiving the feedback (Alder, 2007; Barana et al., 2021; Dawson et al, 2019; Duijnhouwer, 2010; Hattie & Timperley, 2007; Panadero & Lipnevich, 2022; Shute, 2008).

Teachers provide feedback to other teachers in professional development (Hunt et al., 2021). Facilitators' follow-up tasks involve feedback (Catete et al., 2020; Darling-Hammond et al., 2017; Ingvarson et al., 2005; Shortland, 2010). Teachers feel supported and more confident when feedback is provided in a professional development environment (Gubbins & Hayden, 2021; Scheeler et al., 2010; Thurlings & den Brok, 2017). Feedback is viewed as the evidence of PD effectiveness and support in different models of PD (Hertz et al., 2022; Ingvarson et al., 2005; Shortland, 2010). Feedback on various levels of PD is sought to enhance teacher professional development. Teachers reflect on their own instruction through feedback from other teachers and PD facilitators (Chien, 2020; Ingvarson et al., 2005; Kunemund et al., 2022). PD facilitators seek feedback from teachers and other shareholders, such as coaches and administrators, and use the feedback provided to improve professional development.

2. Materials and Methods

2.1 Research Design

A qualitative design was utilized in this study using one-on-one, semi-structured interviews to investigate both how PD facilitators obtain feedback about the effectiveness of their professional development sessions and to what extent the feedback they receive is an integral part of the teacher professional development. Researchers (e.g., Bogdan & Biklen, 2007; Merriam & Tisdell, 2015) state that the qualitative research is used to study a phenomenon in a descriptive manner and do so in a natural setting where participants experience it. Through this, a researcher investigates and wants to know about a participant's perception of experience and, thus, asks questions.

The semi-structured interview format was used in this study because it allows the participants to respond in the manner they choose. It also provides the opportunity for the researcher to examine and compare the participants' responses in contrast (McIntosh & Morse, 2015; Rabionet, 2011). In addition, semi-structured interviews enable reciprocity between the researcher and participants (Kallio et al., 2016) as well as offers the interviewer the flexibility to adapt to the rhythm, flow, and pace of the meeting.

2.2 Participants

The participants in this study consisted of three teacher professional development facilitators selected based on the following criteria: to have served or to be serving as licensed teachers of any subject in the US public school system, and to be currently involved and active in facilitating PD for teachers. Participants had anywhere from 6 to 11 years of experience teaching school subjects and 4 to 20 years of experience facilitating teacher PD in a range of 100 to over 200 PD workshops. They all worked as PD facilitators, including one with a managing position, at a Midwestern educational institution. The convenient sampling method was used to select the participants.

2.3 Data Collection

Data in the current study were collected through semi-structured, one-on-one interviews. The interviews were audio-recorded with the participants' consent. To ensure confidentiality, participants' names were pseudonym-protected, and their details were removed. Face-to-face, one-on-one interviews with each participant were conducted in a single sitting. Interview sessions lasted around 40 minutes and the interviews were audio-recorded with the consent of the participants. The interview protocol had 41 questions seeking information about the participants' professional background, how they facilitated PD sessions, what they did in those sessions, and why they facilitated PD in the way they did. Before the interviews were conducted, the researcher asked the participants to respond to the interview questions based on their perspective of teacher PD. The interview protocol and the consent forms for audio-recording were emailed to the participants before the interviews were conducted.

2.4 Data Analysis

This study adopted an interpretative phenomenological approach (IPA) was utilized to analyze the transcribed interview data. In a phenomenological approach, data analysis involves themes, units, and meanings gleaned from the participants' experiences (Moerer-Urdahl & Creswell, 2004). In addition, IPA researchers focus on how individuals make sense of their experiences (Gill, 2014). The data analysis process in the interpretative method connects the perspectives of both the participant and the researcher (Pietkiewicz & Smith, 2014; Smith, 2004). The data analysis stages, based on Smith et al. (2009) IPA outline that the researcher followed in this study included the following: researcher,

- reading and rereading the first transcript to take notes of possible cluster themes,
- using cluster themes noted from the first transcript to analyze other transcripts and connect themes,
- tabulating the final themes and sub-themes,
- forming a narrative derived from the themes.

3. Results

This study aimed to examine how PD facilitators obtain feedback about the effectiveness of their PD session and to what extent feedback is an integral part of PD planning.

One-on-one interviews with the PD facilitators revealed various aspects of feedback used by them. The three main aspects that the PD facilitators consistently brought up included the timing of feedback, the direction of feedback, and the medium of feedback. (See Table 1.)

Table 1. Three main aspects of feedback

Timing of Feedback	Direction of Feedback	Timing of Feedback
Pre-PD	Planning	Survey
		Website
During PD	Planning & Checking	Observation
		Face-to-Face Communication
Post-PD	Checking	Observation
		Communication w/ coaches

The following is an account of PD facilitators' references to these three aspects of feedback.

3.1 Timing of Feedback

The analysis of the data collected showed that PD facilitators sought feedback about their teacher professional development sessions before the sessions took place; during the PD sessions; and following the PD sessions.

When they receive a call to facilitate PD sessions at a school and learn that teachers need PD, the first thing they do is to organize some type of a needs-assessment to get feedback about teachers' specific PD needs. They do this before they begin PD sessions as is reflected in the following excerpts.

"Well, planning, so I'd like to start with a needs assessment. I think that's probably my …remembering. Just talking and looking at data; so figuring out what is it that they need; coming up with a plan; using my knowledge around engaging adults and motivation." (T1)

"A lot of times in preparation I'll interview folks and I'll send out a survey ahead of time or I'll send out the actual agenda and give them a power point or put it together on a Web site so that they can give me feedback and tell me if I'm on track and if it's not meeting what they think it should do, then I change it." (T3)

During the PD sessions, facilitators obtain feedback from the PD attendees to ensure they are delivering PD to meet the teachers' needs and to timely make necessary adjustments in their PD delivery as revealed in the following responses.

"…I watch body language. I am really intentional about the body language. How are they reacting to me? Do they need a break? Did my directions make sense? Watching the non-verbals between the participants for the same reasons…not only…do I need to change something I'm doing but also like, OK, so what's the culture? Are they OK with each other? How is that effective? And then watching for learning. So, are they getting it or not? Do we need to go back and retry something? Like constantly formatively assessing; and then I do try to model using technology tools. So, I might use electronic sticky notes to ask them for formative assessment and then when we take a break I'm looking at their responses to just figure out if they get it or not get it, what do I need to adjust." (T1)

"So, when I put participants in groups which I do quite frequently, when I give them time to talk at their groups, I circulate the room and what am I listening, I look for 'are they applying it? Do they get it? Or are they confused, trying to clarify?' So, off of that low-inference data, I will also do check points every ten-fifteen minutes or between a topic, I'll say ' ok, turn and talk to your table group, so clarify your thinking, what questions are still surfacing' so then I'll ask them to clarify with their group and when I pull them back together, I'll say 'ok, anything we need to clarify with the whole group?' and I'll give them the opportunity then to clarify with the whole group." (T2)

"I think what I bring to the table is I'd like to ask a lot of questions so that I could find out where they are. Based on where they are in their thinking or their skill set. I try to find out what they think they need and provide opportunities in that classroom to either stretch them in an area that maybe they're not strong in or reinforce an area of strength that they might have." (T3)

Following the PD sessions, the facilitators used various means to get feedback about the effectiveness of the PD. This is demonstrated by the following responses:

"And then, at the end of a session, I always like to do some sort of a check. Check in with them and have them process it and make a commitment. And I try to always ask for some feedback (27:18). Some sort of a survey about the presentation, what they liked, didn't like. Sometimes it's on paper, sometimes it's electronic. It just depends." (T1)

"I typically end with some kind of a recap, review, and I always want feedback. Typically, I am trying to elicit feedback either through a Google form, a follow-up survey or some kind of way for them to give me feedback on how they changed in their thinking and in what they've been able to do." (T2)

"We actually go and visit their schools later on. And they show us what they've been doing and we actually watch them in action and that's been very effective." (T3)

3.2 The Direction (Purpose) of Feedback

The feedback that the PD facilitators obtained before, during, and after the PD sessions served the purposes of planning and checking as shown in the one-on-one interviews. PD facilitators used the collected feedback to either plan their PD sessions relevant to the teachers' needs or check if their PD sessions were effective.

PD facilitators used the feedback they obtained from the teachers before the PD sessions for planning and preparation purposes:

"So, before the session, I try to talk as many people in the district as I can about what are their needs, what are their goals. So, some sort of needs assessment and then planning. I like to, if there's time, kind of present my plan to whoever I talked to and say is this gonna fit the needs, so now, what do we need to change and I also like to engage the staff that's there." (T1)

"So, usually when a district calls to me with a PD request, so, the district will contact me to say 'hey, can you come to talk on this topic?' My follow-up question to them is 'what data do you have to support the idea that you have this need in the district?'" (T2)

"A lot of times in preparation I'll interview folks and I'll send out a survey ahead of time or I'll send out the actual agenda and give'em a powerpoint or put it together on a Web site so that they can give me feedback and tell me if I'm on track and if it's not meeting what they think it should do, then I change it." (T3)

Similarly, the PD facilitators continuously checked if their PD session was working and if they needed to adjust their delivery of PD in their sessions. what the facilitators shared below show how they sought feedback during the sessions:

"The other thing during the session is I watch body language. I am really intentional about the body language. How are they reacting to me? Do they need a break? Did my directions make sense? Watching the non-verbals between the participants for the same reasons…" (T1)

"So, I might use electronic sticky notes to ask them for formative assessment and then when we take a break, I'm looking at their responses to just figure out if they get it or not get it, what do I need to adjust." (T1)

"I circulate the room and what am I listening, I look for 'are they applying it? Do they get it? Or are they confused, trying to clarify?'" (T2)

"Usually, I am reading faces and I'm also looking for cues 'are they off task?' And if they are off task, for example, side-by conversations, checking emails while they are off task, is it because I went too fast when I walked them? Is it because it's not relevant, they already know this? So, I'm trying to collect those clues, too." (T2)

The third type of feedback that the facilitators sought was obtained after the PD sessions, the feedback that the PD facilitators obtained from teachers, instructional coaches, and the school principals provided, as indicated in the responses below, insight about the effectiveness and the impact of PD on teachers' instructional practices and student achievement.

"And then, at the end of a session, I always like to do some sort of a check. Check in with them and have them process it and make a commitment. So like when I use this …check, there is heart and feet. So, they find a partner. So, what's one thing you learned today and how you are feeling about what you learned, and what supports would you need to implement it? Like a red light or like a stop light. What's one practice you are gonna stop about what we learned? What's one thing you are gonna keep doing? What we learned today that validates

it? And then, what something new you are going to try? So, I just try to have some sort of a processing tool that acknowledges like what did you get out of this. What are you coming through before the trying?" (T1)

"And then, at the end of a session, what I also try to do is some sort of a follow up with whoever asked me to come. So, if it's principal or coach, it would be like OK so, in a month, can I come with you to walkthroughs and see how it's going or in two weeks, they are going to email, so what…what is the next step?" (T1)

"I typically end with some kind of a recap, review, and I always want feedback. Typically, I am trying to elicit feedback either through a Google form, a follow-up survey or some kind of way for them to give me feedback on how they changed in their thinking and in what they've been able to do." (T2)

"I think if…one way I know it's effective is when I come back and see those people later or visit their school and I see it in action. It's been effective." (T3)

3.3 The Medium of Feedback

The method of obtaining feedback, for PD facilitators, from teachers and schools participating in the PD sessions varied. The excerpts below show how, before the PD sessions began, the PD facilitators used technology to obtain feedback for needs assessment purposes, they communicated with school administrators or visited their schools:

"So, before the session, I try to talk as many people in the district as I can about what are their needs, what are their goals. So, some sort of needs assessment and then planning. I like to, if there's time, kind of present my plan to whoever I talked to and say is this gonna fit the needs, so now, what do we need to change and I also like to engage the staff that's there." (T1)

"So, usually when a district calls to me with a PD request, so, the district will contact me to say 'hey, can you come to talk on this topic?' My follow-up question to them is 'what data do you have to support the idea that you have this need in the district?' (T2)

"A lot of times in preparation I'll interview folks and I'll send out a survey ahead of time or I'll send out the actual agenda and give'em a powerpoint or put it together on a Web site so that they can give me feedback and tell me if I'm on track and if it's not meeting what they think it should do, then I change it." (T3)

During the PD sessions, PD facilitators often observed the participant teachers in the group and used their observation as feedback about how the teachers were benefiting from the PD sessions.

After the sessions, PD facilitators collaborated with administrators and instructional coaches to visit and observe the teachers in the classrooms; they used technology to give out surveys on how effective the PD sessions were; and communicated with school administrators for further PD plans. The following two responses highlight what the facilitators said they do:

"And I try to always ask for some feedback (27:18). Some sort of a survey about the presentation, what they liked, didn't like. Sometimes it's on paper, sometimes it's electronic. It just depends." (T1)

"Usually because I work with certain districts, we can do a follow-up session. So, if that's an option, absolutely we will do a follow-up. Sometimes, a follow-up is actually not me coming back, that might be me working with an instructional coach in this school." (T2)

4. Discussion

This study aimed to answer two research questions: (1) How do PD facilitators obtain feedback about the effectiveness of their PD sessions? and (2) to what extent is feedback an integral part of PD planning? The results for each question are discussed next.

4.1 How the PD Facilitators Obtain Feedback

One-on-one interviews with the professional development facilitators showed that PD facilitators obtained feedback, about the effectiveness of their PD sessions, from teachers participating in the PD sessions, from the instructional coaches at schools, and the school administrators. Prior to facilitating a PD, facilitators sought feedback from the schools about the type of professional development they want. They used technology to obtain feedback through surveys first, and then visited the schools to check with the teachers about their

specific instructional needs. PD facilitators used this initial feedback for planning purposes. They wanted their PD sessions to address teachers' needs rather than delivering generic, general PD. During the PD sessions, PD facilitators closely observed teachers and created various in-session opportunities for the teachers to share their thoughts about the PD sessions. In turn, the facilitators used the feedback they obtained during the PD sessions to check if the teachers were engaged, and if they found the PD sessions satisfactory. They used the teachers' feedback to make timely and necessary adjustments in their PD delivery. After the PD sessions, the PD facilitators communicated with the instructional coaches and administrators at schools to check the effectiveness of the PD they delivered. They visited schools and observed teachers' instructional practices in their own classrooms. PD facilitators also used follow-up surveys for teachers to obtain post-sessions feedback.

The findings showed that PD facilitators obtained feedback for the PD sessions before the sessions began, when they delivered the PD, and after the PD sessions. PD facilitators used various means to obtain feedback: they used technology to give out surveys, they observed the participant teachers during the PD sessions and in their own classrooms following the PD delivery, they organized meetings with the teachers in person at schools, and the PD facilitators also communicated with the instructional coaches and the administrators at schools.

The findings of this study are in line with the research (Hertz et al., 2022; Darling-Hammond et al., 2017; Bates and Morgan, 2018; Nese et al., 2020; Nordgren et al., 2021) available in the relevant literature to underline that the feedback is an essential part of teacher professional development. For example, Darling-Hammond et al. (2017) stated in their study that feedback is an indispensable part of effective PD. Bates and Morgan (2018) listed feedback among the elements of effective PD. The researchers (Hertz et al., 2022; Bates and Morgan, 2018) stated that, as opposed to one-time PD sessions, the sustained PD efforts promoted feedback continuously. Nese at al. (2020) used participant feedback actively to ensure the effectivity of online PD efforts. Nordgren et al. (2021) explored the teacher PD and emphasized the importance of feedback, both to students while teaching and to the colleagues as part of the professional learning community.

Some researchers (Hertz et al., 2022; Bates & Morgan, 2018; Darling-Hammond et al., 2017; Dickinson & Brady, 2006; Snyder & Wolfe, 2008) pointed out that feedback is among the key characteristics of effective PD. Feedback ensures relevance to the needs and practices of teachers in the classroom and it makes the PD more sustainable

4.2 Feedback as an Integral Part of PD Planning

Findings of this study showed that the PD facilitators obtained and used feedback for the PD sessions at three stages of their delivery: before the PD sessions started, during the PD delivery, and following the PD sessions. As stated by one of the PD facilitators interviewed, the feedback obtained prior to the PD sessions was used for planning purposes: "Well, planning, so I'd like to start with a needs assessment. I think that's probably my ….remembering. Just talking and looking at data; so figuring out what is it that they need; coming up with a plan; using my knowledge around engaging adults and motivation." (T1)

PD facilitators planned to address the instructional needs of the participant teachers, so, the facilitators wanted to design a PD delivery with relevant content, not just a generic one. The content relevance is included among the key features that make teacher PD effective (Hertz et al., 2022; Darling-Hammond et al., 2017; Desimone, 2009; Kang et al., 2013; Kennedy, 1998; Mundry, 2005; Shulman, 1998; Thurlings & den Brok, 2017). Thus, considering the effectiveness of PD relies on a relevant content, it can be said that feedback seems to be an integral part of PD planning, based on the findings of this study.

5. Conclusions

Teachers' working hours at schools include considerable amount of PD. Organization for Economic Cooperation and Development TALIS survey (2018) showed that all teachers were required to have professional development within their working hours in all participating countries. Feedback in teacher professional development is needed in order to ensure that the valuable time teachers spend in PD sessions is productive and fruitful and teachers are more adept in their instructional practice. This, in turn, promotes learning and maximizes

students' academic performance. Also, feedback makes PD a training opportunity that teachers look forward to rather than generic sessions that they begrudgingly attend.

Facilitators may elicit feedback in different forms in PD. To ensure the PD is planned to address the needs of the teachers, pre-PD interest surveys may be used before the PD sessions begin. Involving the participant teachers in the PD process and enabling a continuous check and feedback cycle may be useful for facilitators. Facilitators may use such feedback to tune their PD sessions, based on immediate responses teachers provide. Following the PD sessions, feedback may be obtained through surveys again to check the teachers' opinion of the PD sessions. Some online tools such as blogs may be set up to enable teachers to have a continuous discussion, thus feedback, on PD. Feedback about the effectiveness of PD may be elicited not only from the teachers but also from administrators and instructional coaches, in addition to checking the student learning.

Thus, surveys may be the tools available to the facilitators to obtain feedback about the PD. Future studies may focus on the role of feedback among teachers to make professional development more effective, how collaboration among teachers in PD contribute to providing feedback through digital tools, and the facilitators' follow-up strategies to obtain feedback on PD from teachers and the schools

Institutional Review Board Statement: The study has been approved by the UNI IRB, effective 2/26/18. The study has been approved in the following category: Expedited 6.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflict of interest

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Short report

Misconceptions about Science Concepts in Traditional Fairy Tales

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Abstract: Fairy tales, cherished for generations, often incorporate elements of magic and wonder. While not intended to be scientific, they sometimes introduce misconceptions about fundamental science concepts. This paper explores common misconceptions about science found in traditional fairy tales, aiming to shed light on how these stories may contribute to a misunderstanding of scientific principles and the potential consequences of perpetuating such misconceptions.

Keywords: misconceptions, science, fairy tales

1. Introduction

Fairy tales have played a significant role in human culture for centuries. These stories, characterized by imaginative narratives, mythical creatures, and moral lessons, provide a rich source of entertainment and cultural heritage. A lot researchers agree that children's literature, including picture books, fiction, and non-fiction books, can be used in science teaching and learning (Monhardt & Monhardt, 2006; Morrow et al., 1997). The characteristic difference between fiction and non-fiction sources is the reader's transportation into the world of the narrative (Gerrig, 1993). However, beneath the enchanting tales, there are instances where fairy tales deviate from scientific facts and introduce misconceptions about various science concepts. Errors and inaccuracies in stories can act as a means of misinforming the world. Empirical studies have concluded that errors and inaccuracies in children's books, especially fiction books, create alternative ideas in children (Mayer, 1995; Rice, 2002). Only a few studies have been conducted on children's books to examine the accuracy of their scientific content (Ford, 2006). The literature review identified only two studies that examined children's literature books for their accuracy on astronomy-related topics. Trundle and Troland (2005) and Trundle et al. (2008), therefore, evaluated 80 children's books that focused on the moon and found that many needed to represent it accurately. studies in the field of reading have concluded that children, especially young children, learn not only the correct information but also the errors embedded in the content of the stories (Fazio & Marsh, 2008; Marsh et al., 2003). Kazemek et al. (2004) investigated how children's literature and culture, in general, influence children's thinking, focusing primarily on ideas about the moon. Recently, some searches have investigated the misconceptions about science concepts in children's books. Kazantzidou, & Kotsis, on 2023a found Errors and inaccuracies about celestial bodies in the Greek texts of children's fiction books about atmospheric pollution. The same researchers (Kazantzidou, & Kotsis, 2023b) found misconceptions on the representations of the celestial bodies in fairy tale texts. In addition (Kazantzidou, & Kotsis, 2023c; Kazantzidou, & Kotsis, 2023d) they examine the ozone layer depletion in children's books available in Greece: examining accuracy in the representation of causes of ozone layer depletion in texts.

While it is crucial to remember that fairy tales are works of fiction, they can unintentionally foster misunderstandings about fundamental scientific principles. This paper explores some of the most common misconceptions in traditional fairy tales and examines their potential implications on our understanding of science.

2. Misconceptions

Traditional fairy tales, such as those penned by the Brothers Grimm and Charles Perrault, have enchanted readers for centuries. These stories often feature magical elements, mythical creatures, and moral lessons that resonate with people of all ages. However, beneath the

enchantment lies a trove of misconceptions about the natural world, particularly in physics. This paper aims to identify, analyze, and categorize these misconceptions in popular fairy tales, shedding light on how these narratives shape our understanding of the physical world. By examining key examples, we hope to demonstrate the importance of promoting scientific literacy and fostering a more accurate understanding of the physical universe

2.1 Instantaneous Transformation in Fairy Tale

Fairy tales are renowned for their magical and fantastical elements, and one of the most common misconceptions they propagate is the notion of instantaneous transformation. This phenomenon is frequently depicted when characters like Cinderella experience radical and immediate changes in their circumstances or appearances through magical means. While this concept adds a sense of wonder and wish fulfillment to these narratives, it also challenges our understanding of biological processes, chemistry, and the laws of nature.

One of the quintessential examples of instantaneous transformation can be found in the story of Cinderella. In this tale, Cinderella, a downtrodden and poorly dressed young woman, undergoes a remarkable transformation at the hands of her fairy godmother. In an instant, her tattered clothes are replaced with a stunning ballgown, and her pumpkin carriage becomes a majestic carriage fit for a princess. This seemingly miraculous transformation occurs with the mere wave of a wand.

The portrayal of instantaneous transformation in fairy tales contradicts the fundamental principles of biology and chemistry. Biological processes such as growth, development, and healing require time and specific conditions. Similarly, chemical reactions involve rearranging atoms and molecules, which follow precise pathways and kinetics. These processes are governed by the laws of thermodynamics and kinetics, which dictate that transformations must obey specific rules and occur over measurable periods.

The danger in perpetuating the misconception of instantaneous transformation is that it can lead to misunderstandings among young readers or viewers, particularly in science education. When exposed to fairy tales from a young age, individuals may develop unrealistic expectations about biological, chemical, and physical changes occurring in the real world. This can hinder their grasp of scientific concepts, as they may come to believe that instant transformations are possible without considering the underlying mechanisms.

Furthermore, this misconception can have implications beyond the realm of science education. It may influence individuals' perceptions of self-improvement, making them less patient and more inclined to seek immediate results in various aspects of life, from personal development to career advancement.

It is important to emphasize that fairy tales are not meant to be scientific treatises; they are works of fiction designed to captivate and entertain. However, it is equally important to recognize the potential consequences of perpetuating misconceptions about the laws of nature in these stories.

To strike a balance between the magic of fairy tales and the need for scientific literacy, educators and storytellers can take a more proactive approach. They can encourage critical thinking and curiosity about the natural world, guiding young minds to differentiate between the enchanting narratives of fiction and the factual basis of science.

In conclusion, the portrayal of instantaneous transformation in fairy tales challenges our understanding of biology, chemistry, and the laws of nature. While these misconceptions charm the narratives, they can distort perceptions of reality, particularly among young audiences. By promoting scientific literacy and fostering critical thinking, we can ensure that the wonder of fairy tales coexists harmoniously with an accurate understanding of the natural world.

2.2 Communication with Animals in Fairy Tales

Fairy tales frequently depict characters with extraordinary ability to communicate with animals effortlessly. Snow White, for example, converses with forest creatures as if they were human beings. While human-animal communication is a subject of scientific study, it is far more intricate and nuanced than the straightforward portrayals in fairy tales.

In countless fairy tales, the notion of humans having the capacity to communicate fluently with animals is presented as a matter of course. Snow White can summon woodland creatures to help her with household chores, and Cinderella seeks advice from her friendly mice friends. These portrayals enchant audiences, fostering a sense of wonder and interconnectedness with the natural world.

Animal communication is an intricate field of study encompassing many behaviours, signals, and mechanisms. Scientists who study animal behaviour, ethologists, and animal communication specialists dedicate their careers to understanding how different species communicate within their societies and with other species.

Animal communication involves many sensory modalities, including visual signals, vocalizations, chemical cues, and tactile interactions. These communication systems have evolved over millions of years and are often species-specific, tailored to each species' unique needs and constraints. Moreover, decoding and interpreting these signals can be challenging, as they vary in context and meaning.

The depiction of effortless human-animal communication in fairy tales can lead to misconceptions about the complexities of animal behaviour and communication in the real world. It may give rise to unrealistic expectations, such as the belief that humans can effortlessly communicate with and control wild or domesticated animals without understanding their natural behaviours, instincts, and limitations.

Furthermore, this misconception may hinder efforts to study and conserve wildlife effectively. When individuals believe that communicating with animals is as simple as depicted in fairy tales, they may underestimate the necessity of careful research and observation in understanding and protecting animal species. Conservation efforts require a deep understanding of animal behaviour, habitat requirements, and ecological interactions, which cannot be achieved through simplistic notions of communication.

While fairy tales are cherished for their ability to inspire wonder and imagination, it is important to balance their enchanting narratives and the need for a realistic understanding of animal behaviour and communication. Educators and storytellers can use these tales as a starting point for discussions about the complexities of the natural world.

Encouraging scientific literacy and fostering an appreciation for the intricacies of animal behaviour can help individuals develop a more nuanced and accurate understanding of their relationships with animals. By promoting respect for wildlife and emphasizing the importance of conservation efforts, we can ensure that the wonder of fairy tales coexists harmoniously with a deep and realistic appreciation for the animal kingdom.

2.3 Unrestricted Magical Potions in Fairy Tales

Fairy tales frequently feature magical potions and elixirs as key plot devices, enabling characters to heal, transform, or accomplish extraordinary feats. While these fantastical concoctions add an element of wonder and enchantment to the stories, they often lack the scientific rigour and safety protocols observed in the real world, especially in pharmaceuticals and drug development. The portrayal of these magical potions in fairy tales can inadvertently convey that creating potent substances is as simple as mixing ingredients in a cauldron. This misconception may lead to misunderstandings about the complexities and safety precautions involved in drug development and the potential dangers of using untested substances.

Magical potions have been a staple of folklore and mythology throughout history. These elixirs often possess miraculous properties, such as healing the sick, granting superhuman strength, or transforming individuals into animals or inanimate objects. In fairy tales, the creation and use of these potions are depicted as relatively straightforward, often involving the brewing of various ingredients and the recitation of incantations.

In the real world, drug development and the creation of pharmaceuticals are highly regulated and scientific processes. Developing safe and effective medications involves rigorous research, clinical trials, and adherence to strict safety standards. Scientists and researchers must thoroughly test potential drugs for efficacy and safety, considering factors such as dosage, side effects, and interactions with other medications.

Pharmaceutical companies invest significant time and resources in researching and developing new drugs, often taking many years to bring a single medication to market. This process includes pre-clinical testing in laboratories, followed by a series of clinical trials involving human subjects. Regulatory bodies, such as the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA), oversee and approve these drugs based on extensive scientific evidence.

The portrayal of magical potions in fairy tales as readily available, quick-fix solutions can contribute to misconceptions about the safety and efficacy of real-world medications. People exposed to such narratives may develop unrealistic expectations about the development and use of pharmaceuticals. This can lead to dangerous behaviours, such as self-medicating with untested substances or neglecting prescribed medications in favour of purported "magical" remedies.

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Additionally, the oversimplification of potion-making in fairy tales may trivialize the importance of scientific research and rigorous testing. Individuals must understand that creating safe and effective medications involves a meticulous and evidence-based approach to ensure their efficacy and safety.

To mitigate the potential harm caused by the misconception of magical potions, educators and storytellers can use these tales to discuss the importance of scientific rigour and safety in drug development. Encouraging scientific literacy and critical thinking can help individuals distinguish between the imaginative world of fairy tales and the evidence-based practices of the real world.

By fostering an appreciation for the complexities of drug development and the importance of regulatory oversight, we can ensure that individuals make informed decisions about their health and well-being. Ultimately, the wonder and magic of fairy tales can coexist with a realistic understanding of the processes involved in pharmaceutical research and development

2.4 Inanimate Objects with Sentience in Fairy Tales

Fairy tales often weave captivating narratives in which inanimate objects come to life, exhibiting human-like emotions and personalities. A classic example of this can be found in "Beauty and the Beast", where the castle's objects, such as the talking candlestick Lumière and the singing teapot Mrs. Potts, possess sentience and the ability to interact with the story's characters. While this concept adds a layer of enchantment to these tales, it challenges our understanding of consciousness and the fundamental nature of life.

The idea of objects with sentience has fascinated storytellers and audiences for centuries. In fairy tales, this concept allows for a magical world where everyday objects become characters in their own right, contributing to the plot and often providing comedic relief. These sentient objects may exhibit a range of emotions, desires, and even interpersonal relationships, blurring the lines between the living and the non-living.

The portrayal of inanimate objects with sentience in fairy tales challenges our understanding of consciousness and life. In the real world, consciousness is a complex and highly debated topic in philosophy, neuroscience, and psychology. It remains a mystery how and why certain organisms, such as humans, possess subjective experiences, thoughts, and emotions while inanimate objects lack these attributes.

Furthermore, the concept of objects exhibiting emotions and consciousness in fairy tales may complicate discussions in scientific fields like artificial intelligence (AI) and robotics. These fields aim to create machines and algorithms that simulate human-like intelligence and emotions. While AI and robotics have made remarkable advancements, developing true sentience and consciousness remains a profound challenge that is not as easily achieved as depicted in fairy tales.

The perpetuation of the misconception of sentient objects in fairy tales may lead to confusion, particularly in discussions about the criteria for consciousness and the boundaries between the living and non-living. It can create unrealistic expectations about the capabilities of AI and robots, potentially leading to misunderstandings about the ethical implications of AI and the nature of human-machine interactions.

To address these potential misunderstandings, educators and storytellers can use fairy tales to discuss the nature of consciousness, life, and the ethical considerations surrounding AI and robotics. Encouraging critical thinking and emphasizing the distinction between fiction and reality can help individuals navigate the complexities of these topics.

Moreover, it is important to foster an appreciation for the ethical challenges posed by the development of AI and robots that exhibit advanced levels of intelligence and emotional simulation. These discussions can lead to a more informed and responsible approach to AI and robotics, ensuring we continue advancing technology while respecting consciousness and life's unique attributes.

In conclusion, the portrayal of inanimate objects with sentience in fairy tales adds enchantment to these stories but challenges our understanding of consciousness and life. By promoting critical thinking and ethical discussions, we can navigate the potential confusion and ethical dilemmas arising from this misconception, allowing us to appreciate the magic of fairy tales while engaging in informed and responsible debates about the future of AI and robotics.

3. Implications

Fairy tales have long been cherished for their ability to transport us to magical worlds, ignite our imaginations, and impart valuable life lessons. These enchanting narratives, filled with fantastical elements, are significant in our cultural heritage. However, it is important to recognize that fairy tales are not intended to be scientific treatises or factual accounts of the natural world. Nevertheless, the potential consequences of perpetuating misconceptions about science in these tales should not be underestimated.

Misconceptions about science concepts in fairy tales can have far-reaching implications, influencing how individuals perceive and interact with the world around them. The paper has examined several common misconceptions in fairy tales, including instantaneous transformations, communication with animals, magical potions, and sentient objects. While serving the narrative and imaginative purposes of fairy tales, these misconceptions can foster a lack of appreciation for the depth and complexity of scientific fields.

The influence of these misconceptions extends beyond the realm of storytelling. They can shape decision-making in various aspects of life, from education to public policy. For example, misconceptions about instantaneous transformations may lead individuals to seek quick fixes and immediate results, potentially affecting their approach to personal development and career goals. Misunderstandings about communication with animals may hinder effective wildlife conservation efforts, as they oversimplify the complexities of animal behaviour.

Furthermore, the portrayal of magical potions may contribute to the rise of alternative medicine practices and the use of untested substances, potentially compromising individuals' health and well-being. Lastly, the misconception of sentient objects may impact discussions in fields like artificial intelligence and robotics, potentially leading to unrealistic expectations about these technologies' capabilities and ethical considerations.

In recognizing the potential consequences of these misconceptions, it is essential to balance the magic of fairy tales and the need to promote accurate scientific understanding. Fairy tales can continue to captivate and inspire, but they can also serve as starting points for discussions about the natural world and the scientific principles that govern it.

Encouraging critical thinking and curiosity about the natural world can help mitigate the potential harm of these misconceptions. Educators, parents, and storytellers can play a pivotal role in guiding young minds to differentiate between the imaginative narratives of fiction and the evidence-based practices of science.

5. Conclusions

In conclusion, fairy tales are integral to our cultural heritage, weaving magical narratives that capture our hearts and minds. However, it is crucial to acknowledge that they are not scientific documents, and their fantastical elements can introduce misconceptions about scientific concepts. By promoting scientific literacy, critical thinking, and an appreciation for the complexities of the natural world, we can ensure that future generations continue to enjoy the enchantment of fairy tales while embracing the wonder of scientific discovery. Balancing the magic of storytelling with a firm grasp of scientific reality allows us to appreciate the richness of both worlds.

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Action research

Effects of ADDIE Model as an Instructional System Design for Senior High School Students in Natural Science through Alternative Delivery Learning

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Abstract: The nature of science learning is to teach students to be involved in the investigation. Investigations in science can help improve the performance and skills of students. The purpose of this study is to plan to design instructional strategies after crafting the Sustainability Action Plan in the school context. Specifically, it attempts to answer the following research objectives: (1) To determine the pretest and post-test scores of the experimental group after their exposure to the ADDIE model in teaching natural science, and (2) To determine the significant improvement in the students' scores before and after exposure of the ADDIE model. Using a quasi-experimental design with non-probability sampling, the two experimental groups (n=30) per section taking up General Chemistry 2, and General Physics 2. The results revealed that the respondents obtained closer mean values of the pretest (M=10.80, M=9.03) but the mean value of the post-test for General Chemistry is greater than General Physics (M=23.00, M=12.27). Likewise, there is no significant difference in improvement between the means of General Physics (t =1.8959; p=0.0630) compared to General Chemistry which is significant (t = 13.6640; p=0.0001) when tested at α 0.05. The data suggest that students need a strong focus on the competencies taken from the modules on whatever modalities of learning are utilized. A parallel study is recommended to enhance the students' problem-solving skills at the junior high school level to establish the effectiveness of ADDIE Model.

Keywords: effectiveness, learning modality, science, ADDIE model

1. Introduction

The nature of science learning is to teach students to be involved in the investigation. Investigations in science can help improve the performance and skills of students. They are carried out by discussing such conversations (as related to activities and direct observations designed to trigger students' curiosity, investigative science skills, observation, data recording, data analysis, and conclusion drawing. From the results of these investigations, Kurniawan et al. (2011) emphasized that there will be a learning desire for students so they can improve students critical thinking skills toward science subjects.

The study of Akerson et al. (2011) has shown that students do not have an adequate understanding of the nature of science (NOS) by the time they exit high school, there is also evidence that they have not received NOS instruction that would enable them to develop such understandings. In addition, Handrianto et al. (2021) pointed out the design of instructional strategies which is expected to build a relationship between learning theory and practice in the instructional system. Certainly, there are at least four basic elements in instructional strategies which include the characteristics of students, objectives, instructional design, and evaluation procedures.

Indeed, instructional design has played an integral role in the education and corporate sectors since its inception. Technology has greatly influenced various instructional design factors, including learners' and instructors' beliefs about knowledge, instruction, and learning. According to one industry trends report on instructional design, for instance, emerging technologies and concepts, such as gamification, virtual reality, and artificial intelligence continue to have an impact on the learning process (Bouchrika, 2023).

Hess and Greer (2016) used the ADDIE instructional design framework to build an iteration of a credit-bearing information literacy course. The phases of analysis, design, development, implementation, and evaluation were used to integrate current e-learning best practices and several of the colleges' and universities' high-impact practices to increase student engagement and make real-world applications. From the authors' experience, other academic librarians may find applications for instructional design constructs in their own teaching practices, both in online and face-to-face learning environments.

ADDIE model proved itself as a very useful instructional model in the preparation of materials for traditional teaching and there is a strong intention to use this model for electronic and online teaching materials. There is also an increase in student learning outcomes by looking at the comparison of pre-test and post-test results when the ADDIE Instructional Model was systematically used in developing a Production-based BPBL Model (Drljača et al., 2017; Adri et al., 2020).

According to participants' opinions about visual, sound, and interaction variables containing educational materials shows that; the ADDIE model is a suitable method for the produce e-learning materials and is an applicable method for adult education. Adult individuals have autonomy, so they want to be independent of the instructional materials (Gökkaya & Güner, 2014). Likewise, the effectiveness of this design has been measured, and results in both groups in this study were compared, the experimental group showed statistically significant in students' performances (Alnajdi, 2018).

Moreover, Almelhi (2021) examines the effectiveness of the ADDIE model as used in teaching online in the LMS of Blackboard® and its facilities such as discussion boards, forums, and blogs for improving the creative writing skills of EFL college students. Results demonstrated that there were statistically significant differences between the mean scores gained by the experimental group and those obtained by the control group writing performance post-testing to the good of the experimental group participants.

Subsequently, several studies concluded that respondents' performance increased when ADDIE Model was introduced and employed. Asuncion (2016) affirms that student activities like multimedia projects shall continuously be provided to polish collaboration, creativity, curiosity, and sense of adventurism that would lead to students' holistic development and not deteriorate good learning qualities of the students. Notwithstanding, Sarkodie (2023) expanded the stages of the ADDIE Model to include the "reflection component". It has provided empirical evidence on the effect of reflection processes on students' academic performance and ex-panded the literature on hospitality education. Azimi (2015) reported that the studies trained by ADDIE model have high scores mean compared to the students learning Futsal by the tradi-tional method of key skills.

On the other hand, the study of Ali (2021) indicated among others that students taught using Dick and Carey Model performed academically higher in Motor Vehicle Mechanics Work than their counterparts taught using the Addie Instructional Model. According to Quinn as cited in Chen (2016) the disadvantages of ADDIE include that the analysis step is not broad enough in the design process; the model is too linear and not flexible; and it does not encourage inspiration. Nevertheless, it provides structured guidance for design, serving as a valuable checklist to ensure a solid course design, and including a great focus on implementation and evaluation

Meanwhile, the Department of Education (DepEd) has reminded school heads that they are authorized to suspend in-person classes and implement alternative learning methods to ensure the safety of students, teachers, and non-teaching personnel amid the scorching heat. Head on the news of the country reported that DepEd issued a memo to public and private schools on April 20 reminding them that they are authorized to suspend face-to-face classes and shift to alternative delivery modes. Accordingly, the current DepEd spokesperson Michael Poa informed all citizens that schools have different situations. Thus, school heads should determine what learning mode is best for them (Malonzo, 2023; Ombay, 2023).

In the local setting, most of the secondary students in Don Sergio Osmeňa Sr. Memorial National High School science classes are not exposed to instructional designs scientifically. Their Mean Percentage Score (MPS) from the third periodic performance falls on the below average to satisfactory level as reflected on the School Monitoring Evaluation and Adjustment (SMEA). Indeed, only one science teacher from the senior high school department had conducted action research on manipulative skills intended for STEM students only in the current school year. With the explosive technologies, traditional teaching could not be effective. Therefore, adopting and utilizing computer and communication technology in education became the most important to make learning more active in the new normal, but before utilizing

technology in education, teachers need to ensure of suiting the technology with the students' abilities and characteristics based on ADDIE Model.

For this purpose, the researchers plan to design instructional strategies after crafting the Sustainability Action Plan in the school context as it helps science teachers to analyze, design, develop, implement, and evaluate the teaching and learning activities to mitigate the poor performance of the students based on the results of the study.

This study aims to determine the effectiveness of the ADDIE Model through alternative delivery learning. Specifically, it attempts to answer the following research objectives:

1. To determine the pretest and post-test scores of the experimental group after their exposure to the ADDIE model in teaching natural science;

2. To determine the significant improvement in the students' scores before and after exposure to the ADDIE model in teaching natural science; and

3. To recommend a sustainable action plan based on the results of the study

Statement of Hypotheses concerns:

H1: There is no significant improvement in the Grade 11 STEM students' scores before and after exposure to the ADDIE model of teaching natural science

H2: There is no significant improvement in the Grade 12 STEM students' scores before and after exposure to the ADDIE model of teaching natural science

In this study, an interactive lesson was designed based on ADDIE Model. Students will be divided into two groups; the STEM classes from senior high school levels comprising Grade 11- Athena and Grade 12- Syzygy sections will be exposed as an experimental group with 30 students per section to evaluate the effectiveness of using the interactive lesson and its role in enhancing students' learning performance. The lesson had several stages; starting from having a useful design based on ADDIE Model, then providing a demo to the students to understand the knowledge. After that, the lesson will be presented in an interactive way, assistance hints provided to students during their learning process, and reviewing the initial demo are available for the whole lesson.

Since most students in the respective classrooms walked with a wide range of abilities, the researchers find ways to meet the needs of all students, including those with learning and thinking differences using the ADDIE model as an intervention. The Key takeaways (1) mapping out ideas using pictures and charts is especially effective with struggling students; (2) strategies that involve memorizing phrases help students remember concepts longer.; and (3) when students use all their senses, they remember the material better.

In Figure 1, the ADDIE Model helps researchers to design instructional strategies to apply in teaching-learning situations. It is a flexible guideline that allows teachers to get feedback from the students and provide continuous assessment
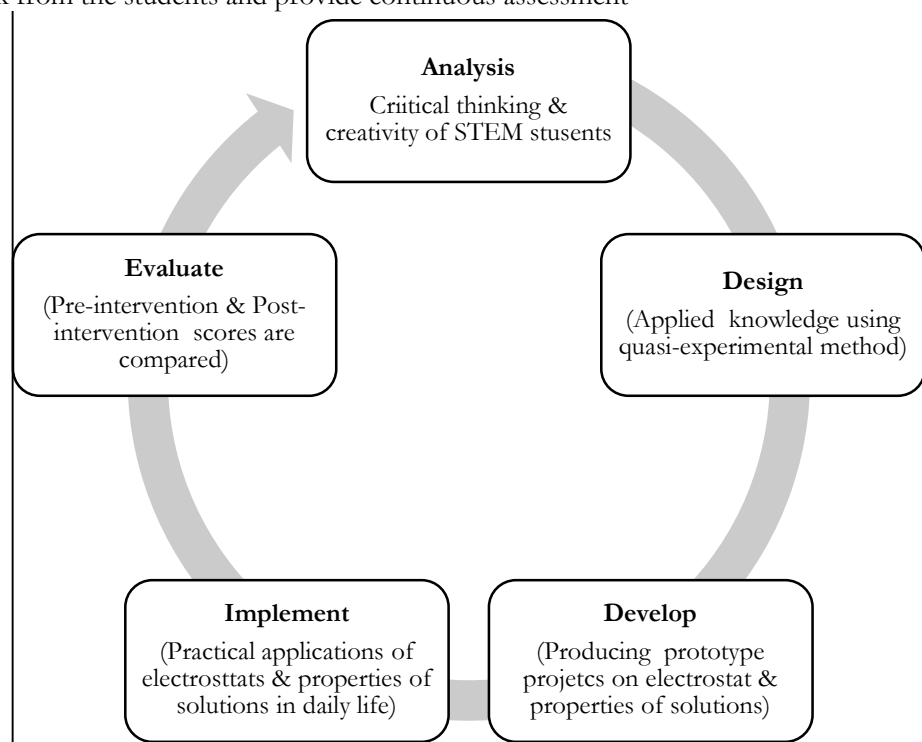

Figure 1. Framework of the Study

This model is an effective support tool to improve teaching competency among secondary school students. Through this model, teachers can analyze the learning needs of students in their classrooms (Hadrianto et al., 2021). In phase of analysis, teachers can investigate students, content, task, and several factors that can influence the instruction. In phase of design, teachers should be able to design teaching plans based on the students' needs. Teachers should address how the instructional goals and objectives to form strategies. In phase of development, teachers develop a tool process to create a new method and approach to deliver learning materials. In phase implementation, teachers do execution of the materials and create effective classroom management by involving students in learning activities. In phase evaluation, teachers can evaluate at what levels the students` understanding to their learning in formative and summative assessments. Based on the evaluation, teachers are allowed to revise an effective instructional strategy for future improvement. It is a part of the cycles of teaching competency of teachers by adapting ADDIE Model in the teaching-learning process.

Consultation and approval from the school research council, as well as the Learning and Development Coordinator, were sought since the planning, implementing, monitoring, and evaluating will be conducted during the In-service Training (INSET) and Learning Action Cell (LAC) sessions for two rounds once the creative investigation will be approved by the School Governance and Operations Division (SGOD) of the Division of Cebu City. The planning and research section gave the appropriate action as to its technical assistance and is able to implement sustainable programs and projects to help schools establish and manage a conducive learning environment and ensure learner readiness to learn.

2. Materials and Methods

This study used a quasi-experimental design to establish a cause-and-effect relationship between an independent and dependent variable. This design involved selecting participants based on a specific cutoff point on a continuous variable, such as a test score. Participants on either side of the cutoff point are then compared to determine whether the intervention or event had an effect. The two experimental groups of senior high school students were exposed using the ADDIE model comprising 30 sample sizes from STEM for every section of students from Grade 11 Athena who are currently taking up General Chemistry 2 and Grade 12 Syzygy taking up General Physics 2. In other words, a non-probability sampling technique is used in this research to select individuals or groups of individuals that meet specific criteria relevant to the research question or objective.

Specifically, the researchers had selected the participants who are experts in a particular field or subject matter. Both heterogenous groups were purposively sampled and subjected to pretest and posttest through ADDIE model as an intervention. This was administered starting May 2023 right after the third grading. The laborious participants are the senior high school students due to good evidence that they are representatives of the total sample of 60.

An instructional plan was utilized that covers the concepts of different subject areas with the adapted cognitive process dimensions with the use of descriptive statistics including mean, frequency, percentage, and ranking. The researcher a validation of the pretest with other classes that were not included in the study. This process determined if the pre-test administered to the participants was acceptable in content validation and its format. This was also examined by the master teachers and school principals in case they would suggest some revisions that would improve the validity of the assessment tool.

The data that were utilized in this action research are categorized into two. For Grade 11, the topics covered are properties of solutions, solubility, and the stoichiometry of reactions in solutions. The learners were able to use different ways of expressing the concentration of solutions: percent by mass, mole fraction, molarity, molality, percent by volume, percent by mass, ppm. The instructional materials to be used will be Module 3 Week 4 (n.d.) Properties of Solutions with a duration of 2 class periods / 120 minutes.

Furthermore, the Grade 12 were also exposed to ADDIE model in General Physics 2 covering the topic of Electrostatics and Coulomb's Law. The students were expected to use theoretical and experimental approaches to solve multi-concept and context-rich problems involving electricity. As a result, they will calculate the electric field due to a system of point charges using Coulomb's Law. The instructional materials to be utilized are the General Physics 2 Quarter 3 Week 1 Module 1: Electrostatics (DepEd) with a duration of two meetings / 12 hours (6 hours per meeting).

The respondents' scores from the administered pre-test and post-test were collected and treated using descriptive-inferential statistics. After computing its corresponding mean, the

following parameters were utilized: 90% and above (Outstanding), 85-89% (Very Satisfactory), 80-84% (Satisfactory), 75-79% (Fairly Satisfactory), and 74% and below (Did Not Meet Expectations). To establish if there is a significant improvement in students' achievement based on the pre-test and post-test of the correlated mean will be employed at α 0.05 level of significance.

The research subjects are free to choose to participate without any pressure or coercion. No personal identification details such as names and residential addresses were collected during the initial stages of the research. All participants can withdraw from, or leave, the study at any point without feeling an obligation to continue. There is no need to provide a reason for leaving the study. The researcher would let them know that their data will be kept confidential and that they are free to stop filling in the survey/questionnaire at any point for any reason. They can also withdraw their information by contacting their class adviser.

3. Results

The results of the present study are presented as per each hypothesis, followed by a short explanation.

Hypothesis One:

To verify the first hypothesis suggesting that "There is no significant improvement in the Grade 11 STEM students' scores before and after exposure to the ADDIE model of teaching natural science at the 0.05 level", a t-test for independent samples was used to compare the mean scores of the two groups on the skill of originality in the posttest.

Table 1. Grade 11 Students' Performance Using ADDIE Model in Teaching General Chemistry

Test	Mean	Standard Deviation	t- Value	P value	Degree of Freedom	Effect Size ($\eta2$)
Pretest	9.03	3.11	13.6640*	0.0001	29	3.532**
Posttest	23.00	4.65				

* Significant at the 0.05 level ** Very large effect size

Table 1 shows that the calculated t-value (13.6640) is statistically significant at the 0.05 level of confidence. Therefore, it becomes evident that there is a significant improvement in the students' scores before and after exposure to the ADDIE model in teaching natural science So, the first hypothesis is rejected. Furthermore, the effect size value was very large as $\eta2 = 3.532$. Thus, the suggested strategy had a very large effect on the participants' performance.

Hypothesis Two:

It was proposed that there was no significant improvement in the Grade 12 STEM students' scores before and after exposure to the ADDIE model of teaching natural science in the skill of accuracy at 0.05 level. To verify this hypothesis, t-test for independent samples was used to compare the mean scores of the two groups on the skill of accuracy in the posttest.

Table 2: Grade 12 Students' Performance Using ADDIE Model in Teaching General Physics

Test	Mean	Standard Deviation	t- Value	P value	Degree of Freedom	Effect Size ($\eta2$)
Pretest	10.80	2.43	1.8959*	0.0630	29	0.491**
Posttest	12.27	3.47				

* Significant at the 0.05 level ** Moderate effect size

Table 2 shows that the calculated t-value (1.8959) is statistically not significant at the 0.05 level of significance. Therefore, it becomes evident that there is no significant difference between the means of the scores obtained by the participants based on their pretest and post-test scores. Hence, the second hypothesis is confirmed. Furthermore, the effect size value

was identified as moderate where $\eta2 = 0.491$. Thus, the ADDIE model design in the senior high school STEM academic strand has moderate effect on the participants' performance in natural science.

4. Discussion

The obtained scores of the Grade 11 students showed significance in describing how Coulomb's Law can be used to solve electrostatics problems as well as displaying independence and collaboration with their classmates when answering activities and assignments. As applied in daily life, electrostatics has many practical applications, such as in the functioning of electronic devices, electrostatic painting, and electrostatic discharge protection. This concept is aligned with the study of Asuncion (2016) who affirms that student activities like multimedia projects shall continuously be provided to polish collaboration, creativity, curiosity, and sense of adventurism that would lead to students' holistic development and not deteriorate good learning qualities of the students. In addition, electrostatics also has many medical applications, such as in electrostatic precipitators for removing pollutants from air and in electrostatic cell separation techniques for isolating specific cells. Finally, electrostatics is widely used in industry for various applications, such as in electrostatic dust collectors, electrostatic oil cleaners, and electrostatic printing.

On the other hand, the Grade 12 students obtained scores resulting in no significant difference when they were exposed to ADDIE model. Thereupon, they had moderate effect sizes when the two treatments (pre-test and post-test) were administered and demonstrated minor understanding of the properties of solutions, solubility, and the stoichiometry of reactions in solutions. Quinn as cited in Chen (2016) confirmed the disadvantages of ADDIE include that the analysis step is not broad enough in the design process; the model is too linear and not flexible; and it does not encourage inspiration. Based on the performance of the students and through observation of the conduct of the lesson, the researchers proved a less effective utilization on the effectiveness of the model as an instructional design. Stoichiometry is one of the most fundamental topics in senior high school STEM courses, but it is also one of the most challenging concepts for students to master. As with any abstract concept, activities that encourage conceptual thinking tend to promote a deeper level of understanding.

5. Conclusions

The statistical analysis demonstrated that the ADDIE model applied in alternative delivery of learning proved to be effective for teaching natural science subjects to Grade 11 students who improved significantly in favor of the post-test in the overall test at the 0.05 level of significance. Results of the study indicated that the use of the weblog as a medium of projecting students' displaying independence and collaboration with their classmates when answering activities and assignments in the instructional design of the ADDIE model functioned as an effective teaching and learning tool supportive of the process of creative writing.

Similarly, the amount of growth between the pre-test and post-test was not significant in overall Grade 12 group students. Some factors related to the suggested strategy and the implemented teaching/learning methodology seem to account for the registered progress in their overall understanding of the properties of solutions, solubility, and the stoichiometry of reactions in solutions skills.

Pedagogically, the findings from this study suggest that science teachers should be mindful of the significance of e-learning resources and strategies inherent in the full utilization of alternative learning delivery and discussion boards as teaching and learning tools for enhancing students' problem-solving performance compared to the conventional method. Despite its successful application in two settings, ADDIE is not a guarantee for successful and effective instruction. This means instructional solutions cannot guarantee desired learning outcomes, which is very different from the causal relationship in a science rule.

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Research article

Examining Academicians' and Teachers' Opinions on Designing Science Activities in Informal Settings

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Abstract: The main purpose of this study is to determine what teachers and academicians think about the process of designing and implementing science activities in informal settings and make suggestions as to how to teach more effectively in them. This study is a cross-sectional survey study and divided the teachers constituting the sample group into subgroups (sections), namely, those who had received training in teaching science in informal settings and those who had not. The current opinions of the academicians were also included in the research. A total of 338 people – 304 science teachers and 34 academicians – participated in this study. A questionnaire was used to collect the data for the research. When the research findings were examined, it was seen that neither teachers nor academicians have the desired levels of knowledge about planning and implementing science-teaching activities in informal settings. The fact that teachers do not have sufficient information on this subject can be interpreted as a reflection of the inadequacy of academicians and government instructors who train and support teachers.

Keywords: science education, informal learning environment, informal science education, views of teachers, views of academicians

1. Introduction

The world is a difficult enough place to understand for anyone, particularly children. This is why people tend to bring order to the environment in which they live in their minds (Kaptan & Korkmaz, 1997). This effort to make sense of one's surroundings is done through learning (Güleç et al.,2013). When considering the individual's process of learning science, one should not focus only on the process that starts before school and ends in higher education. Medrich et al. (1982) reported that 85% of students spend their time outside the classroom (cited in Eshach, 2007). Considering the definition that science is everyday life itself, it is clear that for science to be taught effectively, the relationship between the classroom and the out of school life should be established correctly. It is widely held that the teaching done in the classroom has formal characteristics while that done outside the classroom has informal characteristics. That being said, it is not possible to make a clear distinction between formal and informal education (Eshach, 2007). This can be better demonstrated with an example. As the students who are taken to the science center to be taught science will approach the exhibitions there freely without being forced, and also because the learning environment is outside of the classroom, their learning here is informal. However, these students can participate in pre-planned experiments there, accompanied by a guide, and may be exposed to the guide's direct instruction. This learning is more akin to formal learning because it is planned. To fully define science teaching in informal settings, one must first internalize physical details, such as being in the classroom or outside, and social details, such as the communication between the learner and the teacher, and not the clear difference between formal and informal learning (Dierking, 1991; McGivney, 1999). Science teaching in informal settings is the bridge between formal education and informal education. Thus, the context of the science learning environment is expanded. These settings create a bridge between the school and the natural environment and help maximize the students' potential (Hannu, 1993; Karademir, 2018).

Informal learning environments are defined as learning environments based on communication and interaction, where students obtain first-hand experience, both individually and in groups, and share this experience with teachers, experts, families, and peers (Diamond, 1986). Examples of informal learning environments are institutional such as aquariums, museums, wildlife parks, zoos, botanical gardens, planetariums and observatories, factories and industrial complexes, national parks, non-governmental organizations, artistic environments, health institutions, universities, non-institutional environments such as national parks, nature itself, lakes, seas, bus stops; in short, all social areas outside the classroom walls (Bozdoğan, 2016; Hannu, 1993; Karademir, 2018; Kisiel, 2013; Türkmen, 2010).

Activities carried out as part of science teaching in informal settings should take place outside the classroom walls, have a purpose, support the learning outcomes in the syllabus, and improve the science (Karademir, 2018). When carrying out these activities, students should be given as much freedom as possible and not be limited (Han & Bilican, 2018). These environments also provide students with many beneficial opportunities such as gaining experience, learning by scientific process skills. This makes the process as interesting and fun as possible for students (Ünsal & Karademir, 2017; Türkmen, 2010). Some studies have reported that teaching activities outside the school are considered to be more fun-oriented and thus fail to serve a purpose (Rennie & McClafferty, 1996, Shortland, 1987, Wymer, 1991, Ansbacher, 1998; Eshach, 2007). The most important step to be taken here is for teachers to prevent this process from straying from the goal (Bozdogan, 2008). According to Dewey, if the learner has fun and joins in the learning process by experiencing and doing, this indicates that he is learning better (Eshach, 2007). Piaget states that "children as groups are active explorers; they structure their understanding by exploring their environment" (Köseoğlu & Tümay, 2015, p. 10) and that learning is associated with individual experiences, whereas for Vygotsky it is more a social phenomenon. Information is never found in the environment independently of the learner. The learner must learn how to obtain that information (Sherman, 1995, as cited in Çakıcı, 2012).

All this shows that when learners, driven by curiosity, join in the process by doing and experiencing, and having fun, this helps them learn in a meaningful and lasting way. Studies have shown that trips carried out for a purpose in informal settings help students to learn meaningfully and establish a relationship between the school curriculum and their experiences in those environments. They also help students improve their social skills (Bozdoğan, 2008). This is why is it best to define science teaching in informal environments as an interesting and fun process that serves an outcome and distinguishes it from fun-oriented implicit program activities such as picnics, camping, and trips (Karademir, 2013; Olson, Cox-Petersen & McComas, 2001). To this end, a serious, three-stage process of design is mentioned. Figure 1 shows designing science activities in informal setting.
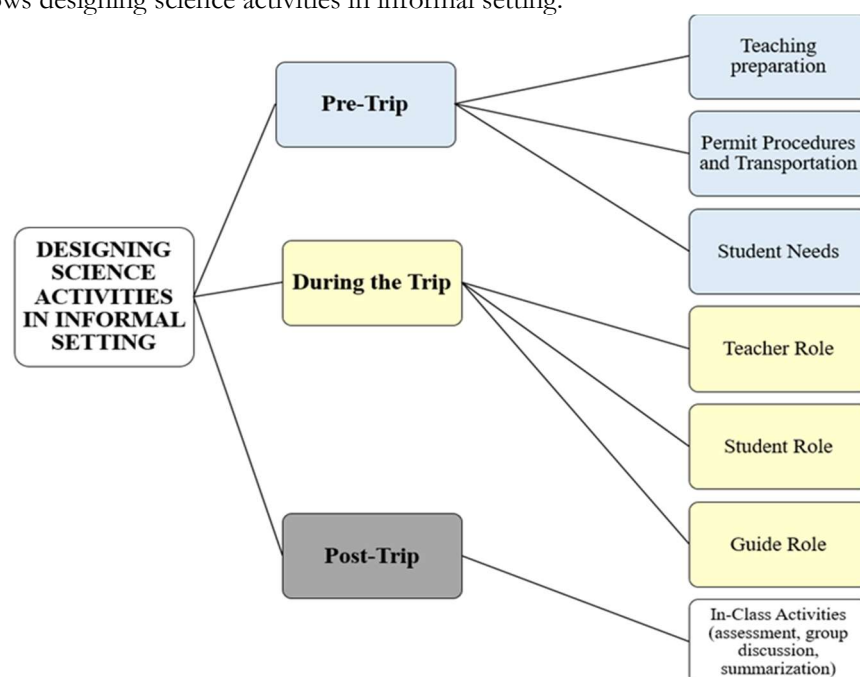

Figure 1. Designing science activities in informal setting.

This process is summarized as follows.

Pre-Trip: The work to be carried out before the trip includes making teaching preparations, obtaining permissions and transportation, and considering the physiological needs of the students (such as eating, drinking, shelter, and bathroom). Teaching preparation involves visiting the location where the activity will take place, determining the learning outcome, and preparing a lesson plan by establishing a relationship between the environment and the learning outcome. It also involves preparing the worksheets. Worksheets are crucial in that they let the process become student-centered. Worksheets should include questions that prompt students to investigate and question their learning environment and thus find the answers that way. Teachers are required to ask permission from parents, the school administration, and the District/Provincial National Education Directorates, depending on the location of the place to be visited. Regardless of whether the location to be visited is outside the city or not, it must be able to accommodate the students' physiological needs (food and drink, bathroom, etc.), either at the location or nearby.

During the Trip: During the trip, individual or group students should be able to search freely for answers to the questions on the worksheet, investigate, question, act out of curiosity; they should not be limited at all, but should be able to obtain the result with the right steering. At this time, the teacher should be a guide and strengthen the communication between the expert and the student, and should not leave all responsibility to the expert. The expert should avoid direct instruction and should help to establish the relationship between the topic being covered and the displays and objects that students encounter in the informal learning environment.

Post-Trip: This is an assessment process that takes place after the trip and can be carried out in the classroom. This assessment should focus on the students' experiences on the trip and on sharing the information that they collected using their worksheets. Steps should be taken to reveal and eliminate incorrect knowledge and misconceptions held by the students (Bozdoğan, 2014; Laçin-Şimşek, 2011; Orion & Hofstein, 1994; Türkmen, 2010).

In light of all this perspective, the main purpose of this study is to determine what teachers and academicians think about the process of designing and implementing science activities in informal settings and make suggestions as to how to teach more effectively in them.

2. Materials and Methods

2.1 Research Design

This study, which aims to determine what teachers and academicians think about the process of designing and implementing science activities in informal settings, is a cross-sectional survey study. According to Cohen et al. (2007), cross-sectional surveys are research conducted to determine the current views and attitudes about a given situation, reveal the distribution of characteristics of two or more subgroups of the sample group, and make comparisons between these subgroups (sections). This study divided the teachers constituting the sample group into subgroups (sections), namely, those who had received training in teaching science in informal settings and those who had not. It investigated their current opinions on the subject and then compared the subgroups' opinions among themselves. The current opinions of the academicians were also included in the research.

2.2 Sample

A total of 338 people -- 304 science teachers and 34 academicians -- participated in this study. The criterion sampling method, one of the purposive sampling methods, was used to select the study group. In criterion sampling, the units to be collected should meet a determined criterion and possess this quality (Büyüköztürk et al., 2016; Canbazoğlu-Bilici, 2019). This criterion was determined as science teachers who actively worked in schools affiliated with the Ministry of National Education. For academicians, this criterion was academicians who provide science courses in the undergraduate science teaching programs in the education faculties of the universities affiliated with the Council of Higher Education. Information about the training status of the teachers and academicians that made up the sample is given in the table below.

Table 1 analyzes the frequency and percentage distributions of teachers and academicians by training status.

Table 1. Frequency and percentage distributions of teachers and academicians by training status

	Teachers		Academicians	
	f	%	f	%
Trained	189	62,2	12	35,3
Untrained	115	31,8	22	64,7

2.3 Data Collection Tools and Data Collection

A questionnaire was used to collect the data for the research. A two-part questionnaire to be administered to the teachers and academicians was prepared. The questionnaires were moved online to collect detailed and in-depth data and sent to 892 teachers. A total of 312 teachers answered the questionnaires. Eight questionnaires were discarded due to reasons such as not meeting the criteria for sample selection and inconsistency between answers. In addition, the science teaching department syllabuses in the education faculties of the universities affiliated with the Council of Higher Education were examined, the academicians participating in science courses were identified, and the questionnaire was sent to 504 academicians. The study group consisted of 304 academicians who answered the questionnaire. The process of collecting the data took around five months and ended when enough data had been collected.

2.4 Analyzing of Data

The data collected from the teachers were first classified according to the predetermined subgroups. The answers given by each subgroup of the teacher sample group and the instructor sample group were combined based on each open-ended question in the data collection tool and then written down. The data obtained from the teachers and academicians were analyzed again to determine the frequency of the codes. The findings obtained as a result of this analysis were analyzed using frequency (f) and percentage (%) from the descriptive statistics, and tables were formed based on each open-ended question in the questionnaire and each subgroup in the teachers' sample and the academicians' sample.

3. Results

Here, the research findings are presented so as to show the answers given to each question by the teachers and academicians. Teachers' opinions were coded as T.1.-...-T.334, and academicians' opinions were coded as A.1.-...-A.34. Direct quotes were included to explain the findings.

3.1 Findings for the First Question of the Questionnaire

The first question of the relevant questionnaire was "For what purposes do you take your students to informal environments?" Nine (4.8%) of the 189 teachers who had received training and 10 (9.0%) of the 115 teachers who had not received training found it sufficient to answer, "I don't take them." Four (12.2%) of the academicians also said they do not take their students. The purposes for which teachers and academicians use informal environments are given in Table 2 and Table 3.

Table 2. Purposes for which trained and untrained teachers use informal environments

	Trained		Untrained	
	f	%	f	%
I take them.				
Learning				
• Hands-on	110	58,2	32	27,8
• Lasting	43	22,7	15	13,0
• Purposeful	37	19,6	17	14,8
• Associate the subject with daily life	28	14,8	7	6,1

The trip itself

• Social activity based	7	3,7	15	13,0

Improve the skills

• Social skills	21	11,1	1	0,9
• Scientific process skills				
✓ Observation	42	22,2	9	7,8
I don't take them.	**9**	**4,8**	**10**	**9,0**

Of the teachers who had received training, 110 (58.2%) said they like to use informal environments so their students can learn by doing and experiencing. Similar to those teachers who had received training, 32 (27.8%) of the 115 teachers who had not received training mostly intended for their students to learn by doing and experiencing (hands-on), but this proportion was lower than for trained teachers. The second highest proportion (22.7%) among the trained teachers was the belief that learning by doing and experiencing would make their students' knowledge more lasting. The second-highest scoring (14.8%) purpose cited by untrained teachers was for this process to be focused on a learning outcome or goal. Seven (3.7%) of the trained teachers who used informal environments for trips said that the process should be social activity based. This proportion is higher (13.0%) among trained teachers than untrained teachers. Teachers who stated they use informal environments to improve their students' scientific process and social skills said they believe that the ability to make observations will improve the most. When all these findings are compared, it is seen that teachers who had received training use these environments for learning more than untrained teachers do.

Sample opinions of teachers on this subject are given below.

T.25 (Trained): For the student to learn by doing and experiencing in the natural environment instead of learning in the classroom, to ensure that the student actively looks for and finds the information himself/herself instead of having it served to him/her all ready, to ensure permanent learning, and provide a learning environment that is more fun...

T. 56. (Untrained): …We can go on high school trips for social activities (seeing places such as the movie theater, the zoo, and nature centers)...

Table 3. Purposes for which academicians use informal environments

	f	%
I take them.		
Learning		
• Hands-on	12	36,4
• Associate the subject with daily life	12	36,4
Improve the skills		
• Social skills		
✓ Raising awareness	7	21,2
• Scientific process skills		
✓ Observation	5	15,2
I don't take them.	**4**	**12,2**

Twelve (34.6%) of the 34 academicians who contributed to the study said their purpose was learning by experiencing and doing and through association with daily life. When it comes to science teaching in informal environments, unlike the teachers, seven (21.2%) academicians said their purpose was to improve students' awareness within the limits of their social skills, and five (15.2%) academicians said their purpose was to improve the science process skill of making observations.

Sample opinions of academicians on this subject are given below.

A.3: To ensure that they learn where the outcomes that they need to achieve in the Science course are by doing and experiencing...

3.2 Findings for the Second Question of the Questionnaire

The questionnaire asked, "What do you consider when designing and implementing science activities in informal environments?" Rather than expressing what they know about the planning process, two academicians (6.1%) preferred to answer, "I don't take them." Four (12.2%) academicians answered, "I don't know how to design." Twelve teachers (10.4%) said they do not take their students to informal learning environments and four teachers (3.5%) said they do not know how to design such lessons. It was seen that none of the teachers who gave these answers had received training. Details on this are given in Table 4 and Table 5.

Table 4. Factors that trained and untrained teachers consider before, during, and after the trip

	Trained		Untrained	
	f	%	f	%
Pre-Trip				
• Preparing a trip plan				
✓ Preparing a lesson plan	38	20,1	15	13,0
✓ Preparing a worksheet	8	4,2	0	0,0
• Selecting the location to be visited				
✓ Safe	63	33,3	44	33,6
During the Trip				
• Create the process				
✓ Suitable for the learning outcome	124	65,5	30	26,1
✓ Safe	63	33,3	44	38,3
Post-Trip				
• Evaluating the Process	4	2,1	1	0,9
I don't take them.	**0**	**0,0**	**12**	**10,4**
I don't know how to design.	**0**	**0,0**	**4**	**3,5**

According to the answers given by the teachers, a plan for the trip should be prepared beforehand. This plan also includes preparing a lesson plan and worksheet. Thirty-eight (20.1%) of the teachers who had received training said that they prepare a lesson plan and eight (4.2%) of them said that they prepare worksheets. While 15 (13.0%) of the teachers who had not received training said that they prepare lesson plans, none of them said that they prepare worksheets. This shows that teachers who do not receive training have a more traditional approach to teaching science in informal settings. Another topic that teachers consider as part of the pre-trip process is selecting the location to be visited. When choosing the location, 33.3% of the trained teachers and 33.6% of the untrained teachers said they pay attention to safety. It was seen that the vast majority of the teachers in the study group did not give sufficient importance to the subject of permission. Overall, when the answers given by the trained and untrained teachers were compared, the frequency distributions of the answers given by the teachers who had not received training were lower than those who had. As for during the trip, 124 (65.5%) of the trained teachers said they plan to create a process suitable for the learning outcome. The untrained teachers mostly (38.3%) tend to create a safe process. Sixty-three of the teachers who had received training said a safe process (33.3%) should be created. Thirty (26.1%) of the untrained teachers said they want to create an achievement-oriented process. It was seen that the rates of the answers concerning safety given by the teachers who had and had not received training were close to each other and that the trained teachers focused more on learning outcomes than the untrained teachers. Again, overall, it was seen that the rates of answers concerning the during-the-trip part of the process given by the teachers who had not received training were lower. As for the post-trip process, only 4 of the 189 trained teachers (2.1%) and 1 of the 122 untrained teachers (0.9%) stated that they would make use of the process. These rates are quite low, which shows that teachers cannot transfer the during-the-trip part of the process to the classroom and do not complete the teaching process regardless of their training status.

Sample opinions of teachers on this subject are given below.

T. 52. (Trained): First, I make a plan for the trip in line with the learning outcome and the level of the students, then I get the necessary permissions. I inform the parents in writing or verbally. After asking them for permission, I inform my students ahead of the trip...

T. 99. (Untrained): … I don't do post-trip assessments.

Table 5. Factors that academicians pay attention to before, during, and after the trip

	f	*%*
Pre-Trip		
• Preparing a Trip Plan		
✓ Preparing a lesson plan	2	6,1
• Selecting the location to be visited		
✓ Safe	7	21,2
✓ Low cost	7	21,2
During the Trip		
• Create the process		
✓ Be in line with the students' level	14	42,4
✓ Be in line with the learning outcome	13	39,4
Post-Trip	**0**	**0,0**
I don't take them.	**2**	**6,1**
I don't know how to design.	**4**	**12,2**

Seven of the academicians said that they consider safety and low cost (21.2%) when choosing the location during the pre-trip process. They said that trip itself should be in line with the students' level (42.4%) and the learning outcome (39.4%). The number of academicians who said they aimed to keep costs low when planning was seven (21.2%). The academicians made no comments about the post-trip process.

Some of the answers given by the academicians under this heading are given below.

A.5: To acquire different learning outcomes by getting as much out of the location as possible.

3.3.*Findings for the Third Question of the Questionnaire*

The question "What methods, techniques, and strategies do you use for teaching science in informal settings?" was asked. Some of the teachers said they did not use strategies, methods, or techniques for teaching science in informal settings. Only one (0.5%) of the teachers who had received training thought this way. This rate is higher among teachers who had not received training. Eleven (9.6%) of those teachers said that they did not use any strategies, methods, or techniques. Five (15.2%) academicians said that they did not use strategies, methods, or techniques. Details on this are given in Table 6 and Table 7.

Table 6. The strategies, methods, and techniques used by trained and untrained teachers for teaching science in informal settings

	Trained		**Untrained**	
	f	%	f	%
Student-Centered				
• Observation	78	41,3	42	36,5
• Experimentation	46	24,3	22	19,1
• Strategy of research and analysis	42	22,2	19	16,5
• Trip	35	18,5	24	20,9
• Brainstorming	22	11,6	6	5,2
• Teaching through invention	22	11,6	17	14,8

Teacher-Centered

• Question and answer	24	12,7	13	11,3
• Direct instruction	12	6,4	7	6,1
I don't use.	**1**	**0,5**	**11**	**9,6**

Of the teachers who had received training, 78 (41.3%) said they use observation and 46 (24.3%) said experimentation. Again, the student-centered strategy of research and analysis (22.2%) is one of the strategies they said they use the most. Thirty-five teachers (18.5%) said they use the trip technique. The question-answer method, one of the teacher-centered teaching methods, is used by 24 teachers (12.7%) and teaching through brainstorming and teaching through invention by 22 teachers (11.6%). Of the 115 teachers who had not received training, 42 stated that they use observation (36.5%). After observation, they mostly (20.9%) said that they use the trip technique. Twenty-two teachers (19.1%) said they use experimentation. On analyzing the data obtained from the trained and untrained teachers, it was seen that both groups of teachers mostly prefer to use student-centered strategies, methods, and techniques. However, the data obtained from both groups of teachers showed that the frequency of using other strategies, methods, and techniques other than observation, experimentation, research-analysis, and the trip was low. When the teachers who had and had not received training are compared, it can be said that the trained teachers are better at using teaching strategies, methods, and techniques than the untrained teachers.

Table 7. The strategies, methods, and techniques used by academicians for teaching science in informal settings

	f	%
Student-Centered		
• Strategy of research and analysis	8	24,4
• Observation	6	18,2
• Prediction-Observation-Explanation	4	12,2
• Discussion	4	12,2
Teacher-Centered		
• Question and answer	6	18,2
• Direct instruction	3	9,1
I don't know.	**5**	**15,2**

Eight of the 34 academicians who contributed to the study stated that they use the research-analysis strategy (24.4%). Six of them (18.2%) said that they use the student-centered technique of observation and the teacher-centered technique of question and answer. Four academicians (12.2%) said they use prediction-observation-explanation, and discussion. Direct instruction is used by three academicians (9.1%).

Some examples of the academicians' opinions on the strategies, methods, and techniques they use for teaching science in informal settings are given below.

A.5: I usually prepare worksheets for prediction-observation-explanation. I design short-term student-centered activities that will ensure that what is learned will be implemented and repeated after the trip.

A.32: We go to these places mostly in groups and make observations. We spend time with the subject matter expert using direct instruction, question-answer, and prediction.

3.4.Findings for the Fourth Question of the Questionnaire

Another question in the questionnaire was "What skills do you expect your students to improve following the science activity in informal settings?" Six of the academicians answered this question by saying, "I don't know." Details on this are given in Table 8 and Table 9.

The trained teachers mostly (16.9%) expected their students' creative thinking skills, which are high-level thinking skills, to improve. This was followed by 30 teachers (15.9%) who thought that their students' analytical thinking skills should improve. The trained teachers mostly said that they expect the scientific process skills of observation and analysis to improve. Forty-nine teachers (25.9%) said they intend to improve their students' ability to observe and analyze. The observation skill, one of the scientific process skills, is the skill that

the untrained teachers said they most expect to improve in their students. Of the 115 untrained teachers, 19 (15.6%) gave this answer. Of the trained teachers, 43 (22.7%), 38 (20.1%), and 31 (16.4%) said they expect to improve their students' skills in forming cause-and-effect relationships, interpretation, and data collection, respectively.

Table 8. Skills that trained and untrained teachers expect their students to improve following science teaching in informal settings

	Trained		Untrained	
	f	%	f	%
Advanced Thinking Skills				
• Creative	32	16,9	11	9,1
• Analytical	30	15,9	14	11,5
Scientific Process Skills				
• Observation	49	25,9	19	15,6
• Analyze	49	25,9	6	4,9
• Forming cause-and-effect relationships	43	22,7	5	4,1
• Inference	41	21,7	7	5,7
• Interpretation	38	20,1	12	9,8
• Data collection	31	16,4	6	4,9
• Experimentation	29	15,3	8	6,6
Social Skills				
• Self-confidence	33	17,5	5	4,1
• Communication	29	15,3	4	3,3
• Cooperation	22	11,6	5	4,1
• Group work	20	10,6	6	4,9
Target Behaviour				
• Cognitive	54	28,6	16	13,1
• Affective				
✓ Positive attitude	27	14,3	7	5,7
• Psychomotor	21	11,1	3	2,6
Not a Skill				
• Being in line with the learning outcome	21	11,1	3	2,5
• Associating it with daily life is a skill	20	10,6	15	12,3

Another skill that the untrained teachers said they expect their students to improve the most is experimentation (6.6%). When these findings were examined, it was seen that the teachers who had received training mainly wanted their students to improve their scientific process skills. The trained teachers mostly aimed to improve their students' self-confidence (17.5%), communication (15.2%), cooperation (11.6%), and group work (10.6%). The untrained teachers mostly expected their students' group work skills to improve (4.9%). In terms of target behaviors, the trained teachers mostly expected a change at the cognitive level (28.6%). In the affective field, they wanted them to develop a positive attitude (14.3%). Some expected psychomotor skills to improve (11.1%). Just like teachers who had received training, the teachers who had not received training also thought there should be a change at the cognitive level (13.1%). From the answers given by the trained teachers, it is obvious that they tend to plan the entire process in line with the learning outcome. Although not a skill, 21 teachers gave the answer of being in line with the learning outcome (11.1%). Twenty teachers

(10.6%) gave this answer by thinking that learning a topic by associating it with daily life is a skill. It was observed that the frequency distribution of the answers given by the teachers who had received training was higher than those who had not.

Sample opinions of teachers on this subject are given below.

T.5. (Trained): 1) Social skills (accepting roles within the group, communication) 2) Science literacy 3) Critical, creative, reflective, and analytical thinking from among the high-level thinking skills.

T. 147. (Untrained): 1) The student gaining the learning outcome 2) Increasing the student's positive attitude toward the lesson 3) Seeing how the topics relate to daily life.

Table 9. Skills that academicians expect their students to improve

	f	%
Advanced Thinking Skills		
• Creative	3	9,1
• Analytical	3	9,1
Scientific Process Skills		
• Observation	14	42,4
• Forming cause-and-effect relationships	10	30,0
Social Skills		
• Cooperation	6	18,2
Target Behaviour		
• Affective	14	42,4
• Cognitive	5	15,2
• Psychomotor	2	6,1
Not a Skill		
• Science literacy	3	9,1
I don't know.	**6**	**18,2**

Three of the academicians (9.1%) said they expect their students to improve their high-level thinking skills in critical and analytical thinking. Unlike the teachers, the academicians did not comment on reflective thinking skills. They mostly (42.4%) wanted the scientific process skill of observation to improve. This was followed by 10 academicians (30.0%) who said they believe their students will form a cause-effect relationship during this process. The only social skill they said will improve is cooperation (18.2%). They mostly thought (42.4%) that this process contributes to the affective field, which is one of the target behaviors. Five (15.2%) academicians said they think their students' cognitive skills will improve and only two (6.1%) said they expect their psychomotor skills to improve. Although not a skill, three academicians answered by saying science literacy (9.1%). Below are some of the skills the academicians said they expect their students to improve.

Sample opinions of academicians on this subject are given below.

A.6: Observation-explanation, data collection, affective goals, science literacy, cooperation, critical thinking...

3.5. *Findings for the Fifth Question of the Questionnaire*

Another question in the questionnaire was "What criteria are you looking for to consider the science activity in an informal setting a success?" Again, five academicians answered "I don't know" to this question. None of the teachers gave this answer. This question and details are given in Table 10 and Table 11.

Just like the trained teachers (20.1%), the untrained teachers (13.9%) said that identifying a location in line with the learning outcome is the most important criterion in considering the process a success. However, the proportion of untrained teachers who gave this answer was lower than that of trained teachers. Teachers mostly accept students' learning by doing and experiencing and assessment results as criteria for calling the process a success. Of the 189 trained teachers, 32 wanted to see what their students learned by doing and experiencing (hands-on) (16.9%). Again, 32 trained teachers (16.9%) stated that their assessment results at the end of the trip would determine whether it was a success or not.

Table 10. Criteria sought by trained and untrained teachers to consider the science teaching activity in an informal setting a success

	Trained		Untrained	
	f	%	F	%
Environment				
• in line with the learning outcome	38	20,1	16	13,9
• Effective	12	6,3	6	5,2
Student				
• Cognitive				
✓ Learning				
➢ Hands-on	32	16,9	21	18,3
➢ Assessment results	32	16,9	27	23,5
➢ Purposeful	25	13,2	18	15,6
• Affective				
✓ Positive attitude	15	7,9	8	6,9

Twenty-seven untrained teachers (23.5%) said they would look at the assessment results to judge whether the science teaching activity in an informal setting was a success. The number of untrained teachers who thought that students should learn by doing and experiencing was 21 (18.3%). When the teachers who had and had not received training were compared, it was seen that the frequency distribution of the answers given by the trained teachers was higher than the untrained teachers. From the answers given by the trained teachers, it is obvious that they care more about the behavioral changes in their students than they do about the learning environments.

Sample opinions of teachers on this subject are given below.

T. 163. (Trained): I measure whether they can form a connection between the learning outcome and the topic, whether they can interpret by collecting data and reaching a conclusion, whether there is any change in their observation skills and their attitudes toward science, and of course, whether there is an increase in their academic achievement...

T.86. (Untrained): Did the students learn by experience? Was there any change in the students after the activity? Is the student willing to study in informal settings again for the next learning outcome?

Table 11. Criteria sought by academicians for teaching to be successful

	f	%
Environment		
Active participation	13	39,4
Suitable for student level	7	21,2
Student		
• Cognitive		
✓ Learning		
➢ Scientific process skills	11	33,3
➢ Lasting	8	24,2
➢ Assessment results	7	21,2
➢ Purposeful	6	18,1
• Affective		
✓ Social skills	5	15,2
I don't know.	**5**	**15,2**

According to the academicians, the informal learning environment in which the teaching will be successful should be one in which students will actively participate (39.4%). Seven academicians (21.2%) said that for the teaching process to be successful, the learning environment should be designed around the student level. Six academicians (18.1%) said the

environment should be suitable for the learning outcome. Students acquiring scientific process skills was enough for 11 preservice teachers (33.3%) to consider the process a success. According to eight academicians (24.2%), the process should result in permanent learning. Seven academicians (21.2%) said they decide whether the process was a success only after making an assessment. This answer from academicians who did not comment about planning for the post-trip process is a contradiction (see Table 31). Six academicians (18.1%) said that students' learning should be purposeful. Five academicians (15.2%) said they consider the process a success if their students' social skills improve. The academicians' thoughts on the criteria they look for teaching to be successful are given below.

3.6. Findings for the Sixth Question of the Questionnaire

Another question in the questionnaire was "What difficulties do you encounter in designing and implementing the activity?" Unlike the teachers, the academicians replied by saying, "I don't experience any difficulties" and "I don't know." The details are given in Tables 12 and 13.

Table 12. Difficulties experienced by trained and untrained teachers when teaching science in informal settings

	Trained		Untrained	
	f	%	f	%
School management and Parents				
• Financial impossibilities	76	40,2	31	27,0
• Lack of support	25	13,2	8	6,9
Teacher				
• Concern				
✓ Not being able to manage the process	30	15,9	19	16,5
✓ Planning	14	7,4	4	3,5
Student				
• Negative attitudes	28	14,8	14	12,2
• Crowded classes	20	10,6	10	8,7
Environment and Process				
• Suitable time	38	20,1	17	14,8
• Permission	35	18,5	19	16,5
• Transportation	33	17,5	14	12,2
• Security	22	11,6	12	10,4

The most common problem faced by the trained teachers was the financial impossibilities they encounter arising from the school administration and parents (40.2%). The untrained teachers also said this was the problem they encounter the most but the frequency of this answer was still lower than for trained teachers (27.0%). Thirty of the teachers who had received training stated they were concerned about not being able to manage the process (15.9%). The frequency of this answer was higher among untrained teachers (16.5%). Another topic they said they worry about is planning. Some 7.4% of the trained teachers and 3.5% of the untrained teachers gave this answer. The teachers who had received training were more concerned about planning. Of the trained teachers, 38 (20.1%) said the most common difficulty they encounter is finding a suitable time; 35 (18.5%) said obtaining permissions from the necessary authorities, 33 (17.5%) said transportation, and 22 (11.6%) said security. Of the untrained teachers, 19 (16.5%) said obtaining permissions from the necessary authorities, 17

(14.8%) said finding a suitable time, 14 (12.2%) said transportation, and 12 (10.4%) said security.

Sample opinions of teachers on this subject are given below.

T.142. (Trained): Classroom management becomes difficult in crowded classrooms. It is hard to keep track of what each student is doing. You have to plan without straying from the relationship between activity and topic; I think this is very hard to do.

Table 13. Difficulties experienced by academicians when teaching science in informal settings

	F	%
Student		
• Negative attitudes	7	21,2
• Crowded classes	5	15,2
Environment and Process		
• Transportation	8	24,2
• Not finding environment suitable for the learning outcomes	3	9,1
• Straying from the learning outcomes	2	6,1
University Administration		
• Financial impossibilities	11	33,3
• Lack of support	4	12,1
I don't know.	**3**	**9,1**
I don't experience any difficulties.	**2**	**6,1**

Here, the academicians complained about students' negative attitudes (21.2%) and crowded classes (15.2%). Eight academicians (24.2%) saw transportation as a problem, three (9.1%) said not finding an informal learning environment suitable for the learning outcomes, and two (6.1%) cited the concern of straying from the learning outcomes as a problem. The biggest difficulty faced here by academicians was cost (33.3%). Four academicians (12.1%) cited lack of support from the university administration.

Some of the opinions expressed by the academicians under this heading are given below.

A.10: The universities have no unit for this and no allocated budget. Perhaps most importantly, the informal learning environments around us are few and far between.

4. Discussion and Conclusions

This study aims to determine what teachers and academicians think about the process of designing and implementing science activities in informal settings and make suggestions as to how to teach more effectively in them. When the research findings were examined, it was seen that neither teachers nor academicians have the desired levels of knowledge about planning and implementing science-teaching activities in informal settings. The fact that teachers do not have sufficient information on this subject can be interpreted as a reflection of the inadequacy of academicians and government instructors who train and support teachers. When the subgroups of the teachers were compared among themselves, it was found that the teachers who had received training were more knowledgeable than those who had not. Examination of the relevant literature reveals many studies that report that being trained in how to teach science in informal settings directly affects this process (Carrier et al, 2013; Dilli; 2017; Kisiel, 2005; Türkmen, 2015; Türkmen, 2018).

Learning, the trip itself, and improving students' skills were found to be common goals among the academicians and the trained and untrained teachers in the sample group for teaching in informal settings. In general, it is seen that teachers who receive training on this subject mostly adopt the goal of learning and improving skills in informal environments. The finding that untrained teachers see this process as more of a social activity supports this. The academicians, on the other hand, stated that they attach the most importance to learning and skill development when setting goals, as did the trained teachers. Considering that what the teachers know about this subject comes from the educational sciences courses in the

undergraduate programs run by education faculties, it is to be expected that their opinions echo those of their academicians.

To design and implement a science teaching lesson in an informal setting, teachers must carefully design all stages of the process: pre-trip, during the trip, and post-trip. In the pre-trip process, it was seen that the academicians and the teachers who made up the sample group attached more importance to choosing low-cost, safe, and easily accessible locations than they did to making educational preparations such as making lesson plans and worksheets. However, this lesson is going to take place in an informal setting and has to be suitable for the learning outcome, so the lesson plan matters a lot. One of the questions asked to teachers and academicians was about the strategies, methods, and techniques they used for this process. From the answers given to this question, both the teachers and the academicians want to create a student-centered process. One key element that makes this process student-centered is the use of worksheets to steer the students. These worksheets allow students to experience the process without any other influence by steering them to the knowledge that they are supposed to obtain directly as part of the process. The findings of this study show that not much importance was given to the worksheet. This means that both teachers and academicians actually manage this process without focusing on the student.

The permissions required in the pre-trip process are another important step. Teachers and academicians do not give the necessary importance to obtaining permissions. That both teachers and academicians want to create an outcome-oriented trip can be regarded as positive. When the findings are examined, it is seen that none of the teachers and academicians attach the necessary importance to the post-trip process. In the constructivist approach, learners build on their existing experiences to obtain new knowledge. The new experience is gained by combining learners' prior knowledge with real-life experiences. For this experience to become knowledge, students need to be guided by theoretical explanations and analyses (Şentürk, 2010). Since the trip itself is a part of daily life, it already has the necessary qualities for students to acquire this new experience. However, the post-trip process is the part where the explanations necessary for meaningful learning are made and the information is structured. The fact that the post-trip process is not given importance shows that meaningful learning has not actually taken place for the students. When the sample group was asked about the criteria they were looking for to judge this teaching process as a success, they said that the assessment results would give them a hint as to whether the process was a success or not. This contradiction clearly shows that teachers and academicians do not see the post-trip process as a part of the overall process of teaching in informal settings. On the over hand teachers and academicians have a more traditional perspective with regard to teaching science in informal settings, are unable to carry the actual trip part of the process to the classroom, and do not complete the teaching process. Hence the academicians perceive this process only as the activities carried out during the trip. The academicians want to make the actual trip part of the process student-centered, and their choice of methods, strategies, and techniques supports this finding. Many studies have concluded that teachers do not give enough importance to the post-trip process and cannot establish the relationship between the trip itself and the post-trip process (Griffin and Symington, 1997; Kisiel, 2007; Orion & Hofstein, 1994; Stroksdieck, 2001).

Teachers and academicians alike stated that they face many problems in designing and implementing this process. These problems can be classified as those originating from school administrations and parents, students, the location and the process, and colleagues. In addition, teachers mentioned other matters such as cost, security, and transportation as problems. The answers given by the instructors show parallelism with the answers given by the teachers. Inadequate support from the university administration, lack of experts, thinking that the process is for entertainment purposes and cost are the difficulties faced by the instructors. These results are in line with the studies made by Dilli (2017), Carrier et al. (2013), Sarışan-Tungaç & Ünaldı-Çoral (2017) and Türkmen (2018).

5. Recommendations

The results of this study show that not enough use is made of informal settings and that science teachers know very little about this topic regardless of whether or not they have received training. Teachers need to be given more frequent training on this topic and this training needs to be practical.

Considering the problems faced by teachers and academicians here, both teachers and academicians should be supported in finding appropriate informal settings, obtaining transportation, and getting access to the necessary resources.

A certain period of time is needed for students and teacher candidates to develop positive attitudes for this teaching process, which will take place in a different learning environment, and for teachers and faculty members to gain practical experience. Therefore, this teaching process should be repeated as long as possible.

Academicians who train future science teachers should use informal environments at universities more, so that prospective teachers can experience this process more.

For science teaching to be carried out more in informal settings at universities, the number of learning environments such as museums, botanical gardens, and science centers on university campuses should be increased. These informal learning environments will benefit both university students and the surrounding schools.

This study is limited only to the opinions of teachers and academicians. Other studies should be conducted to obtain the opinions of preservice teachers, school administrators, students, and parents.

This study found that the teachers who had received training were more knowledgeable than the other teacher groups when it came to designing and implementing science teaching processes in informal settings. However, these levels of knowledge are still inadequate. Therefore, teacher training courses on this subject should be developed and the qualities that these courses need to possess should be investigated.

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Research article

Effectiveness of Audio-visual Materials in Teaching Reading for Young EFL Learners in Bangladesh

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Abstract: This article presents the effectiveness of audio-visual materials on young learners' reading skills in an EFL context. It aims to see the result of developing their abilities by using audio-visual materials in the classroom. The study was conducted on 35 students of Tutpara Model Government Primary School in Khulna, a southern district of Bangladesh. It was an experimental study where a pre-test and a post-test were given to experiment with the students who were selected randomly. The students were taught with audio-visual materials for 3 months. The results of the research finds that there is a progress of the students' reading skills after the use of audio-visual materials. The students were able to read out the text with more confidence, could make development in pronunciation and also could increase their vocabulary knowing unfamiliar words and their meanings. As a by-product, the learners were more enthusiastic in learning being entertained in the multimedia classroom and gave full concentration on particular tasks than in their regular class.

Keywords: audio-visual materials, reading comprehension, experiment, EFL learners

1. Introduction

Teaching reading is fundamental for EFL learners as they mostly learn the foreign language by reading and it is crucial for them. (Debat, 2006:8). As one of the four language skills, its teaching needs carefully selected materials, activities and methods. Skills in reading enable learners to achieve academic benefit from educational activities and also to participate in the social and economic activities in the target language. Beatrice (2008) defines reading skills as the cognitive processes that a reader uses in making sense of a text. EFL students may face a lot of difficulties to read and comprehend the language due to their unfamiliarity to the language. Second or foreign language learners want to visualize what they know from reading in the target language though they do that in their own language. Only the proficient bilingual readers can understand and relate the L1 and L2. They are aware of the similarity between the languages, and explicitly transfer information or strategies learned in one language to the other language as they think aloud. (Jiménez, García, & Pearson, 1996). Second and foreign language readers apply various strategies to overcome the obstruction in reading. These strategies include rewording or repeating an idea from the text in different ways until readers felt that they had comprehended the idea to the best of their ability and that lasts longer. Samuels (1979) thinks, repeated reading works positively to develop decoding automaticity with struggling readers.

1.1 Teaching Young Learners

Teaching young learners is different from teaching adults. Klein (2005, cited in Suganda, 2016) thinks that young children tend to change their mood every other minute, and they find it extremely difficult to sit still. On the other hand, they show a greater motivation than adults to do things that appeal to them. Interestingly, Ashworth and Wakefield (2005, p.3) claim that all young children are highly motivated to learn language. Harmer (2007, p. 81) identifies some characteristics of the young learners' learning methods. For example. They respond to meaning even if they do not understand individual words. They like to learn indirectly rather than directly, taking information from all sides, learning from everything around them rather than only focusing on the precise topic they are being taught. Their understanding comes not

only from explanation, but also from what they see and hear and, crucially, have a chance to touch and interact with. Harmer (2007, 81) further identifies that they have a limited attention span; unless activities are extremely engaging, they can get easily bored, losing interest after ten minutes or so. Young learners may well be involved in creative tasks as puzzle-like activities, in making things, in drawing things, in games, in physical movement or in songs. This expectation can be mitigated by using technology in the classroom by which teachers might engage the learners with learning based on audio-visual materials.

1.2 Using Audio-visual Materials in EFL Classroom

Suganda (2016) identified three important points for success of children in reading: (1) innovative and suitable approach, (2) effective materials, and (3) parents or teachers' role.

Technology is ruling the world and doing many wonders in human life. Aligning with the invasion of the Fourth Industrial Revolution, technologies are rapidly advancing in various industries, and the educational field is not exempted from embedding technology in its sector (Mudin, Rahman & Jopony, 2018: p. 3).

Using technology in the classroom is a technique for teaching and learning because in this modern era, technology plays a vital role and now this method is very beneficial for teaching language effectively. The audio-visual materials like sounds, pictures, graphics etc. create a visual effect and reiterates the ideas that can improve the cognitive ability of students so that they can easily relate it to the practical object. Learning, in this way, lasts longer in their memory. Teachers have the role as a facilitator and observer in the class so that they can easily reach them and identify the problems of individual learners. Most of the EFL learners feel difficulties and anxiety in learning English when they are to read and comprehend new words. Moreover, students sometimes are reluctant to concentrate on the teachers' words because of the detachedness with the target language. For this reason, they fail to know many words and reading a text becomes too hard for them.

Learning through the audio-visual materials help the learners learn with amusement as it reduces the anxiety as well as the monotony of following a language class. The term audio-visual materials are defined by Dike (1993) as materials that do not depend solely upon reading to convey meaning. They may present information through the sense of hearing as in audio resources, sight, as in visual resources, or through a combination of senses. (As cited in Shamsideen, 2016).

The use of media in the classroom plays the most significant role in education, especially in English language teaching because teaching and learning activities become more interesting when audio-visual materials are used effectively. Some technologically advanced countries believed in the enlightenment and power of media technology and that's why they are going to adopt such technologies in the classrooms so that students using audio-visual aids may become highly qualified. (Kurt & Ciftci, 2012) (as cited in Tareen, Manan Khan, et al, 2021, p. 163-175).

Through, arising some questions, it tries to find out the effectiveness of the given materials such as: (1) What are the challenges of reading in the primary level School student of Bangladesh? (2) What are the benefits of using audio-visual materials in the classroom? (3) How can they develop their reading skill through these audio-visual materials? The paper also studies the impact of audio-visual materials on students' reading skill and main purpose to explore the problems in reading among primary level students and the effect of technology in language learning as well as the use of audio-visual materials in developing reading skills of the primary level students.

Learning visually is more effective than only hearing a lecture. Poor reading skills is the major problem in learning the English language. Students who are unable to read and have poor efficiency in reading such as poor vocabulary knowledge, word difficulty, poor knowledge of punctuations, spelling as well as intonation. Besides, the non-usages of audio-visual materials in the teaching learning process also make their performance inactive and dull. Natoli (2011) claims that audio-visual materials are important in the teaching and learning processes because "having seen something, most people remember, for whatever that thing was, it conjures up an image at a mere mention and can be talked about freely." (As cited in Shamsideen, 2016).

Dike (1993) also explained that students forget because of a lack of interest and opportunities to use the knowledge they have gained later on. Audio-visual resources can therefore contribute to the clarity of the information presented by allowing students to visualize what is learned.

1.3 Research Hypothesis

Audio-visual materials can help students develop their language skills, especially reading skills. Students can be able to accomplish reading and its micro skills, and recover their weaknesses if regular access of audio-visual materials are ensured in the class. In this study hypothesis was tested at 0.05 level of significance value. If the value of Sig. (2-tailed) was < 0.05, then Hypothesis accepted, while if the value of Sig. (2-tailed) was > 0.05, then Hypothesis is denied.

Hypothesis: There is a significant difference in student's performance after completing the treatment class who are taught by using audio-visual materials in the classroom.

2. Literature Review

Students vary in their choices of learning styles. It is important for both the teachers and the students to identify the choices to minimize the gap and to ensure the appropriateness between students' preferred ways of learning and teachers' teaching strategies (Haryana, Astina & Kurniawati, 2020). A Multimedia based classroom is more beneficial for students to develop their language skills, especially reading skills because through reading comprehension they can build up their vocabulary; pronunciation as well as background knowledge.

Olagbaju and Popoola (2020) say, "Teaching is a two-way interaction between the instructor and the learner. The use of audio-visual resources in teaching actively engages both the teacher and learners in conversation during instruction. Audio-visual technology improves the quality of learning and students' learning experience because concepts are easily presented and comprehended as words are complemented with images and animations".

Larsen-Freeman and Anderson (2011) supported the idea that technology affords teaching materials and creates exciting learning experiences for the world of learners. Through the use of technology, learners can be motivated to master all four language skills.

Kathirvel and Hashim (2020) stated that audio-visual materials are enticing tools for learners' eyes and ears that can be used to help teachers to educate the students. They also added that audio-visual materials are important teaching and learning tools that have been used by teachers to create a technology-based classroom. It helps both teachers and students in their everyday teaching and learning process.

Apart from that, Cakir (2006) said that everyone knew very well that audio-visual materials are a great helper in stimulating and facilitating the foreign language learning process. According to him, students show more interest in language class with the use of audio-visual materials as it encourages them to stay focused, and they can relate their learning to their real life. He also added that, recently, the use of video in English classes had overgrown because of the increasing stress on communicative techniques.

Smith (2010), Ramadian, Cahyono and Suryati (2019) stated that applying VAK (Visual Auditory and Kinesthetic) learning styles in a class to accommodate the students' learning style preference will likely bring good achievement in English speaking classes. An assessment of the appropriateness of the VAK learning style is of potential value in helping decide on the appropriate learning style for improving students' speaking ability. Learning style is defined as a person's learning preferences to apprehend, organize, and process information and experiences in learning.

Supiyati (2011) asserted that one of the appropriate interventions to enhance students' speaking skills is the virtual implementation of audio-visual aids. She further adds, students become more excited when there is the usage of audio-visual aids in their daily lessons in the classroom and it is a proven fact that teaching and learning have been enjoyed by not just students but also teachers while teaching them.

Koksal (2004, 63) expects that teachers shouldn't be so dependent on the board and textbooks. They can encourage students to be more actively involved in the learning process through the use of films, which also enable students to be entertained while they are learning the language in question. Tomalin and Stempleski (1993) think that that videos stimulate student interest to acquire the target culture, as well as language and claim that video can communicate meaning better than any other media. Cunning and Wallace (2001) discussed the usefulness of using videos in language teaching stating that video provides stimuli to the learners which facilitates an opportunity to the learners to get background schemata of the subject. Also, the use of videos helps the learners to have an idea of the stress and rhythm pattern of the target language. Moreover, it allows the learners to predict, infer and analyze information of the subject matter.

Kishore (2003) determined that audio-visual devices encouraged a person's thinking and understanding. These devices have significant effects in the process of learning new things. Use of such devices makes a strong correlation with better understanding.

Harmer (2007) says that a range of objects, pictures, and other things can be used as instructional media to present and manipulate language and to involve students in the activities. (as cited in Nurmahyuni et al., 2020)

Kinder (1942) states that, with the use of audio-visual resources the learning experience can be made more real, accurate and active.

Coe et al (2014) assume, "Individuals learn better when they receive information in their preferred learning style (for example, visual, auditory or kinesthetic)"

The discussion stated above mainly concerns using audio-visual materials for teaching in the classroom to increase the interaction between teachers and students. Larsen-Freeman & Anderson (2011) also supported the idea that through the use of technology, learners can be motivated to master all four language skills.

The study, conducted by Smith (2010), stated that applying VAK (Visual Auditory and Kinesthetic) learning styles in a class to accommodate the students' learning style achievement in English speaking classes. Supiyati (2011) also showed the use of audio-visual aids in improving the speaking skills of learners.

The present study focuses on the development of reading skills of the young EFL learners in an institution where mainstream education is given by using traditional textbooks distributed by the government run organization. This is to understand what impact the audio-visual materials can create on the young learners in Bangladesh who are used to read and memorize only for learning a foreign language namely, English.

3. Theoretical Framework

This study is theoretically linked with Behaviorist theory and VAK learning style theory respectively.

3.1 Behaviorist Theory

Behaviorism believes in a process of mechanical habit formation of the human being for learning anything. This is a very effective and proven process for human language development because it incorporates the steps or parameters like stimuli, reinforcement, reward as well as punishment which can engage a man deeply to change their behavior. Weiss & Rosales-Ruiz (2014) emphasize 'Operant conditioning' is important for learning as it is a major part of behaviorism which is all about learned and reinforced behavior and, therefore, something is learned through reward or punishment.

The way infants develop oral language can be explained from Behaviorist point of view. They learn it from other human role models through a process involving stimulation/modeling, imitation, rewards, punishment, and practice. (Reutzel, 2015, p. 38).

Both Operant conditioning techniques and classical conditioning techniques could have been also applied in education sector to shape the students' behavior in classroom. If they can communicate perfectly in English and can accomplish a good command of it, it will be source of motivation for them that could be considered as a reward. Through this technique, students will understand the task and will be interested to analyze the comprehension. Here audio-visual materials function as stimuli that reinforce the students' to response their performance. Similarly, teachers can raise students' attention through audio-visual materials such as, by playing music, watching movie and asking the questions.

"While students are reading, the teacher rings a bell when every bold word is read. Soon students will begin to tap their pencil whenever a bold word is read, in addition to all the instances of 'the'. This activity shows how quickly classical conditioning can take effect" (Leonard, 2018).

3.2 VAK Learning Theory

VAK learning style theory is designed to describe how distinct types of learners process information. The VAK learning style was pioneered in 1987 by Neil Fleming. VAK stands for visual, auditory, and kinesthetic (tactile). The theory tries to establish that learners usually prefer to learn through any of these sense channels (UK Essays, 2018).

The use of an audio-visual system in the classroom makes the learners much quicker to get the information. As the information is visually presented in front of them it is remembered for a long time and they can connect the visual image with the real object. Huda (2015) states that visual, auditory, and kinesthetic learning styles (VAK) are multi-sensory learning styles that involve three elements of learning style: sight, hearing, and movement. This model seeks to combine these three components in developing students' skills in learning activities.

Visual ways create scope to learn through seeing which can be done best by presenting visual displays. Displaying pictures, images, videos, graphics, and even the teacher's activities may be included in it to see how the learners respond to them.

Auditory ways inspire to learn from listening that may include recorded speech or music, song, and sometimes teacher's lectures. Students can easily involve in auditory stimuli that help them to read fluently and oral presentations. They can understand the intonation, stressed, and unstressed sound, rhythm and make them correct from hearing those auditory materials.

Kinesthetic learning means learning through moving, doing and touching. Here, learners prefer learning from physical approach or take information from movement. They can observe or feel the incidents by touching. It can be an imitation process in which students learn through imitation or practice with the teacher.

These two theoretical foundations make the learners more active and increase their interest in the classroom.

4. Materials and Methods

This was an experimental type of research and adopted a pre-test and post-test on reading. Both Quantitative and qualitative approaches have been applied in this research. Participants have been chosen from the students of grade 4 and 5 from Tutpara Government Primary School of Khulna Sadar area. This area has been selected purposively for its central location and an easy access of the researchers to that place.

4.1 Participants

A total of 35 students were selected randomly from grade 4 and 5 as the participants of this research to observe and find out their reading capacity and learning process. Treatment was given for three months by applying audio-visual materials in the classroom.

4.2 Instrumentation

Three methods were used for collecting data in this research; these were observation, pre-test and posttest of reading. Through this process the researcher finds out the impact of using audio-visual materials on the students' reading skills and identified the changes after treatment class.

4.3 Procedure

The researchers gave a reading test before conducting the experimental class for the post-test. They answered some questions on multiple choices; filling in the gaps, matching, synonymous words, vocabulary, etc. After the pre-test, the researchers took a three-month long treatment to experiment on their achievement by using audio-visual materials. Finally, a post-test was given to find out student's development or changes after giving treatment. The test contained four different sectors and another segment the oral test had been added after post-test activities to see the result of their reading capacity.

4.4 Data Collection Technique

In this research, the quantitative and qualitative data were collected through:
- Observation
- Pre-test – post-test results
- Reading test by using audio-visual materials in the classroom

4.4 Observation

Observation was the first process for this experimental research. At first, the researcher observed the teaching and learning system in the school and students' learning capacity as well as their eagerness to follow the traditional system. Before applying the audio-visual materials in the classroom, a pre-test was given and conducting the classes was started by using those materials. To apply this treatment to students, they were observed in every class and data of the observation was recorded. It was observed whether the students were interested or not to attend the class, and how they were enjoying and responding to the system.

Figure 1 shows the researcher's role in the classroom while observing the teaching and learning techniques, students' behaviour or attendance.

Figure 1. A researcher in the class

4.4 Pre-test and Post-test Design

The test was a process to measure the learners' understanding levels and skills in a particular issue through some oral or written procedures. In this experimental research design, testing was also needed to collect the data on students' reading comprehension skills by applying audio-visual materials in the classroom.

Before taking the treatment class, the participants attended a pre-test that revealed the student's ability in reading comprehension. The pre-test consisted of 5 different items with true/false, multiple-choice questions, matching etc. It was arranged to know about the level of performance of the students in the pre-treatment condition. After the pre-test, the students were under the treatment class for three months through using new technology means the audio-visual materials. Audio-visual materials were used in the classroom; students watched videos and listened to audio clips. A laptop and an overhead projector were used in the classroom to display some videos, and images with audio clips. The students wrote down the unknown words from the videos and the researchers solved the problems if they faced any like helping them to understand the meanings of the words or to pronounce them. After teaching a comprehension there had some question-answer sessions for practice.

Figure 2 shows students when they are taking the test in the classroom. Appendix A shows the questions for the pre-test.

Figure 2. Students are taking the test

Finally, to see the result of their condition after conducting the treatment class by using audio-visual materials, the post-test was given to compare their performance on two different tests. The post-test consisted of four different items like fill in the gaps, multiple choice questions, and word meaning. Both the pre and post-test were given of 20 marks. Appendix B shows the questions for the post-test.

4.5 Student's Reading Test

It was kind of oral test that students were assigned to read aloud a particular comprehension individually in order to understand their reading ability. This segment bearing 10 marks was added after completing the posttest. The test was given in sound proof room for recording the student's voice. They had read out the selected passage which had been recorded with the help of an audio recorder. The purpose of this segment was to see the students' improvement in reading skills and to measure their fluency, pronunciation, punctuation as well as intonation during reading a passage.

4.6 Variables in the Study

Variables in the study include independent and dependent.

Independent variable. The audio-visual materials were an independent variable in this research.

Dependent variable. The improvement of their reading skills is considered as dependent variable

4.7 Data Analysis

In data analysis the researchers found out the differences between pre-test and post-test through collected data. The effect of using technology in the treatment class was deeply analyzed from observation. To compare the before-after test result, t-test formula was applied.

5. Results and Discussion

5.1 Pre-test and Post-test Frequency

Table 1 shows the average scores of the students in the pre-test as well as in the post-test. The mean values of the pre-test of 35 students was 9.94 and the mean values of the post-test which was conducted after using audio-visual materials in the classroom is 17.09. The increase in mean scores from the pre-test to the post-test (9.94 to 17.09) suggests that, on an average, students performed better after being exposed to audio-visual materials in the classroom.

Table 1. Student's Mean Score

Mean Values of Student's Performance	Pre-test	Post-test
	9.94	17.09
Max	16.5	20
Min	5	8

In pre-test the minimum score was 5 that increased in post-test into 8. Similarly, in pre-test the maximum score of student was 16.5 that increased in post-test into 20. The overall pattern of results suggests a significant positive change in student performance between the pre-test and post-test. The utilization of audio-visual materials in the classroom appears to have a positive impact on students, as evidenced by higher mean scores and a broader distribution of scores in the post-test.

Pre-test Frequency: It was a sudden test to see the student's basic skills of reading in pre-action stage before they were under the treatment classes

Table 2 displays the number of students who obtained specific scores in the pre-test conducted before using audio-visual materials in the classroom. For instance, 7 students scored 9, 6 students scored 11, and so on.

Table 2. Range of pre-test score

Pre- test Frequency	
Obtained Scores	**Number of Students**
5	1
6	2
6.5	1
7	2
8	3
9	7

10	4
11	6
12	5
13	1
14	2
15	0
16	0
16.5	1

Low Scores: The presence of scores such as 5, 6, and 7 indicates that a portion of students initially performed at a relatively lower level in the pre-test.

Average Scores: The range from 8 to 13 suggests that a considerable number of students achieved scores around the average range. The concentration of scores in the 8 to 13 range suggests that the majority of students attained scores within this average band during the pre-test.

Higher Scores: The absence of scores beyond 14 implies that only a few students initially performed exceptionally well.

Post-test Frequency: The test was given after completing the treatment class using audio-visual materials. The test was administered in the same question format as had been used in the pre-test.

Table 3 displays the number of students who obtained specific scores in the post-test. For instance, 15 students scored 20, 5 students scored 19, four students scored 16, three students scored 12 and 2 students scored 18 and so on.

Table 3. Range of post-test score

Post- test Frequency	
Obtained Scores	**Number of Students**
8	1
9	1
10	1
11	0
12	3
13	2
14	1
15	0
16	4
17	0
18	2
19	5
20	15

Low Scores: No student scored such as 5, 6, and 7 which indicate that no student performed at a relatively lower level in the posttest.

Average Scores: The range from 8 to 13 suggests that a considerable number of students achieved scores around the average range. The concentration of scores in the 8 to 13 range suggests that some of students attained scores within this average band in the posttest.

Higher Scores: Many students scored in the range of 16 to 20. A notable proportion of students achieved the highest score of 20 in the posttest.

It can be assumed that in the post-test stage, students' scores were increased significantly because the teaching process helped the students to learn spontaneously and to learn with amusement. They were more active and cheerful when the visuals were shown on the screen. The results of post-test also show the improvement that most of the students earned the highest score. They were equally calculated in 20 marks as in the pre-test. These significant differences between the pre-test and post-test show that the hypotheses are accepted. It can be shown in the pie charts given below (figure 3).

The figure shows the students' pre-test frequency result before applying audio-visual materials in the classroom. In this stage, 20% of total 35 students obtained average marks which is 09 and 17% students obtained 11 out of 20. 11% students comparatively got less marks in the pre-test.

Pre-test Frequency

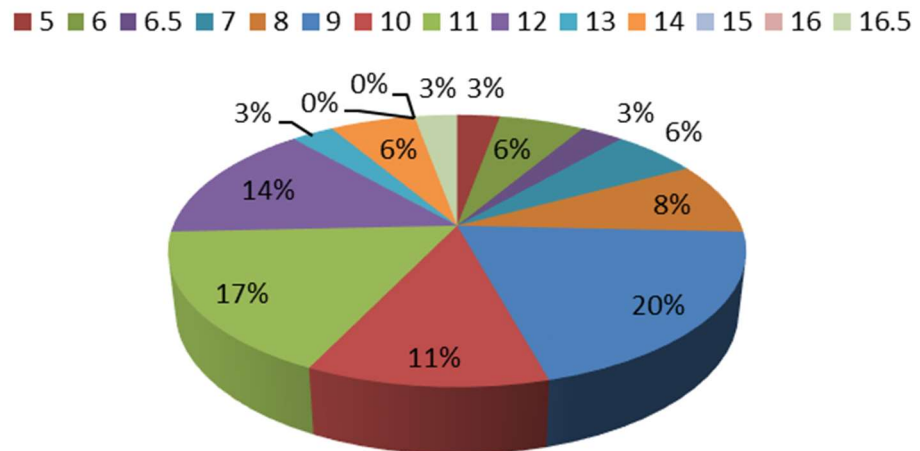■ 5 ■ 6 ■ 6.5 ■ 7 ■ 8 ■ 9 ■ 10 ■ 11 ■ 12 ■ 13 ■ 14 ■ 15 ■ 16 ■ 16.5

Figure 3. Pre-test Frequency

Figure 4 illustrates the percentage of students' post-test frequency result which shows a large number of students, almost 43% of total 35 students, obtained the highest scores of 20. And 14% of the students obtained 19. Most of the students have the higher level of attention and only 3% of the students scored comparatively poor. It clearly depicts that overall students have performed well and improved their scores in comparison to pre-test scores and the use of audio-visual materials helped them in a considerable amount.

Post - Test Frequency

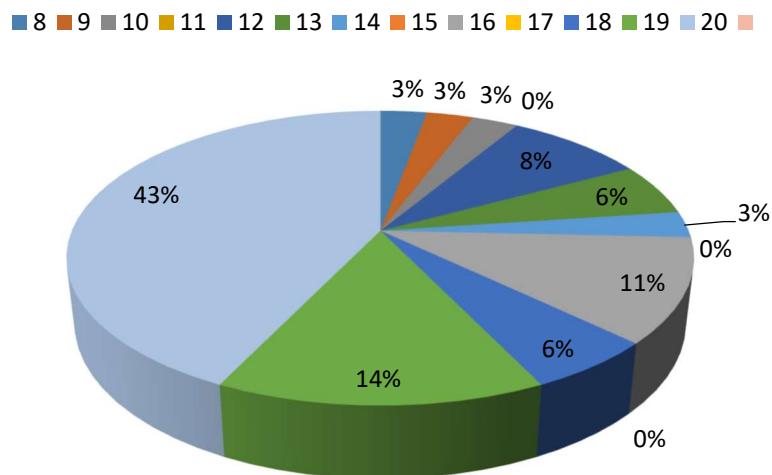■ 8 ■ 9 ■ 10 ■ 11 ■ 12 ■ 13 ■ 14 ■ 15 ■ 16 ■ 17 ■ 18 ■ 19 ■ 20 ■

Figure 4. Post-test Frequency

The pie charts, Figure 3 and Figure 4, visually represent the distribution of students' scores in the pre-test and post-test stages, respectively. A significant portion (20%) of students obtained average marks (9 out of 20) in the pre-test.17% with above-average scores where a substantial proportion (43%) of students achieved the highest scores of 20 in the post-test. A notable percentage (17%) scored 11 in pre-test, indicating above-average performance where in post-test a significant percentage (14%) obtained 19, indicating a high level of proficiency in reading skill. A notable percentage (11%) scored comparatively lower marks in the pre-test where only 3% of students obtained comparatively lower scores in the post-test.

Remarkable Improvement: In summary, the pie charts provide a clear visual representation of the shift in student performance from the pre-test to the posttest .The post-test pie chart demonstrates a significant shift towards higher scores, particularly with 43% achieving the

maximum score. The clear increase in percentages for top scores suggests that the use of audio-visual materials in the classroom contributed to improve student's reading skill.

5.2 Results of Observation

From the result of students' reading test, it can be concluded that there were 22 participants who read out the particular passage. On the basis of their performance, they were categorized into three distinctive grades – good, medium and low. Through this oral test, researcher observed their pronunciation, punctuation, fluency and intonation. In table 5, the mark (☐) sign indicates the students' accuracy that there had no notable mistakes in their performance. The rest of the students made some mistakes in pronunciation and punctuation. In another segment of fluency and intonation they were categorized in three different ways. The students who achieved the higher range of scores 7 to 10 out of 10, they obtained "good" grade. In this way, 4 to 6 scores students categorized in "medium" level and below 4 scores students graded in "low" level. Table 4 shows the analysis of students' reading test.

Table 4. Students' Reading Test

Number of participants	Observed mistakes during the student's reading			
	Pronunciation	Punctuation	Fluency	Intonation
Participant 1	1	✓	good	good
Participant 2	✓	✓	medium	medium
Participant 3	✓	✓	good	good
Participant 4	✓	1	medium	medium
Participant 5	6	2	medium	medium
Participant 6	6	1	low	low
Participant 7	2	1	low	medium
Participant 8	2	2	good	good
Participant 9	3	1	medium	good
Participant 10	2	2	medium	medium
Participant 11	2	2	medium	medium
Participant 12	✓	✓	good	good
Participant 13	3	2	medium	medium
Participant 14	4	2	low	medium
Participant 15	1	✓	good	good
Participant 16	2	1	low	low
Participant 17	2	1	good	medium
Participant 18	1	2	medium	low
Participant 19	✓	✓	good	good
Participant 20	1	✓	good	good
Participant 21	7	3	medium	medium
Participant 22	3	4	low	low

Further, let's analyze the criteria for the reading test. We considered three criteria. They were the following: good, medium, and low. Table 5 shows the analysis of criteria for the reading test and their range of scores.

Table 5. Criteria for Reading Test

No.	Range of Scores	Criteria
1	7-10	good
2	4-6	medium
3	0-3	low

5.3 Hypothesis Testing

The hypothesis is tested by comparing the pre-test and post-test data on particular task which are displayed in Table 6.

Table 6. Analysis of t-test of Students' performance

t-Test: Paired Two Sample for Means		
	Pre-test condition	**Post-test condition**
Mean	9.94	17.09
Variance	6.335	13.846
Observations	35	35
Hypothesized Mean Difference	9.94	17.09
Df	34	
T Stat		11.32
P(T<=t) one-tail		0.000
T Critical one-tail		1.69
P(T<=t) two-tail		4.44
T Critical two-tail		2.032

Table 6 shows that the mean result for pre-test is 9.94 and for post-test, it is 17.09. The pre-test mean reflects scores before using audio-visual materials, and the post-test mean reflects scores after three months of using such materials. The mean value of t-test basically stands for average score. So, this result shows that use of audio-visual materials has increased the average score of the students. The table also shows that the variance of the scores of the pre-test is 6.335 increasing to 13.846 in the post-test. It implies higher deviations from the mean. It could be assumed that the variability of the scores have increased due to the treatment with the audio-visual materials. The results of the post-test show a comparatively lower number of students scoring less than 10, comparatively higher number of students scoring 10-19, and a good number (15) of students scoring full marks (20). The implication is that the use of audio-visual materials has brought a significant change on an average in the reading performance of the students.

According the rules of t-test:

- If the P-value is below the conventional significance level of 0.05, it signifies a noteworthy distinction between the mean values. This means that there is a substantial variation in student's performance before and after using audio-visual materials in the classroom.
- If the P-value exceeds the established significance level of 0.05, the null hypothesis will be accepted which indicates that there is no substantial variation in student's performance before and after using audio-visual materials in the classroom.

From the table, we can see that the P-value for one tailed form of t-test is 2.22134E i.e. 0.000 level of significance which is less than 0.05 and the P-value for two tailed t-test is 4.44267E-13 or 0.000 which is also less than 0.05. So, P-values for both one-tailed and two-tailed t-tests are less than 1% level of significance. Therefore, according to the rule of t-test the result of the t-test of pre-test and post-test signifies a noteworthy distinction between the mean values. This means that there is a substantial variation in student's performance before and after using audio-visual materials in the classroom.

The result implies that the mean difference of t-test is statistically significant at 1% level. Post condition of using audio-visual materials improved the reading skills significantly.

As the P-value of the test (4.44267E-13) is less than the standard significance level of 0.05, the researcher can reject the null hypothesis because the hypothesis is proved.

5.4 Research Findings

The study aimed to compare students' performance before and after using audio-visual materials in the classroom. The results were analyzed using a t-test, and here are the key findings.

- It was observed that the students enjoyed the screen images, videos and the sound for learning the lessons in the class room.
- Before applying those materials, they were not too much active and did not pay proper attention to their task.
- Students were found more active and could easily understand the lesson during three months treatment class.

- Audio-visual materials are proved to be very effective in stimulating and facilitating the foreign language learning process (Cakir, 2006). In the study, it was found that students were more enthusiastic in language class with the use of audio-visual materials as it encourages them to stay focused, and they can relate their learning to their real life.
- In the pre-test, students on average scored 9.94 and in the post-test after using audio-visual materials in the classroom, they scored 17.09. This suggests that students performed better after experiencing audio-visual aids in their learning and they are very effective for increasing student's reading skill.
- The t-test results show that there is a substantial improvement in student performance when using audio-visual materials in the classroom. That means audio-visual materials are very effective for increasing student's reading skill.
- In the post-test the students made lesser mistakes (✔) in pronunciation and punctuation. Only few students had medium or low performance levels in reading comprehension skills.
- The results suggest a significant positive change in student performance from the pre-test to the post-test. Therefore, students, on an average, showed improvement after being exposed to audio-visual materials in the classroom. It is evident that students did better after the treatment class with audio-visual materials. The average scores went up, and there is a noticeable improvement across the range of scores, indicating positive effect of using audio-visual materials in the classroom.
- The shift from the pre-test to the post-test in higher scores, especially with 43% of the students' achieving the maximum score (20 out of 20), highlights the positive effect of audio-visual materials on students' overall improvement in reading skills.

So overall, the finding shows that the use of audio-visual materials in classroom can increase their reading skills and accelerate them to be more active.

5.5 Implications of the Study

• The findings suggest that incorporating audio-visual materials in the classroom enhances student engagement and attention. Educators can consider integrating multimedia elements to create a more interactive and dynamic learning environment.

• The study indicates a significant improvement in students' reading skills after exposure to audio-visual materials. Teachers and curriculum designers may consider incorporating multimedia content to improve reading proficiency.

• The positive impact observed after three months of using audio-visual materials implies that continuous implementation is beneficial. Schools and educators should integrate multimedia elements into their regular teaching practices.

• The oral test results highlight the importance of focusing on pronunciation and punctuation. Language instructors should design activities or lessons that specifically address these aspects to enhance overall language proficiency.

5.6 Recommendations

Based on the findings of this study, researcher has some recommendations to develop the students' language skills:

• To maintain students is difficult if the teacher does not follow any technique or creativity in the classroom. To grab their attention teacher should be more careful and creative.

• For arranging a multimedia classroom all the necessary materials are required, so materials should be available always.

• The teacher should assure that the multimedia classroom is free from any chaos and sound proved so that students can listen carefully and give proper attention.

• During English class, L1 interference should be avoided as much as possible

• Teacher should continue the process of using audio-visual materials in the classroom

• Teacher also should participate in the activities with the students while using the materials

• Students should practice more and more on comprehension to increase the fluency.

5.7 Limitations of the Study

The research is a small scale study. A larger number of sample could have been more convincing. Another limitation of the study is that no control group has been formed in the experiment. The presence of a control group could open scope for comparison of the experiment and the control group. It could reveal the impact of the audio-visual materials in a more realistic way. Due to the scarcity of class-schedule and other technical support the range of the study has been limited.

6. Conclusions

The use of technology in classroom has tremendous significance in learning a language. Students have learnt with joy and were more active. Audio-visual materials supported students to learn the particular lesson. After three months treatment class, they were able to read English text comparatively fluently. The objectives of the study were to find out the impact of audio-visual materials on reading skills development in primary level students and the result of posttest shows the significant improvement as well as their performance in the classroom. The pre-test and posttest mean score has been increased from 9.94 into 17.08 that indicate that, the treatment was significant for students by using those audio-visual materials in classroom. More than half of the students obtained highest scores in posttest. The hypothesis of the study was to find out the students' capacity to accomplish reading and its micro skills, and recover their weaknesses if regular accesses of audio-visual materials are entered in the class that has been proved and it can be said that using audio-visual materials develops young EFL students' reading skill significantly.

In Bangladesh, generally primary school students are habituated to their board-suggested textbooks which is mainly based on chalk and talk approach. But in a digital era, the process of teaching system should be changed and teachers should make them familiar with these new trends and technologies by using audio-visual materials in classroom. But technologies are not properly used at school because of the paucity of audio-visual teaching resources. Sometimes students become bored with their regular classes. So, these materials can be a good solution to the problems related to reading skills in Bangladesh as well as to any EFL context.

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Appendix A. Question for Pre-test.

Name:_____   Class:_____   Date:_____

Reading Comprehension Test

Time: 1 hour

Marks: 20

Directions: Read the passage. Read each question and mark or write the correct answer.

Read the text carefully:

Hello, this is Mita. I live in Khulna. I live in a house with my father, mother and brother. I am nine years old and I read in class four. Yesterday was my birthday. On my birthday, my father bought me a mango tree as a birthday gift. I was very happy to get it from him because I know that tree is our true friend. Trees are the main source of Oxygen. We cannot live without oxygen. It also helps in absorbing dust and other pollutants from the air and keeps it clean. Every part of a tree is useful to us. So it is undoubtedly a very precious gift for me.

Next day, I along with my father planted the tree in front of our house I was so excited to do that. After planting it, my father put a fence around it. I water the tree every morning.

A.   Choose True or False:

Mita is from Khulna   **True**   **False**

She is 9 years old   **True**   **False**

Trees help in absorbing Oxygen   **True**   **False**

Her father bought her a banyan tree **True**   **False**

B.   Choose the correct answer from the option

I. How many members are there in Mita's family?

a)   3   b) 4   c) 5   d) 2

II. Mita's father bought her a_____

a)   book   b) doll   c) cake   d) mango tree

III. Which one is not true?

a)   Trees give us Oxygen

b)   Trees keep in absorbing pollutants

c)   Trees Keep the water clean

d)   Trees give us fruits

IV. Who helps in absorbing dust?

a)   Air   b) Tree   c) Oxygen   d) Mita

C.   Answer the questions:

1)   In which class does Mita read in?

2)   Why did her father give her a mango tree?

3)   How does tree keep clean the air?

4)   What does tree do to us? Write 3 (three) sentences on it.

D.   Find out the following words in the passage and underline them

a.   Eight   e.   Pollutant

b.   Absorbing   f.   Friend

c.   Dust   g.   Planted

d.   Undoubtedly   h.   Excited

E.   Match the words with the parts in the opposite box:

i. Gift	a) Happy
ii. Absorbing	b) Enclose the area
iii. Dust	c) Put seeds in ground
iv. Excited	d) Powdery substance
v. Friend	e) Harmful substance
vi. Planted	f) Present
vii. Fence	g) Source
viii. pollute	h) Keep
	i) A close relationship
	j) Take up

Appendix A. Question for Post-test.

Name: Class: Date:

Reading Comprehension Test

Time: 30 min

Marks: 20

Directions: Read the passage. Read each questions and mark or write the correct answer

Read the text carefully:

Hello, I am Sakib. I live in Dhaka. Last February I went on a visit to the Bangla Academy Book Fair along with my parents and younger brother. It is the biggest and most gorgeous book fair in the country. Bangla Academy Book Fair is organized every year. I also visit a book fair organized in my city because I am a book lover. I have read a lot of books so far. Most of them are bought from the book fair. Whenever I get some time, my first priority is to read books. Reading has improved my thinking pattern, understanding and knowledge. There were thousands of visitors coming to the Fair. There were rows of bookstalls beautifully decorated in the Fair. The premises of Bangla Academy took a festive look. We visited a lot of stalls and bought a number of books: there were storybooks, science fiction, and autobiographies. My father is particularly fond of autobiographies and he suggests we read these books. My younger brother and mother bought some books for the children. The popularity of book fairs is increasing day by day with the advancement of civilization.

A. Choose the correct answer from the option:

1.   Where does Sakib live in?

a.   Khulna   b. Dhaka   c. Sylhet   d. Rangpur

2.   Where did Sakib go last February?

a.   Dhaka National Zoo

b.   Bangla Academy Book Fair

c.   Lalbagh Kella

d.   Sonargoan

3.   There were thousands of visitors coming to_____

a.   the programme

b.   the Fair

c.   the village Fair

4.   Which one is not correct?

a.   Sakib is a book lover

b.   Sakib does not want to read any book

c.   Sakib reads a lot of books

d.   His first priority is to read books

B. Answer the questions:

1. What is the name of the book fair?

2. By whom is it organized?

3. What is the importance of a book fair?

4. What types of books are available at the fair?

C. Find out the following words in the passage, underline them and guese their meanings:

Book lover, Autobiography, Decorative, Premises, Priority, Gorgeous, Festive, Civilization