

International Journal of Teaching, Learning and Education (IJTLE)

Vol-3, Issue-5, Sep-Oct, 2024

CrossRef DOI: 10.22161/ijtle

IJTLE



editor.ijtle@gmail.com

<https://ijtle.com/>

International Journal of Teaching, Learning and Education (IJTLE)

ISSN: 2583-3812

DOI: 10.22161/ijtle

Vol-3, Issue-5

September - October 2024

Editor in Chief

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Publisher

International Journal of Teaching, Learning and Education

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Vol-3, Issue-5; September-October 2024
(10.22161/ijtle.3.5)

Green Brand Image Affects Consumer Purchase Intention in China

Authors: Feng Lin, Adejare Yusuff Aremu

Page No: 1-17

Construction of Student-centered Teaching Evaluation Index System in College Classroom

Authors: Wei Jingxuan, Charanjit Kaur Swaran Singh

Page No: 18-26

A Critical Evaluation of Existential Dilemmas in Frost's "The Road Not Taken"

Authors: Imran Ahmad Sheikh, Khushi

Page No: 27-30

Customizable Virtual Reality Gamification for Enhanced Teaching and Learning for Students with Dyslexia

Authors: Fasee Ullah, Thievalson a/l Johnsan

Page No: 31-41

Between Tongues: The Battle for Linguistic Equity in Tanzanian Schools – An Autoethnographic Study

Authors: Scholastika Massawe

Page No: 42-53

Financial Management Challenges Heads of Schools Experience in Public Secondary Schools in Mbeya Rural District, Mbeya Region, Tanzania

Authors: Thadeo Chundu, Lucas Mwahombela, Brown Gwambene

Page No: 54-64

The importance of teaching paradigmatic lexical relations to EFL students: How to teach homonymy

Authors: Dr. Alda Jashari

Page No: 65-69

Role of Psychologists and Psychological theories in Mental wellness of pupils in the context of National Education Policy-2020

Authors: Dr. Vanita Rose, Romi Kadian

Page No: 70-76

Teachers' Perceptions on Integrating YouTube Videos in Teaching Narrative Writing

Authors: Jane Irene PJ Antony, Puteri Zarina Binti Megat Khalid

Page No: 77-91

Assessing the Development of Environmental Awareness in CLIL Based Learning Environments

Authors: Ms. Preksha, Dr. Kanwalpreet Kaur

Page No: 93-100

Transforming Technical Education: A Framework for Integrating AR/VR to Enhance Teaching and Learning in Universities

Authors: Shashi Bhushan, Sharmila Arunkumar

Page No: 101-112

Green Brand Image Affects Consumer Purchase Intention in China

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Received: 24 Jul 2024, Received in revised form: 19 Aug 2024, Accepted: 25 Aug 2024, Available online: 01 Sep 2024

Abstract

The development of green marketing has experienced a process from focusing on environmental protection concepts to fully integrating into corporate strategies. With the improvement of environmental awareness, consumers' demand for green products continues to grow, prompting enterprises to take sustainable development as one of their core competencies. Today, green marketing not only involves the environmental attributes of products, but also includes the greening of the entire supply chain from the selection of raw materials to waste disposal, promoting the transformation of the entire industry to the direction of low-carbon and environmental protection. At the same time, the support of government policies and regulations has also accelerated the development of green marketing, which pushing enterprises to innovate green technologies and reduce environmental impact. This paper takes the consumers in Shaanxi province in China as the research object, constructs the research model of enterprise green brand image and consumer purchase intention with brand trust as the intermediary variable, and obtains the data through questionnaire survey, uses SPSS26.0 and carries out empirical analysis. The results show that corporate green brand image has a significant positive impact on brand trust and consumer purchase intention. Brand trust has positive mediating effect. This paper reveals the influence mechanism of corporate green brand image on brand trust and consumers purchase intention, provides a theoretical basis for enterprises to promote consumers purchase intention, and provides a meaningful reference for enterprises to implement brand strategy.

Keywords— green brand image, brand trust, consumer purchase intention

I. INTRODUCTION

In the era of economic globalization, international competition is becoming increasingly fierce. As a result, the relevant countries have adopted the GDP or GNP calculation method, with economic growth as the primary goal. All competitive firms strive for efficiency as well as profit whether public or private. Competitive pressures have led them to ignore resource scarcity and ignore the value of natural ecosystems. The Chinese

government attaches great importance to solving environmental problems and has introduced a series of environmental protection policies. The 18th National Congress of the Communist Party of China (2012) included ecological progress in the overall “five-in-one plan” for the cause of socialism with Chinese characteristics. The report to the 19th National Congress of the Communist Party of China (2017) pointed out that: We must adhere to the concept of clear waters and lush

mountains as gold and silver mountains, in accordance with the requirements of green development in order to improve the ecological environment as an important prerequisite and guarantee for high-quality economic development; The "14th Five-Year Plan" circular Economy Development Plan (2021) proposes that the "14th Five-Year Plan" period is a critical period for China's ecological civilization construction to achieve a new leap, and it is also a crucial period for the transformation of circular economy from scale expansion to quality improvement. The 20th National Congress of the Communist Party of China (2022) put the construction of socialist ecological civilization in the national development strategy in the new era, and meanwhile pointed out that promoting green and low-carbon economic and social development is a key link to achieve high-quality development. Xi pointed out "Green development is the base color of high-quality development, and new quality productivity itself is green productivity" (Yu Sinan, 2024). All walks of life began to pay close attention to green sustainable development, strengthen the transformation of economic growth mode and the relationship between resource conservation and environmental protection, and make efforts to realize the green transformation of production and life style.

For consumers, brand image is the consumer's overall cognition and feeling of the brand, which can have an impact on consumer behavior. For enterprises, brand image is an important brand asset. Brands can influence consumers' awareness and attitude towards the brand through various marketing activities, establish brand image in consumers' minds, and stimulate consumers purchase intention and actual purchase behavior towards the brand. Studies have shown that the impact of green brands on market economy has been increasing with the popularization of environmental awareness and the strengthening of government supervision (Maignan, 2004); Consumers have a deeper understanding of green products, and their willingness to consume has gradually increased, and they are more willing to buy brands with green and environmental protection attributes (Kotler, 2011; Luchs et al., 2010), the unique competitive advantages of green brands

gradually emerged (N Darnall, 2008).

At present, many scholars have studied the influence of brand image on consumers purchase intention from different perspectives, but there is a problem as follows: although the influence of brand image on consumers purchase intention has been confirmed, the internal influence mechanism between the two has not been clarified. In some studies on the influence of brand image on consumer behavior, some scholars introduce mediating variables to explore its influence path. Zhao Enbei (2020) discussed the influence of retail brand image on consumers patronage behavior based on three dimensions, and proved that perceived value plays an intermediary role in the influence process. Brand image is positively associated with brand purchase intention (Liang, S. Z., 2024). Tong Lizhong and Lei Tao (2012) studied the influence of brand image on the purchase intention of private brands and found that brand trust of private brands played a completely mediating role. The research of the above scholars proves the feasibility of introducing intermediary variables to explore the relationship between brand image and consumers purchase intention, and also provides reference for the research of this paper. Therefore, this paper will take the brand green trust as the mediating variable, brand green image is independent variable, and the dependent variable is customer purchase intention.

II. LITERATURE REVIEW

2.1 Green Brand Image

Chen (2010) defined green brand image as a series of brand perceptions that consumers have about a brand environmental commitment and environmental issues. Dai Mingxi (2008) proposed that when consumers can perceive the green attributes conveyed by the enterprise through the green marketing strategy and form green associations with the brand, they believe that the brand has a green brand image. Li Hui (2018) believes that the green brand image refers to the impression left by the green and environmental protection elements in a brand in the minds of customers, and is an important part of the overall brand image. Chen (2010) conducted a survey on 254 green consumers of information and electronic products in Taiwan, which shows that green

brand image, green brand satisfaction and green brand trust all have a positive impact on green brand equity. The positive correlation between green brand image and green brand equity is partly mediated by green brand satisfaction and green brand trust. Mourad & Ahmed(2012) found that there is a significant positive correlation between green brand image and brand preference. Liu Feiyan and Li Xinran (2022) took green brand image as a one-dimensional variable in their study on proactive personality's willingness to buy green products. Zameer et al. (2020), taking Chinese cleaner production as the background, studied the formation mechanism of enterprises' green competitive advantage under the joint action of internal factors such as green production and green creativity and external factors such as green brand image, and also took green brand image as a single dimension. When He Jinlian (2021) studied the impact of green brand image on consumers' willingness to travel in rural areas, he divided the green brand image of tourism destinations into green brand tourism organization image, product hardware attributes and product software attributes. He Lin and Chen Lihong (2020) believe that the components of green clothing brand image include green product image, green store image, green service image, green public relations image, green enterprise image and green production image. Ma Ji (2023) divides green brand image into green product image, green enterprise image and green consumer image. Environmentally concerned consumers are likely to hold a less positive image of the green performance of the brand, but where brands have a favorable green brand image, this positively impacts brand loyalty (Watson, A.,2024). Therefore, this paper will start with green brand image, an independent variable that consumers can directly perceive, and study how it affects consumers' behavior.

2.2 Green Trust

Lauer & Lee(1999), based on the premise that purchasing choices are risky and proposed that brand trust refers to the degree to which consumers rely on brands they think are more reliable when they are in an environment of information asymmetry. Ballester et al. (2003) believe that brand trust refers to consumers'

attitude and expectation that they still have confidence in a brand in the face of uncertainty, that is, possible risks. Jin Yufang et al. (2006) discussed the establishment mechanism of brand trust based on the data of the cosmetics industry, and concluded through empirical analysis that the empirical mechanism and calculation mechanism played a role in the establishment of brand trust. He Aizhong (2010) verified the mediating role of private brand trust in the influence of store image on consumers' purchase intention. Tong Lizhong et al. (2014) found that retailer brand image promotes consumers' purchase intention through consumer brand trust. In the study on regional brands, Zhao Weihong et al. (2021) found that the regional cultural confidence strategy based on cognitive rationality can drive consumers' trust in regional brands in the host country and further promote their acceptance. In addition, Zhao Weihong et al. (2021) also found that charisma strategies based on moral rationality can drive consumers' trust in regional brands in host countries, and thus promote consumers' regional brand preference in host countries. There are abundant researches at home and abroad on the influencing factors and conduction effect of brand trust, and the relevant relationships are clear, which provides ideas for the research of this paper.

2.3 Customer Purchase Intention

Fishbein(1975) defined purchase intention as the probability of a consumer's purchase behavior for a specific product. Monroe et al. (1991) proposed that consumers' purchase intention has a positive impact on actual purchase behavior, that is, the higher the purchase intention, the more likely the actual purchase behavior will occur. Morinez et al. (2007) defined purchase intention as the probability that a consumer is inclined to buy a certain product under certain conditions. Shah et al. (2012) proposed that the study on purchase intention is a study on the decision-making mode of consumers' purchase behavior essentially. Some green marketing studies have also shown that positive attitudes towards green products affect purchase intentions (Laroche et al., 2001; Smith et al., 1994).

In view of this, this paper intends to start from the

perspective of consumer behavior, select consumers' purchase intention as an important variable that predicts consumers' purchase behavior, and integrate various factors related to green brand image to carry out research on the impact of corporate green brand image on consumers' purchase intention. At the same time, on the basis of previous studies, this paper analyzes the mediating effect of brand trust, explores the influence effect and influence mechanism between independent and dependent variables, which provides reference for further academic research on the relationship between green brand image and consumer behavior, and provides effective management suggestions for enterprises to build green brand image.

2.4 Hypothesis Development

Chen(2010) defined green brand image as a series of brand perceptions that consumers have about a brands' commitment to environmental protection and environmental issues. Consumer purchase intention is a kind of psychological trend, which can become the basis and judgment standard of consumers' final decision on purchasing behavior. Guan Hui, Dong Dahai et al. (2004) believe that brand image influences and determines consumers purchasing and consumption behaviors. Unique brand image can improve the market performance of products. Robertson and Gatignon(1986) pointed out that a good brand image will affect a person's overall impression of the enterprise, and a good brand image will bring confidence to him and encourage him to make more purchases. The research of Bian&Moutinho(2011) shows that brand image has a significant positive impact on customers purchasing behavior. Mo Fan (2021) believes that corporate image, product image and consumer image in Bell model all significantly affect consumers purchase intention. Based on the purpose of this study, this paper will focus on the impact of green brand image on consumers purchase intention. So the hypothesis is that,

H1: Brand green image has a positive effect on customer purchase intention.

Zhang Qiyao et al. (2016) believe that they will judge the green attributes of products by product raw materials, packaging, functions and image when consumers buy green products. Yang Xiaoyan et al. (2008) proved that

consumers would trust green certified brands more, and found that consumers who obey authority would trust green certified brands more. Chen Weijun (2014) showed that consumers would trust brands with green certification mark more. Yang Zhi (2016) found through research that green certification and argument strength can significantly enhance consumers' green food. Zhao Weihong (2004) found that in China's service industry, the quality of service results provided by practitioners to customers has a positive impact on customer satisfaction. He Lin and Chen Lihong (2020) found that clothing brand enterprises can convey the environmental protection information of the brand to consumers through service, so that consumers can perceive the environmental protection concept of the enterprise, and thus increase the goodwill and trust of the brand. Ma Jirou (2023) uses the Bei model to divide green brand image into three dimensions: green product image, green enterprise image and green user image, and finds that these three dimensions all have a positive impact on the purchase intention of green products through empirical study. Based on the above analysis, this paper proposes the following hypothesis:

H2: Brand green image has a positive effect on brand green trust.

At present, many studies have shown that trust will affect consumers' willingness and behavior. Koller's theory of general consumer behavior pattern holds that trust will affect consumers purchase intention. He Aizhong and Li Yu (2010) believe that if they have high trust in the brand, they will be more willing to buy or recommend the private brand products to others when consumers choose or buy private brand products. Dong Lizhong and Lei Tao (2014) found that consumers purchase intention is also affected by the trust and reliability of private brands. In the process of brand internationalization, brand trust of consumers in host countries has a positive impact on their purchase intention (Zhao Weihong, 2020). Supported by Wijaya and Pahar (2022), their research indicates that brand trust significantly impacts purchasing decisions. Based on the above analysis, this paper proposes the following hypothesis:

H3: Brand trust has a positive effect on customer

purchase intention.

Wang Chunying (2015) took home appliance brands as an example to verify that brand trust plays a partial intermediary role between corporate brand image and consumer behavior. The results of Chenyu et al. (2017) research on online shopping clothing brands show that brand trust plays a complete mediating role between brand image and online shopping brand buyback intention. In a number of studies conducted in different fields, brand trust has been used as an intermediary variable to conduct the influence of brand image on consumer behavior. According to the theory of perceived risk, the stronger the consumer's trust in the brand, the stronger the consumer's perceived risk to the brand will be reduced to a certain extent, and the stronger the purchase intention (Lei Kaichun & Wang Xiaonan, 2024).

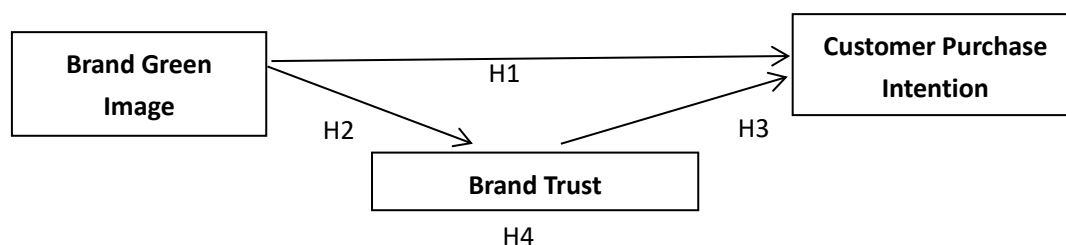


Fig.1 Research Framework

3.2 Instrument Development

Three scales are used in this study: green brand image, consumer purchase intention and brand trust measurement scale, which is mainly based on measurement research model proposed by Fan Xiucheng, Chen Jie (2002), Guan Hui, Dong Dahai (2007), Dai Mingxi (2008) and Chen Boyi (2018). Finally, a measurement scale composed of 24 items was formed. All scales in this paper are measured using Likert5-level scoring method, 1-5 respectively represent the degree of recognition of the items, 1 represents “completely disagree”, 5 represents “completely agree”, from 1 to 5 with the increase of the size of the number, the degree of recognition increases.

3.3 Data Collection

In the whole process of questionnaire survey, a total of 300 questionnaires were sent out, 285 were recovered, the number of valid questionnaires was 271, and the effective recovery rate was 90.33%. The questionnaire distribution method is mainly distributed through the

Based on the above research, the following hypothesis is proposed:

H4: Brand trust plays an intermediary role between brand green image and consumers purchase intention.

III. METHODOLOGY

3.1 Framework

Combined with the research purpose of this paper, this paper builds a theoretical research model with green brand image as the independent variable, consumers purchase intention as the dependent variable, and brand trust as the intermediary variable (Figure 1). Based on literature review in this paper. The framework is presented below,

questionnaire star: it is mainly conducted for relatives and friends. The advantages are that the questionnaire modification opinions can be directly obtained and the data quality is high. The disadvantages are that the sample group is single, the subjects are mainly in the same region, and the number of questionnaires is limited. The questionnaires were distributed and collected over a two-week period from July to August 2024.

IV. DATA ANALYSIS

The usage of SPSS26.0 will be also used for the data analysis. This paper will be using data analysis, regressions and descriptive statistic and to elaborate the findings, whereas, reliability scale will be calculated using Cronbach's Alpha.

4.1 Descriptive Statistical Analysis

Table 1 is descriptive statistical analysis of subjects such as personal information, including gender, age, education level, occupation and income level, and

statistics of the average scores of each variable dimension. According to Table 1, the descriptive statistics of sample demographic characteristics can be obtained. The sample group participating in this survey has the characteristics of young age, high education, stable career and high income. According to the survey

of Chinese current green consumer groups, young people with high education and high consumption power are the mainstay of the future green consumer market. Therefore, the sample objects participating in this survey are representative to a certain extent from the perspective of individual information,

Table 1: *Demographic Profile of Respondents*

Demography	Description	Frequency	Percent%
GENDER	Male	120	44.2
	Female	151	55.8
	Subtotal	271	100
AGE	Below 21	5	1.8
	21-30	110	40.6
	31-40	108	36.9
	41-50	38	14.0
	51 above	10	6.7
	Subtotal	271	100
EDUCATIONAL LEVEL	High school/Technical secondary school	31	11.4
	Undergraduate/Junior college student	185	68.3
	Master	52	19.2
	PHD	3	1.1
	Subtotal	271	100
CUTTENT JOB	Students	10	3.7
	Government Official	96	35.4
	Worker	5	1.8
	Science, education, culture and health staff	110	40.6
	Laid-off workers	5	1.8
	Company staff	42	15.6
	Others	3	1.1
Subtotal	271	100	
MONTHLY INCOME	Below 2000	7	2.6
	2000-4000	21	7.7
	4000-6000	66	24.3
	6000-8000	70	25.8
	8000-10000	75	27.7
	10000 above	30	11.9
Subtotal	271	100	

4.2 Internal Consistency Reliability

Reliability analysis is also known as reliability analysis. For Likert scale, reliability is usually judged by CITC value of the item and Cronbach's coefficient. Among them, the CITC value generally needs to be above 0.4, and is acceptable in the range of 0.3-0.5. If the CITC value is less than 0.3, it indicates that the correlation between items is not strong enough and the scale questions under

this dimension should be rearranged. The Cronbach's value should be greater than 0.8. If it is greater than 0.7 and less than 0.8, it is acceptable. The Cronbach's α of each subscale should be greater than 0.7, if greater than 0.6, less than 0.7 is acceptable; If the Cronbach's α is below 0.6, the question item needs to be adjusted or the questionnaire needs to be redesigned.

Table 2: Variables, Items, CITC, Cronbach's Alpha if Item Deleted, Cronbach's Alpha,

Scale	Code	Items	Corrected Item-Total Correlation (CITC)	Cronbach's Alpha if Item Deleted	Cronbach's Alpha	Source
Brand Green Image	A1	The brand products pay attention to saving resources and reducing pollution in the product pre-sale, sale and after-sales service.	0.387	0.612	0.858	Chen Boyan, 2018; Fan Xiucheng, Cheng Jie 2002:
	A2	The brand's affiliated enterprises are innovative and energy-saving products are updated quickly.	0.394	0.685		
	A3	The brand's affiliated enterprises often have green public welfare behavior.	0.457	0.699		
	A4	Using this brand can show my green lifestyle.	0.414	0.689		
	A5	Relatives and friends around have used the brand's products, and recommend them.	0.442	0.678		
	A6	Green certification is attached to the packaging of the brand's products.	0.457	0.567		
Brand Green Trust	B1	Through this brand, I get the products I'm looking for.	0.476	0.748	0.737	Ballester, 2003; Hess, 1995; An Xiaoming, 2007
	B2	I have faith in the brand.	0.443	0.789		
	B3	I can rely on the brand to solve problems related to the product.	0.403	0.723		
	B4	When something goes wrong with the product, the brand compensates me in some way.	0.462	0.745		
Customer Purchase Intention	C1	I think the company's related products and services are the first choice to buy.	0.539	0.654	0.742	Dodds, 1991; Bickart & Rut

C2	I will buy most of the related products and services from this company.	0.507	0.688	h, 2012
C3	I prefer to try new products and services introduced by the company.	0.518	0.692	
C4	Will recommend the product to friends and people around.	0.532	0.622	

Table 3: Reliability Statistics (n=468)

Variables	Cronbach's Alpha	NO. Of Items
Brand Green Image	0.858	6
Brand Green Trust	0.737	4
Customer Purchase Intention	0.742	4
Total	0.928	14

According to Table 2 and Table 3, the reliability test was conducted on the brand green image, brand green trust, and customer purchase intention scales. The Cronbach's α coefficients of the overall items of the three scales were 0.858, 0.737 and 0.742 respectively., greater than 0.7, the overall reliability of the scale is good. The CITC of each item in the scale are shown in Table 2. It can be seen from the table that the CITC of all items is greater than 0.4, indicating that the reliability level of the three scales is good.

4.3 Validity

Validity analysis refers to the degree to which each item in a questionnaire measures the relationship between variables accurately. In this study, the measurement items of each dimension scale used in the questionnaire are all based on previous studies of scholars, and most of them are items that have been used and verified for many times, and have passed the feedback and modification of the pretest. The contents of the items are logical and reasonably expressed, and the content

validity can be considered high. Firstly, KMO value and Bartlett sphericity test should be used to determine whether the data is suitable for factor analysis. In general, the KMO value should be greater than 0.7, and greater than 0.8 is appropriate; Data with a KMO value less than 0.5 should be abandoned.

The validity of the dependent variable brand green image scale is analyzed, and the results are shown in Table 4. The KMO value of brand green image is 0.858, greater than 0.7, and the significance of Bartlett sphericity test value is 0.000, less than 0.05 indicating that exploratory factor analysis can be carried out. Principal component factor analysis is used to extract 6 measurement items of brand green image, and a factor can be extracted. As shown in Table 5, the load value of each factor is greater than 0.5, and the explanatory variance reaches 55.245%, which exceeds 50%. Therefore, the mean value of each item can be used for correlation analysis and regression analysis.

Table 4: KMO, Bartlett's Test of Sphericity of Brand Green Image

KMO and Bartlett's Test of Sphericity		
KMO		0.858
Bartlett's Test	Approx. Chi-Square	689.125
	df	12
	Sig.	0.000

Table 5: Factor loading(Rotated)

Variable	Code	Factor loading
Brand Green Image	A1	0.834
	A2	0.522
	A3	0.632
	A4	0.995
	A5	0,727
	A6	0.92
Variance		55.245

The validity of the dependent variable brand trust scale is analyzed, and the results are shown in Table 6. The KMO value of brand green trust is 0.712, greater than 0.7, and the significance of Bartlett sphericity test value is 0.000, less than 0.05, indicating that exploratory factor analysis can be carried out. The principal component

factor analysis is used to extract 4 measurement items of brand green trust, and a factor can be extracted. As shown in Table 7, the load value of each factor is greater than 0.5, and the explanatory variance is 53.123%, more than 50%. Therefore, the mean value of each item can be used for correlation analysis and regression analysis.

Table 6: KMO, Bartlett's Test of Sphericity of Brand Green Trust

KMO and Bartlett's Test of Sphericity		
KMO		0.712
Bartlett's Test	Approx. Chi-Square	392.195
	df	6
	Sig.	0.000

Table 7: Factor loading(Rotated)

Variable	Code	Factor loading
Brand Green Trust	B1	0.721
	B2	0.736
	B3	0.687
	B4	0.707
Variance		53.123

The validity of the dependent variable purchase intention scale was analyzed, and the results were shown in Table 8. The KMO value of consumers purchase intention is 0.725, greater than 0.7, and the significance of the Bartlett sphericity test value is 0.000, less than 0.05, indicating that exploratory factor analysis can be performed. Using principal component factor analysis to

extract 4 items of purchase intention, one factor can be extracted. As shown in Table 9, the load value of each factor is greater than 0.5, and the explanatory variance reaches 54.231%, which exceeds 50%. Therefore, the mean value of each item can be used for correlation analysis and regression analysis.

Table 8: KMO, Bartlett's Test of Sphericity of Customer Purchase Intention

KMO and Bartlett's Test of Sphericity		
KMO		0.725
Bartlett's Test	Approx. Chi-Square	369.782
	df	6
	Sig.	0.000

Table 9: Factor loading(Rotated)

Variable	Code	Factor loading
Customer	C1	0.725
Purchase	C2	0.767
Intention	C3	0.745
	C4	0.737
Variance		54.231

4.4 Correlation Analysis

Correlation analysis is used to measure the degree of correlation between two or more variables and is the premise of regression analysis. The value of the correlation coefficient r is between $[-1, 1]$, when $r=0$, it is considered to have a linear positive correlation. And when $r<0$, it has a linear negative correlation. The closer to 1, the stronger the correlation. When the value range of r is 0.8-1, the variables are considered to be highly correlated. When r ranges from 0.5 to 0.8, the variables are considered to be moderately correlated. When the value range of r is between 0.3 and 0.5, the correlation between variables is considered to be low. When it is less than 0.3, there is a weak correlation. When r is more than 0.8 or even greater than 0.9, the presence of multicollinearity between variables is considered.

In this study, Pearson bilateral analysis was used to explore the correlation between variables, as shown in Table 10. It can be seen that most of the correlation coefficients among the variables are distributed between 0.2 and 0.7, and the highest value is 0.692. As can be seen from Table 10, there is a positive correlation between the independent variable green brand image and the dependent variable purchase intention, and the significance level is $p<0.01$. Brand trust also has positive correlation with independent variables and dependent variables, and the significance level is $p<0.01$. To sum up, there is a positive correlation between the pairs of the three variables in the theoretical model of this study, and then the causal relationship between the variables should be explored through regression analysis.

Table 10: Pearson Correlation($n=271$)

Variables	Mean	S.D.	Gender	Age	Educatio n	Occupatio n	Incom e	Brand Green Image	Brand Green Trust	Customer Purchase Intention
Gender	1.51	0.511	1							
Age	2.43	0.687	-.108*	1						
Education	2.27	0.552	-0.065	-.009	1					
Occupation	3.32	1.241	.155**	-.263**	-.054	1				
Income	4.25	1.478	-.128**	.312**	.336**	-.424**	1			
Brand Green Image	4.41	0.414	-.039	.111*	.017	-.165**	.199**	1		
Brand	4.29	0.408	-.066	-.088	-.055	-.130**	.242**	.643**	1	

Green Trust										
Customer										
Purchase Intention	4.09	0.534	-0.064	.142**	-.056	-.187**	.281**	.625**	.692**	1

Note:n=271, **P<0.01, *P<0.05

4.5 Regression Analysis

The correlation analysis above has shown that there is a correlation between various variables, but this analysis method cannot reflect the relationship between all variables in essence. This part further explores the causal relationship between various variables through regression analysis, and tests the hypothesis proposed above.

H1: Brand green image has a positive effect on customer purchase intention.

First, the main effect of green brand image and consumer purchase intention is analyzed. In this section, six models are constructed to verify the influence of independent variables and each dimension of independent variables on purchase intention. The dependent variables of the six models are all consumers purchase intention. In model 1, demographic variables

(gender, age, education level, occupation and income) are introduced as control variables, and in model 2, the independent variable is green brand image.

According to Table 11, after the independent variable green brand image is added to M1, the R square of the model increases from 0.078 to 0.668, indicating that M2's interpretation of the purchase intention of the dependent variable is 0.579 higher than M1's. Moreover, M2 passes the (F=147.454,p<0.001), and VIF values are all less than 2. The D-W value is 1.942(close to 2), indicating a good M2 fitting effect. In M2, the regression coefficient of green brand image on consumers purchase intention is 0.775(P<0.001), indicating that green brand image will be verified. It has a significant positive impact on consumers purchase intention, hypothesis H1 is supported by the data.

Table 11: Regression Analysis(n=271)

Variables	Dependent Variable: Customer Purchase		VIF
	Intention		
	M1	M2	
Control variable:			
Gender	-0.020	0.004	1.041
Age	0.049	0.035	1.177
Education	-0.035	0.032	1.200
Occupation	-0.058	-0.004	1.265
Income	0.255***	0.081*	1.479
Independent variable:		0.775***	1.075
Brand Green Image			
R^2	0.089	0.668	
Adjusted R^2	0.079	0.655	
F	8.699***	147.454***	
D-W		1.942	

H2: Brand green image has a positive effect on brand trust.

This part analyzes the relationship between the independent variable green brand image and the intermediary variable brand trust. In this section, a total

of 6 models are built to verify the impact of independent variables on brand trust. The dependent variable of each model is brand trust, the demographic variable is introduced as the control variable in model 3, and the

independent variable in model 4 is green brand image. As can be seen from Table 12, after the independent variable green brand image is added to M3, the R square of the model increases from 0.059 to 0.612, indicating that M4's interpretation of brand trust in the dependent variable is 0.553 higher than that of M3, and M4 passes the F test (F=118.711, p<0.001) with VIF values are less

than 2. The D-W value is 1.956(close to 2), indicating that M4 has a good fitting effect. In M4, the regression coefficient of green brand image on brand trust is 0.785(P<0.001), indicating that green brand image will have a significant positive impact on brand trust. Hypothesis H2 is valid.

Table 12: Regression Analysis(n=271)

Variables	Dependent Variable: Brand Green Trust		VIF
	M3	M4	
Control variable:			
Gender	-0.07	0.039	1.041
Age	-0.005	0.042	1.177
Education	-0.036	0.038	1.200
Occupation	-0.030	-0.005	1.265
Income	0.245***	0.090*	1.479
Independent variable:			
Brand Green Image		0.785***	1.075
R^2	0.059	0.612	
Adjusted R^2	0.054	0.609	
F	5.906***	118.711***	
D-W		1.956	

H3: Brand image has a positive effect on customer purchase intention.

This part analyzes the relationship between the intermediary variable brand trust and the dependent variable consumer purchase intention. In this part, two models are constructed to verify the influence between the two. The dependent variables of both models are consumer purchase intention. In model 5, demographic variables are introduced as control variables, and brand trust is introduced as independent variables in model 6. It can be seen from Table 13 that after the independent variable brand trust is added to M6, the R square of the

model increases from 0.059 to 0.492, indicating that M6's interpretation of the purchase intention of the dependent variable consumers is 0.433 higher than that of M5, and M6 passes the F-test (F=73.003, p<0.001). VIF values are all less than 2, and D-W value is 2.093(close to 2), indicating that M6 fitting effect is good. In M6, the regression coefficient of brand trust on consumers purchase intention is 0.681(P<0.001), indicating that brand trust will have a significant positive impact on consumers purchase intention. Hypothesis H3 is supported by data, the verification is valid.

Table 13: Regression Analysis(n=271)

Variables	Dependent Variable: Customer purchase		VIF
	Intention		
	M5	M6	
Control variable:			
Gender	-0.06	-0.03	1.041
Age	-0.006	-0.051	1.165
Education	-0.042	-0.049	1.152
Occupation	-0.041	0.015	1.272

Income	0.255***	0.068	1.524
Independent variable: Brand Green Trust		0.681***	1.098
R^2	0.059	0.492	
Adjusted R^2	0.054	0.485	
F	5.906***	72.003***	
D-W		2.093	

H4: Brand green trust plays an intermediary role between brand green image and consumers purchase intention.

Based on the method proposed by Baron and Kenny(1986), this study considers that the establishment of mediation should meet the following four conditions :(1) the relationship between independent variables and dependent variables is significant; (2) The relationship between independent variables and mediating variables is significant; (3) The relationship between mediating variables and dependent variables is significant; (4) If conditions (1),

(2) and (3) are satisfied, the intermediate variable is added to the regression model of independent variable and dependent variable for regression analysis, and the type of the intermediary effect is judged whether the intermediary effect is established and whether the intermediary effect is complete or partial.

The above regression analysis has proved that conditions (1), (2) and (3) of mediating effect are valid, and then the conditions are verified. The intermediary variable brand trust is introduced on the basis of M2, and the analysis results are shown in Table 14.

Table 14: Regression Analysis(n=271)

Variables	Dependent Variable: Customer Purchase Intention	
	M2	M7
Control variable:		
Gender	0.004	0.007
Age	0.035	0.041
Education	0.032	0.025
Occupation	-0.004	-0.007
Income	0.081*	0.069*
Independent variable: Brand Green Image	0.775***	0.659***
Mediating variable: Brand Green Trust		0.162***
R^2	0.668	0.771
Adjusted R^2	0.655	0.687
F	147.454***	133.001***

As can be seen from Table 14, green brand image in M2 has a significant positive impact on consumers purchase intention. After adding the intermediary variable of brand trust into M2, M7 is obtained. At this time, green brand image still has a significant positive impact on purchase intention, and the regression coefficient is 0.659(P<0.001), which is smaller than that of 0.775(P<0.001) in M2. In M7, the regression coefficient

of the intermediary variable brand trust on consumers purchase intention is 0.162(P<0.001). In summary, the mediating effect of brand trust is established, and the type of intermediary effect is partial intermediary. Hypothesis H4 is supported by data, the verification is established.

V. CONCLUSION

Green brand image has a significant positive impact on purchase intention, which indicates that , green consumption has become a new consumption trend of the young generation of consumers with the increasing awareness of environmental protection and energy saving of consumers and policy guidance. With this background, enterprises can build green brand image to cater to consumers environmental protection psychology and bring consumers a deep and good impression. Thus, it has a positive impact on consumer behavior. Green brand image has a significant positive impact on purchase intention. On the one hand, enterprises with green brand image are easy to leave consumers with the brand impression of paying attention to ecology, caring about consumers, and actively fulfilling social responsibilities. On the other hand, more and more consumers pay attention to the field of green consumption and hope to become green consumers. The emergence of enterprises with green brand image caters to the environmental protection psychology of consumers, thus enhancing brand trust. According to the results of empirical analysis, brand trust has a significant positive impact on consumers purchase intention. The emergence of new industries, new enterprises and new brands has made the market environment increasingly complex, and obtaining brand trust has become an effective way for brands to stand in the ever-changing market environment with the rapid development of economy. Brand trust plays a partial mediating role in the effect of green brand image on consumers purchase intention. It shows that green brand image can not only directly and positively affect consumers purchase intention, but also enhance consumers' brand trust and thus increase consumers' purchase intention.

5.1 Implications

Taking Chinese consumers as the research object, this paper explores the effect mechanism and boundary conditions of corporate green brand image on Chinese consumers purchase intention, which has theoretical significance for the relationship between corporate green brand image and consumer behavior. A large amount of data was obtained through questionnaire survey with Chinese consumers as the research object,

which confirmed that corporate green brand image has a significant impact on Chinese consumers' brand trust and purchase intention, and provided a theoretical basis for enterprises to build green brand image in China to promote consumer brand trust.

With the advent of the information age, brand-related information obtained by consumers through various new media channels is influencing consumers purchase intention and behavior. To maintain a place in the emerging new enterprises and brands, enterprises should pay attention to and strive for improving brand trust. On the one hand, enterprises should actively communicate with consumers through green public welfare activities while building a green brand image, multi-channel advertising to promote green production technology and other green marketing behavior means, so as to enhance consumer brand trust. On the other hand, due to the negative impact of the emergence of greenwashing behavior on consumer psychological factors in recent years, enterprises should pay attention to adopting substantive green means as far as possible while building a green brand image, and avoiding the enterprise behavior of environmental protection publicity without substantive investment in vain, so as to avoid forming skeptical attitudes in the minds of consumers. The results of this paper and related studies show that green consumer groups have the characteristics of high income, high education and young age. Enterprises should first accurately locate green product consumer groups according to consumer profiles, and carry out differentiated green marketing for young people with high education and high consumption power, the backbone of the future green consumer market. At the same time, they should pay attention to increasing publicity efforts. At the same time, we actively promote the concept of green consumption and open up potential markets, so as to achieve the harmony and unity of environmental interests, consumer interests and corporate interests. At the same time, enterprises need to be down-to-earth in the process of practicing green transformation, and create a green industrial chain of technology research and development, production, sales, after-sales service and product recycling so as to have irreplaceable core

competitiveness in the green market truly .

5.2 Limitations and Recommendations

First of all, although the number of questionnaires can meet the statistical needs of samples, there is still a problem of insufficient randomness. The non-uniformity of sample selection may affect the representation of samples, which may affect the universality of research conclusions to some extent. Therefore, extensive and large sample studies may lead to more reliable conclusions in future studies. Secondly, the representative of green brand image in this study did not go deep into specific industries or products, and the model in this paper can be studied again for specific green products in the future. Finally, the scale in this paper is mainly modified by referring to the mature scale of previous scholars and combining the research scenario and purpose. Although the reliability and validity of the questionnaire obtained are relatively reliable, the form of green consumption and the concept of consumers are changing with the rapid development of the economy, and future research needs to be further improved.

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Construction of Student-centered Teaching Evaluation Index System in College Classroom

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Received: 05 Aug 2024, Received in revised form: 06 Sep 2024, Accepted: 12 Sep 2024, Available online: 20 Sep 2024

Abstract

The classroom teaching evaluation system commonly used in current universities is facing multiple challenges, such as the disconnect between evaluation indicators and evaluation subjects, vague evaluation objectives, and unreasonable indicator design. These problems directly lead to the neglect of student's learning experience and satisfaction as learning subjects, making it difficult to effectively achieve the original intention of "promoting teaching quality improvement through evaluation and driving student learning progress through evaluation". In view of this, this article focuses on the current student evaluation index system in a university in Hebei Province, China. Drawing on the educational philosophy of the humanistic education pioneer Rogers' "student-centered" approach, a diversified evaluation index system guided by student satisfaction and learning outcomes is constructed through reconstruction and optimization.

Keywords— Student-centered approach; Classroom teaching; Evaluating indicator

I. INTRODUCTION

In October 2019, the Ministry of Education put forward the "Opinions on Deepening the Reform of Undergraduate Education and Teaching and Improving the Quality of Talent Cultivation in a Round Way", proposing to establish a multidimensional university teaching quality evaluation guarantee system with teacher evaluation and student evaluation as the main body and promote the quality revolution [1]. On June 26, 2022, Comrade Wu Yan, who was then the Director General of the Higher Education Department of the

Ministry of Education, proposed six major reform directions for future higher education at the "2021 International Forum on Higher Education Annual Meeting". The second direction - providing a more comprehensive learning experience - emphasized that classroom teaching should be "student-centered" rather than "teacher-centered" [2].

The student-centered educational paradigm has become an inevitable trend in the reform of talent cultivation models in universities in the new era [3]. Putting students at the center is a shift from the

"teaching mode" to the "learning mode", and from a focus on "teaching" to a focus on "learning". It is conducive to fully leveraging the subject status and role of students in education and teaching [4]. It is focused on cultivating learning abilities, mastering knowledge, and improving learning outcomes [5]. Implementing a student-centered classroom teaching evaluation is also a necessary measure to improve teaching quality evaluation and enhance teaching quality.

After studying the classroom teaching evaluation indicators of a university in Hebei Province, China, researchers found that its classroom teaching evaluation indicator system is based on the evaluation of teachers' teaching, and students are only passively participating in the evaluation. The evaluation results are only used as a reference for teacher awards, ignoring the evaluation of students' learning experiences, learning gains, and other aspects, and cannot improve students' learning satisfaction through evaluation. Making student evaluation of teaching a mere formality, failing to truly achieve the goal of promoting learning and enhancing students' abilities through evaluation.

This article is based on the relevant data on student service satisfaction in the report "Quality Tracking and Evaluation of College Graduates' Training in China from 2018 to 2022" by Michelson Research Institute [6], Based on Rogers' humanistic educational philosophy, "student-centered" as the guiding ideology, a preliminary student classroom evaluation index system that can adapt to the development of higher education is constructed, fully reflecting the subject status of students in the teaching process, with student learning experience and satisfaction as the evaluation core, and focusing on evaluating the "learning" situation.

II. RESEARCH OBJECTIVE

This study conducts research and analysis on

classroom teaching evaluation indicators, taking student learning satisfaction as the starting point for teaching evaluation, and provides student perspective suggestions for the development of school quality monitoring.

III. RESEARCH METHODOLOGY

The purpose of this study is to discuss the construction of a classroom evaluation index system in schools, using qualitative research methods for research and analysis. Design evaluation indicators from the perspective of students, and construct them based on their personal growth background, learning interests, individual cognition, etc. The core is to observe the learning experience of students in their personal growth; Improve the evaluation index system from the perspective of students, incorporate student learning satisfaction into the evaluation indicators, construct from the aspects of curriculum training objectives, curriculum content, teaching environment, assessment methods, etc., take student learning satisfaction as the starting point for evaluation, and provide student perspective suggestions for the development of school quality monitoring.

IV. FINDINGS

4.1 "Student-centered" Educational Philosophy

In 1806, Herbart laid down the "three-center" teaching theory in General Pedagogy, focusing on the classroom, teachers, and textbooks, reflecting the traditional education model of "teacher-taught textbooks" and emphasizing the role of teachers [7]. In 1916, Dewey proposed the "new three centers" in Democracy and Education, that is, children, experience, and activity as the center advocating realistic teaching, attaching importance to students' subjectivity and experiential learning, and shifting the focus of education

from teachers to students [8]. In 1952, Rogers advocated "student-centered" in "Free Learning". As a humanistic psychologist, he emphasized the promotion of learning by students' intrinsic learning motivation and environmental safety, marking a further shift in educational philosophy towards a student-centered approach [9].

This series of evolution reflects a profound shift in educational focus from teachers to students, emphasizing the importance of student's learning experience and satisfaction in the evaluation system, to stimulate their cooperation and innovation abilities.

4.2 The Concept of "Student-centered" Classroom Teaching Evaluation

Rogers integrated the principles of "humanistic" psychotherapy into education, emphasizing student needs as the guide, creating a positive environment, and promoting students' self-directed learning and self-worth realization. Based on the educational philosophy of "humanism", classroom teaching evaluation should construct an evaluation index system centered on

students.

Evaluation indicators should follow the development law of students' personalities constantly improving, and subjective factors such as personal growth, teacher guidance, teaching participation, and other evaluation indicators based on students' learning experience should be added; At the same time, some objective evaluation indicators for students should be added, such as teaching objectives, learning abilities, goal achievement, and other evaluation dimensions based on student satisfaction and achievement of learning outcomes, to reflect the "student-centered" perspective.

5. Discussion

5.1 College Classroom Teaching Student Evaluation Form

In the case of a university in Hebei province, China's Hebei province, the current evaluation of classroom teaching is the method of supervision, peer evaluation, expert evaluation, and student evaluation. The student evaluation is shown in Table 1.

Table 1 Current Student Evaluation Form of a University in Hebei Province, China

NO.	First Level Indicator	Secondary Indicators	Highest Mark	Lowest Mark
1	Teachers' Moral accomplishment	Lectures are correct and positive, teach according to the law, and do not physically punish or insult students.	10	6
2		Lectures are correct and positive, teach according to the law, and do not physically punish or insult students.	10	6
3	Teaching Attitude	Strictly demand students, do not allow students to make mistakes, start and end classes on time, do not arbitrarily adjust or suspend classes, and have a full and enthusiastic teaching spirit.	10	6
4		Adequate lesson preparation, smooth teaching, no knowledge errors, active communication with students in class, emphasis on student feedback, actively soliciting student opinions after class, and continuously improving teaching.	10	6

5	Content of Courses	Strictly implement the teaching plan and do not delete teaching content without authorization.	10	6
6		Clear teaching objectives before class, proficient in teaching, rich in content, concise in teaching, prominent in key points, and clear in thinking.	10	6
7		Expand the teaching content, provide reference materials and relevant information, introduce the development trends and cutting-edge information in the field of this discipline, assign appropriate and diverse homework tasks, and consolidate the teaching content.	10	6
8	Teaching Method	Establish connections between new and old knowledge, review and summarize the content, and relate it to actual life and future work.	10	6
9		Select teaching methods based on the teaching content, explain the textbook content with specific examples, encourage students to discuss and express independent opinions, inspire students' thinking, and achieve personalized teaching.	10	6
10	Teaching Efficiency	Improved students' interest in learning the course, better mastery of the knowledge and abilities of the course, and better mastery of the learning methods of the course.	10	6

The evaluation indicators are evaluated from five aspects: teachers' professional ethics, teaching attitude, teaching content, teaching methods, and teaching effectiveness. The focus is on teachers' "teaching", neglecting the evaluation of students as the main body of teaching "learning", and lacking indicators such as learning experience and satisfaction evaluation. In the evaluation of teaching activities, students generally hold a mentality of completing tasks, lacking in-depth evaluation and substantive and constructive feedback.

5.2 Construct "Student-centered" Classroom Teaching Evaluation System

Educator and psychologist Bloom believes that evaluation is a method of obtaining and processing evidence to determine student proficiency and teaching effectiveness [10]. Therefore, constructing a student-

centered classroom teaching evaluation index system, shifting from the current "evaluation promotes teaching" to an "evaluation promotes learning" evaluation model, with student learning experience and satisfaction as the evaluation core, reflects the value of students as the teaching subject.

5.2.1 Clear Evaluation Subject

The concept of "student-centered" emphasizes that higher education is "student-centered". Classroom reform requires a change in teaching and evaluation models, establishing the position of students as the main body of evaluation, and constructing a student-centered evaluation system.

5.2.2 Clarify the Purpose of Teaching Evaluation

Building a student-centered evaluation system aims

to transform the purpose of evaluation from teacher evaluation to promoting teaching adjustments and student feedback. This system encourages students to actively participate, stimulates the spirit of exploration and innovation, and promotes comprehensive development.

5.2.3 Constructing Evaluation Indicators

Organizing teaching around students, evaluation aims to enhance interest, stimulate internal drive, and achieve learning goals. Based on Rogers' "Meaningful Learning" and OBE philosophy, through diverse evaluation forms, focusing on student performance and goal achievement, improving externalization evaluation and constructing internalization system, incorporating learning experience and growth, forming a "Meaningful Evaluation" system, promoting teaching reform and improving the quality of talent cultivation.

5.3 Principles for Constructing the Transition From a Single Integrated Indicator System to a Diversified Indicator System

To construct a student-centered teaching evaluation index, we should shift from the evaluation concept of "promoting teaching through evaluation" to "promoting learning through evaluation", change the single evaluation teaching method, content, etc., and

shift to a diversified evaluation system based on the student learning process as the focus.

Researchers selected 20 students from different grades at a university in Hebei Province for interviews, asking them to provide feedback on improving evaluation indicators. Based on the results of the interviews conducted among students, it was found that in classroom teaching, students are more concerned with personal growth, classroom participation, learning interest, and learning outcomes; Corresponding teaching strategies, teaching environment, assessment methods, and practical teaching are also evaluation indicators that students are more concerned about.

Therefore, as shown in Table 2, the researchers made modifications from the perspective of students, setting learning experience, learning satisfaction, and learning effectiveness as primary indicators. "Learning experience" has 5 secondary indicators, "learning satisfaction" has 7 secondary indicators, and "learning effectiveness" has 2 secondary indicators. We have incorporated and integrated existing evaluation indicators, placing greater emphasis on student-centeredness, and initially constructed a "student-centered" evaluation index system.

Table 2 Student-centered "Student Evaluation Indicators

First Level Indicator	Weight	Secondary Indicators	Index Observation point	Indicator Option				
Learning Experience	40%	Learning Interest	Students are willing to take the initiative to participate in classroom teaching, and their learning drive is stimulated.	Very good	Good	Average	Poor	Very poor
		Personal Growth	After attending the course, the students' self-ability has been improved	Very good	Good	Average	Poor	Very poor

			and the expected goal has been achieved.					
		Teacher's Guidance	Teachers can effectively guide students in learning, be good at inspiring students, and mobilize students' interest in learning.	Very good	Good	Average	Poor	Very poor
		Class Participation	Students are willing to participate in classroom teaching, with good interactive effects and high learning enthusiasm.	Very good	Good	Average	Poor	Very poor
		Learning Experience	The teaching method of teachers is "student-centered", cultivating students' participation awareness, independent thinking ability, and mobilizing learning enthusiasm.	Very good	Good	Average	Poor	Very poor
Learning Satisfaction	60%	Course Training Objectives	Students understand the training positioning of the course, the required abilities, and the industries and professions involved.	Very good	Good	Average	Poor	Very poor
		Course content	Carry out results-oriented teaching, where teachers closely connect classroom learning with extracurricular practice.	Very good	Good	Average	Poor	Very poor
		Teaching Strategy	Teachers can design diverse group learning collaboration tasks based on learning content and goals, cultivating students' teamwork abilities.	Very good	Good	Average	Poor	Very poor
		Practice Teaching	The course teaching includes practical teaching content and the teaching requirements for ability and literacy are matched with the actual professional ability requirements.	Very good	Good	Average	Poor	Very poor

		Teaching environment	Create a good learning environment for students (including multimedia, online teaching, laboratories, etc.)	Very good	Good	Average	Poor	Very poor
		Course Assessment Method	Adopting a process-based assessment method, evaluating students' knowledge application level and comprehensive ability by examining their independent thinking, problem-solving, performance in group cooperation, and achievement display.	Very good	Good	Average	Poor	Very poor
		Student Satisfaction With Teaching	Mainly refers to students' comprehensive evaluation of teaching methods, teaching content, teaching process, teaching environment, and other aspects after course learning.	Very good	Good	Average	Poor	Very poor
Learning Effect	10%	Course Score	The final evaluation result achieved good results	Very good	Good	Average	Poor	Very poor
		Practice Effect	Students have a good experience in practice and the knowledge students have learned can meet their practical needs.	Very good	Good	Average	Poor	Very poor

Learning experience, as one of the primary indicators of the evaluation system, is also the core of the entire evaluation system. It consists of five secondary indicators: personal growth satisfaction, learning interest, teacher guidance satisfaction, classroom participation, and learning experience satisfaction. The listed observation points mainly evaluate the subjective experience of students as the main body of teaching in participating in teaching activities.

There are seven secondary indicators for learning satisfaction, including an understanding of course

training objectives, course content, teaching strategies, practical teaching, teaching environment, course assessment methods, and teacher teaching satisfaction. The listed observation points are intended to evaluate the degree of support from schools for students' learning software and hardware conditions, as well as the satisfaction of learning outcomes. They are a more intuitive way for students to evaluate after participating in teaching activities.

V. CONCLUSION

The "humanistic" educational philosophy advocated by Rogers focuses on promoting comprehensive change and growth of individuals, aiming to cultivate individuals who can adapt to the changes of the times and master the ability of self-directed learning. The primary prerequisite for achieving this grand goal is to establish and adhere to the teaching philosophy of "student-centered", and regard students' learning experience and satisfaction as the essence of teaching evaluation. This process is not only a profound reflection and reconstruction of traditional teaching models, but also a comprehensive transformation involving multiple roles and levels of teachers, students, managers, and even society.

To achieve this transformation, we must break free from the constraints of traditional evaluation frameworks and innovatively construct a student-centered evaluation system and management system. This requires teachers to adjust their mentality, transform from traditional knowledge transmitters to learning guides, and explore more flexible and diverse teaching methods to stimulate students' intrinsic learning motivation; Students need to gradually cultivate the habit of self-directed learning and enhance their ability for self-reflection and evaluation; The management department needs to optimize resource allocation, provide necessary support and guarantees, and ensure the smooth progress of teaching reform; Schools and various sectors of society should also adjust their evaluation standards, pay more attention to students' comprehensive qualities and innovative potential, and form a broad recognition and active support for new educational concepts.

The preliminary construction of the classroom teaching evaluation index system based on the "student-centered" concept in the article is a key link in this transformation process. It not only embodies the

talent cultivation concept of "people-oriented", and provides a scientific basis for optimizing teaching design, but also is an important path to promote students' comprehensive quality and ability improvement and cultivate applied talents with innovative spirit. Through the implementation of this system, we are expected to trigger a profound paradigm revolution in the field of education, laying a solid foundation for cultivating the future pillars of society.

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A Critical Evaluation of Existential Dilemmas in Frost's "The Road Not Taken"

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Received: 15 Aug 2024, Received in revised form: 12 Sep 2024, Accepted: 17 Sep 2024, Available online: 23 Sep 2024

Abstract

Robert Frost's "The Road Not Taken" is a multifaceted poem that explores the complexities of choice and the human tendency to assign meaning to decisions in hindsight. Often misinterpreted as a celebration of individualism, the poem is laden with irony and ambiguity, reflecting Frost's playful critique of his friend Edward Thomas' indecisiveness. The poem's structure, with its regular rhyme scheme and conversational tone, belies its deeper exploration of regret, the arbitrariness of life's decisions, and the way we construct narratives around choices. Frost's portrayal of two seemingly divergent paths, which are later revealed to be nearly identical, underscores the futility of trying to find meaning in every decision. The poem invites readers to consider the retrospective significance we give to life's choices, particularly in light of irreversible consequences, as seen in Thomas' tragic enlistment in World War I. This tension between choice, consequence, and meaning ensures the poem's enduring relevance and complexity.

Keywords— Robert Frost, The Road Not Taken, choice, regret, irony, Edward Thomas, individualism, decision-making, narrative construction, literary analysis.

I. INTRODUCTION

Robert Frost's "The Road Not Taken" stands as one of the most popular yet paradoxical poems in American literature. Published in 1915 in **The Atlantic Monthly** and later included in Frost's 1916 collection **Mountain Interval**, the poem resonates with readers across generations due to its seemingly simple yet deeply layered exploration of choice and consequence. While many interpret it as a celebration of individualism, where the speaker proudly takes the "road less traveled," the poem's subtle irony invites more complex interpretations. Frost himself, aware of this potential for misreading, once warned his audiences that it is a "tricky poem—very tricky," revealing layers of meaning that complicate a straightforward reading. This nuance has made the poem not only popular but also a subject of ongoing scholarly debate.

The context in which Frost wrote the poem plays a crucial role in understanding its layers. Between 1912 and 1915, Frost lived in England, where he formed a

close friendship with the writer Edward Thomas. The two often went on walks through the countryside, during which Thomas would frequently express regret over their chosen paths, wondering aloud if they should have taken the other road. This habitual indecision inspired Frost to compose "The Road Not Taken," initially as a playful commentary on his friend's reflective nature. However, Thomas took the poem more seriously, and some believe it may have influenced his decision to enlist in World War I—a choice that led to his death at the Battle of Arras in 1917. This personal backstory imbues the poem with a tragic depth, as it becomes not merely about choice but about the consequences of decisions that can never be undone.

The structure and form of the poem contribute to its accessibility and complexity. Comprising four stanzas of five lines each, the poem follows a regular rhyme scheme of ABAAB. The consistent rhyme creates a melodic flow, which, when paired with Frost's conversational tone, gives the impression of simplicity. However, the meter is

not entirely regular; while most lines are written in iambic tetrameter, Frost frequently breaks the pattern by introducing anapests (two unstressed syllables followed by a stressed one). These subtle variations in rhythm lend the poem a natural, spontaneous feel, mimicking the speaker's wandering thoughts and the uncertainty of decision-making. The formal elements of rhyme and meter work together to create a tension between the poem's outward simplicity and its underlying complexity.

Critics like David Orr have pointed out that this retrospective assignment of meaning is one of the poem's central themes. Orr describes the speaker's future reflection as a kind of self-deception, where the speaker constructs a narrative around the choice to give it significance. In reality, the two paths were interchangeable, and the speaker's choice was no more profound than any other. This theme of constructing meaning out of arbitrary choices reflects a broader commentary on the human condition. We are often forced to make decisions without fully knowing their consequences, and only later do we imbue those decisions with importance, shaping our personal narratives around them.

The reception of "*The Road Not Taken*" has been shaped by this tension between its surface simplicity and its underlying complexity. Many readers and critics have initially approached the poem as a celebration of individuality and nonconformity, focusing on the image of the "road less traveled." However, scholars like Lawrance Thompson, Frost's biographer, have emphasized the irony within the poem. Thompson argues that the speaker is a figure who habitually regrets any choice made, wistfully sighing over the alternative paths left unexplored. Frost's comment that Thomas was "a person who, whichever road he went, would be sorry he didn't go the other" further underscores this theme of regret and indecision, which pervades the poem.

The formal elements of the poem—its rhyme, meter, and use of natural imagery—reinforce this ironic reading. The conversational tone and flowing rhythm make the poem accessible, drawing readers into what initially appears to be a straightforward narrative. However, as the poem progresses, the subtle shifts in rhythm and the speaker's contradictory observations about the roads suggest that the choice is not as meaningful as it seems. The natural imagery of the "yellow wood" and "leaves no step had trodden black" creates a serene, almost idyllic setting, which contrasts with the speaker's internal conflict and adds to the poem's sense of irony.

"*The Road Not Taken*" can be seen as a meditation on the nature of choice and the stories we tell ourselves about the decisions we make. By presenting two seemingly different yet ultimately similar paths, Frost challenges the notion that our choices are always deeply significant. The poem suggests that the meaning we assign to our choices is often a product of hindsight, shaped by memory and personal narrative rather than the actual consequences of the decisions themselves. This complex interplay between choice, consequence, and meaning has made the poem a subject of enduring fascination, ensuring its place in the canon of American literature.

II. DISCUSSION

In Robert Frost's poem "*The Road Not Taken*," the speaker is faced with a metaphorical choice between two paths in a "yellow wood." This moment reflects Frost's own experience during his time in England (1912-1915), where he formed a close friendship with writer Edward Thomas. The line "Two roads diverged in a yellow wood" echoes a real walk Frost took with Thomas, who was often indecisive about which road to take during their outings. Thomas would later reflect on these moments with regret, lamenting that they should have chosen the other path, much like the speaker in the poem.

The poem begins with the speaker expressing sorrow: "And sorry I could not travel both," reflecting a human desire to experience all options. This mirrors Thomas' own indecision on their walks and his tendency to question choices afterward. The line "And be one traveler, long I stood" suggests the weight of decision-making, an internal conflict that Thomas also felt when confronted with choices, not just on walks but in life.

Frost's lines "I took the one less traveled by, / And that has made all the difference" can be seen as a playful nod to Thomas' tendency to overthink decisions. Frost had written the poem partly as a gentle satire of his friend's indecisiveness. However, Thomas took the poem seriously and personally. It is believed that the poem influenced his decision to enlist in World War I, as he may have viewed it as a commentary on life's unavoidable choices and the consequences that follow.

The speaker, after examining one road "as far as I could / To where it bent in the undergrowth," ultimately chooses the "other" road, described as "just as fair." This decision reflects the unpredictable nature of life's choices, where individuals often cannot see far into the future or fully understand the consequences of their actions. Just as Frost and Thomas debated which road to

take during their walks, the speaker weighs both options equally. The claim that this road "was grassy and wanted wear" aligns with the theme of individuality and nonconformity, yet the poem also undercuts this by noting that "the passing there / Had worn them really about the same." Both paths, much like life's decisions, may not differ as much as we think at the moment.

The lines "Oh, I kept the first for another day!" highlight the human tendency to defer choices or imagine future opportunities. Frost knew, as the speaker does, that "way leads on to way," and Thomas may never have the chance to revisit these roads—literal or figurative. This resonates with the permanence of Thomas' decision to enlist, a path that ultimately led to his death in the Battle of Arras two years later. The realization that certain choices cannot be undone—no matter how much one might want to return—adds a layer of poignancy to both the poem and Thomas' fate.

When the speaker reflects that "I shall be telling this with a sigh / Somewhere ages and ages hence," the sigh can be interpreted as a mix of nostalgia and regret. Thomas' own decision to enlist in the war may have carried a similar weight of reflection, as he looked back on the choices that led him to the battlefield. The speaker's "sigh" implies that the significance of his choice is constructed in hindsight, much like how Thomas might have retrospectively viewed his decision to fight in World War I. The final lines, "I took the one less traveled by, / And that has made all the difference," encapsulate this retrospective meaning, which, for Thomas, might have felt tragic.

Frost's experience with Thomas illuminates the ambiguity in the poem. The two roads in "The Road Not Taken" could represent both literal and metaphorical crossroads, much like the roads they encountered during their walks in England. Thomas' decision to join the war, influenced in part by his reading of the poem, reflects the tragic weight of choice in a broader context. What was initially a lighthearted commentary on indecision became for Thomas a serious reflection on life's irreversible choices.

The natural imagery Frost employs, such as the "yellow wood" and "undergrowth," evokes a sense of tranquility, contrasting with the internal tension of decision-making. The landscape is indifferent to the speaker's (and Thomas') choices, suggesting that the significance of the decision lies within the individual, not the environment. This idea is reinforced by the lines "And both that morning equally lay / In leaves no step had trodden black." Just as the roads are untouched by prior

travelers, life's paths are full of unexplored possibilities, awaiting the decisions of those who encounter them.

The phrase "ages and ages hence" creates a temporal distance, suggesting that choices often take on greater meaning in hindsight. Frost, aware of Thomas' introspective nature, might have predicted that his friend would overinterpret the poem, just as the speaker in the poem imagines himself reflecting on his choice "with a sigh." The connection between the poem and Thomas' eventual enlistment in World War I adds a tragic dimension to this reflection, as Thomas never had the chance to return to the "other" road he left behind.

In deconstructing the existential dilemmas of poem, it becomes clear that Frost's playful critique of Thomas' indecisiveness had deeper consequences. The poem engages with the existential dilemma of choice and consequence, with the roads symbolizing the multiplicity of paths available in life. However, the act of choosing, as both the speaker and Thomas realize, carries an irreversible weight.

By infusing the poem with his experience of friendship, Frost elevates the personal to the universal. Thomas' decision to enlist, influenced in part by his interpretation of the poem, shows how art can impact life in unexpected ways. "The Road Not Taken" thus becomes more than a reflection on choice; it is a meditation on how we, like Thomas, create meaning from the decisions we make and the paths we leave untaken.

III. CONCLUSION

In *The Road Not Taken*, Robert Frost masterfully explores the complexities of decision-making and the human tendency to retrospectively assign meaning to choices. The speaker's reflection on the choice between two paths, which were in fact quite similar, symbolizes the arbitrary nature of many of life's decisions. This aligns with Frost's own playful critique of his friend Edward Thomas' indecision during their countryside walks in England. Thomas, who often lamented their chosen paths, may have seen the poem as more serious than Frost intended, contributing to his tragic decision to enlist in World War I—a path that led to his death.

The poem's structure—simple yet subtly complex—mimics the process of decision-making. The consistent rhyme scheme, conversational tone, and seemingly straightforward imagery create an accessible narrative, but upon closer reading, it reveals deeper layers of irony. The roads, representing life's choices, are not as

different as they first appear, which challenges the common interpretation of the poem as a celebration of individualism. Instead, Frost highlights the inevitability of regret and the constructed nature of meaning in the choices we make.

The Road Not Taken is a reflection on the human condition. It suggests that while we often imbue our decisions with great significance, this meaning is largely a product of hindsight. Both Frost's poem and Thomas' real-life choices underscore the paradox of decision-making: the paths we take are often indistinguishable at the moment, yet they become significant only as we look back and assign them importance. Through this layered exploration, Frost's poem remains a powerful commentary on choice, consequence, and the narratives we create about our lives.

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Customizable Virtual Reality Gamification for Enhanced Teaching and Learning for Students with Dyslexia

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Received: 20 Aug 2024, Received in revised form: 11 Sep 2024, Accepted: 18 Sep 2024, Available online: 25 Sep 2024

Abstract— *Virtual Reality (VR) technology has garnered considerable attention for its potential applications in education and therapy, particularly for children with neurodevelopmental disorders. Moreover, this study focuses on the exploration and effectiveness of VR-based interventions in improving object identification skills in children who have been diagnosed with dyslexia, autism spectrum disorder (ASD), Developmental Coordination Disorder (DCD), attention deficit hyperactivity disorder (ADHD), and brain injuries. The existing literature needs to improve with traditional interventions to meet the specific needs of children with these conditions. Thus, this paper proposes a novel VR-based intervention system based on a theoretical framework to improve object identification skills in children aged 6-12. The intervention seeks to create interactive and multisensory learning environments where children can practice identifying and categorizing objects in a secure and supportive atmosphere. By harnessing the capabilities of VR technology, including immersive visuals, auditory feedback, and interactive simulations, the intervention aspires to boost engagement, motivation, and learning outcomes for children with dyslexia, ASD, DCD, ADHD, and brain injuries. Anticipated results include improvements in participant object identification, measured by standardized assessments and task performance metrics. Qualitative observations and user feedback will offer insights into the subjective experiences, preferences, and challenges encountered during the intervention. The study aims to contribute valuable insights to the burgeoning field of VR-based interventions for children with neurodevelopmental disorders and inform future educational and therapeutic advancements.*

Keywords— *Virtual Reality (VR) interventions, neurodevelopmental disorders, object identification skills, multisensory learning, educational advancements.*

I. INTRODUCTION

Virtual Reality (VR) technology has become a tool with far reaching consequences, especially in the social sectors such as education and health. Virtual reality can provide learners with experiences and approaches that cannot be solved by implementing conventional learning methods, which means unique opportunities to address the problems that children with neurodevelopmental disorders face. For example,

dyslexia, Autism Spectrum Disorder (ASD), Developmental Coordination Disorder (DCD), Attention-Deficit/Hyperactivity Disorder (ADHD), as well as head injuries cause problems determining spatial relations, objects' size and shape, and coordination when interacting with the environment, which substantially impacts their learning and development process.

Dyslexia is a disability affecting an individual's ability to read, write, and spell, whereby the affected person has

issues with visual phonological processing, such as identifying objects by name. Children with dyslexia may be unable to distinguish different assemblages of similar features in letters or objects relevant to the task and may be unable to identify objects correctly. Likewise, learning disorder in ASD, which is characterized by a deficit in social communication and interaction, may affect the child's ability to identify and group objects based on specific features that pertain to the shape, colour, and use of the object [1].

In the case of DCD, which affects motor coordination and planning, children may face challenges manipulating objects and coordinating their movements to interact with their environment effectively [2]. Children with ADHD, characterized by difficulties in attention, impulse control, and hyperactivity, may struggle to maintain focus and sustain attention during object identification tasks, leading to errors and inconsistencies in performance [3]. Moreover, children with brain injuries resulting from trauma or neurological conditions may experience impairments in cognitive functioning, including memory, attention, and executive functions, which can affect their ability to process and recognize objects accurately [4]. Traditional interventions for children with neurodevelopmental disorders, such as worksheets, flashcards, and verbal instructions, often fail to address the specific challenges faced by these children in object identification tasks. These interventions may need more engagement, cater to individual learning styles, and overlook the complex cognitive processes involved in object recognition and categorization [5]. Additionally, assistive technologies, while beneficial in specific contexts, may not provide the multisensory experiences and personalized support needed to facilitate object identification skills effectively [6].

Given the shortcomings that are characteristic of conventional interventions and assistive technologies, it is apparent that there is a dire call to search for effective and new strategies by which object identification abilities can be effectively enhanced in children with neurodevelopmental disorders. The growing technologies that have the potential to solve these challenges include virtual reality (VR). VR technology offers extensive possibilities for appealing to children and incorporating them into learning activities in which they can acquire skills in a virtual but safe environment [7], [8].

Eventually, it is essential to notice the lack of research

on the efficacy of VR-based interventions to enhance object identification skills in children with NDDs. Several studies reveal that they enhance patients' cognitive and sensory-motor abilities through VR. However, only a few have segmented object identification as an outcome to be achieved by its use [9], [10]. This gap strengthens the need for researching the other learning aspects of students with dyslexia, ASD, DCD, ADHD, and brain injuries in the identification of objects with the help of VR technology.

A. Contributions

The following are the contributions listed below:

- 1) Develop a Customizable VR Learning Environment: Create an interactive VR application designed to teach basic geometric shapes (cubes, cylinders, pyramids) in alignment with elementary school curricula. The environment will be tailored to the cognitive abilities and sensory preferences of children diagnosed with dyslexia, ASD, DCD, ADHD, and brain injuries.
- 2) Explore Customization and Inclusivity Features: Investigate the role of customization features within VR applications to adapt content delivery and interaction methods based on individual learning profiles. This exploration aims to enhance inclusivity and accessibility, ensuring that VR technologies effectively support diverse learning needs in educational settings.

The rest of the paper is constructed as follows: The literature is available in Section II. The detailed work of the proposed framework is discussed in Section III. The results discussions, conclusion, and future work are available in Sections IV and V, respectively.

II. RELATED WORK

In recent years, Virtual Reality (VR) technology has emerged as a significant tool in the medical industry, especially in addressing learning disabilities like dyslexia. Dyslexia is a common learning disability affecting an individual's writing and spelling abilities. It often comes with difficulties in object identification and spatial awareness. Customizable VR systems offer a promising approach to mitigating these challenges and enhancing learning outcomes for dyslexic children. Virtual Reality (VR) is a digitally generated representation of a three-dimensional space that allows users to interact with it as if it were real or tangible [11]. This contact is enabled by specialized electronic devices such as headphones with screen or

sensor-equipped gloves.

The primary goal of virtual reality is to immerse people in sensory-rich experiences that mimic real-life situations or imaginary realms. In recent years, research findings indicate the viability and innovation of virtual reality as a human-computer interface technique. VR has gradually progressed from the theoretical research stage of the laboratory to the stage of mass and industry application, and as a bridge between the digital and the real world, providing people with a new way to recognize and experience the things around them. Furthermore, the American Times Weekly have named it one of the top ten most promising technologies for the future. [12], [13] investigated the field of AR, in which 3D virtual elements are blended in real-time into a 3D actual environment. It outlines the applications investigated in the medical, manufacturing, visualization, path planning, entertainment, and military fields. The author covers AR system characteristics, thoroughly examining the tradeoffs between optical and video mixing techniques. Two of the most severe issues in developing a successful AR system are registration and sensing failures. [14] also, add that introducing the VR systems has brought a new twist to surgical planning and training. The environmental models allow the surgeons to manoeuvre through the sequences and enhance their movement prowess through the virtual environment. These aid in simulation and minimize mistakes during actual operations, which increases accuracy and shifts risks faced by patients since nurses are familiar with the various appearances of the anatomy of different patients and the complex possibilities of every surgery. These tools utilize VR technology to establish a fully immersive and interactive learning environment to support dyslexic children with the course material. In the words of [15] "VR tools can be developed to offer playful adaptive learning experiences for children with dyslexia according to their special cognitive profile". Moreover, VR can be incredibly effective in this analogy, presenting dyslexic learners with lifesize scenarios and involving multiple senses to help them identify objects and develop a sense of space without fear or anxiety.

A. Adaptive Learning Environments

The customizable nature of VR environments means that educational content can be adapted to each child's learning pace and style. [16] emphasize that adaptive VR systems can adjust the difficulty level and the type of stimuli presented to the learner based on their performance and progress. This adaptability ensures that children with dyslexia receive personalized

instruction that caters to their strengths and addresses their weaknesses, thereby enhancing their learning efficiency and motivation.

B. Enhanced Spatial Awareness

The ability to have a cognitive sense of where things are is impaired in dyslexic children, affecting the capacity not only for moving through space and understanding geometric relationships and visual information. In an article by [17], they discuss how VR can be implemented to tackle spatial skills environments offer possibilities for learning about space relations such as different surrounding contexts and the results of moving from one place to another based on provides visuospatial cues which assist dyslexic students in acquiring better understanding about relations between points to path further improving their navigation abilities. They can engage with 3D objects and virtual spaces where children can safely practice and perfect their spatial abilities.

C. Interactive and Engaging Learning

One of the critical advantages of VR is its ability to create highly engaging and interactive learning experiences. The [16] notes that the immersive nature of VR captures learners' attention and makes educational activities more enjoyable. For children with dyslexia, who often face frustration and low self-esteem due to their learning difficulties, the engaging nature of VR can make learning more appealing and reduce anxiety associated with traditional educational methods.

D. Multisensory Learning

VR tech legislates multisensory Learning, an attribute exceedingly advantageous for dyslexic children. By amalgamating visual, auditory, and kinesthetic components, VR delivers a comprehensive sensory experience that fortifies Learning. Evidence from [18] posits that "Multisensory VR realms can bolster memory retention and comprehension through simultaneous sensory engagement". For instance, dyslexic children can observe, listen to, and manoeuvre virtual entities, assisting them in grasping concepts more profoundly and cementing information more efficaciously.

E. Real-Time Feedback and Assessment

Another essential thing that VR has going for education is the capability to develop real-time feedback, according to [19]. These VR systems can track user actions to provide real-time feedback, which is very important for practising and reinforcing correct responses and correcting mistakes. This instant feedback loop enables dyslexic children to learn from

their mistakes and strengthen good learning habits, leading to better grades in school and stronger self-esteem.

In contexts extending beyond educational spheres, VR technology additionally exhibits potential in therapeutic and rehabilitative applications for children with dyslexia. [20] elaborates on how VR-centered therapeutic ventures may be orchestrated to cater to cognitive and motor impairments linked with dyslexia. Such initiatives can encompass drills that enhance eye-hand coordination, memory retention, and sequencing prowess, frequently representing areas of challenge for individuals grappling with dyslexia. A study published in provides significant insights into the application of VR in neurorehabilitation. The research highlights the distribution of scientific contributions (SCs) in VR-based rehabilitation across different periods, revealing crucial trends and shifts in focus over time. Notably, the SC

“Rehabilitation” consistently accounted for over one-third of all publications. The study found that the SC “Neurosciences and Neurology” increased from 10% of publications in the early period to 20-25% in later periods, reflecting the growing interest in VR applications in neurological contexts. Similarly, SCs “Engineering” saw an increase from 8.4% to about 12%, while “Computer Science” experienced a decline from 12% to less than 6% [21]. The study identified key research topics and their distribution over time through text analytics. Initially, topics like Simulation, Tele-rehabilitation, and Cognitive Issues were prominent, but these declined in subsequent periods. There was a significant shift towards topics such as Neural Impact in the middle period and an increased interest in Intervention in the latest. This trend suggests a broader and more balanced distribution of research interests in VR-based neurorehabilitation in recent years.

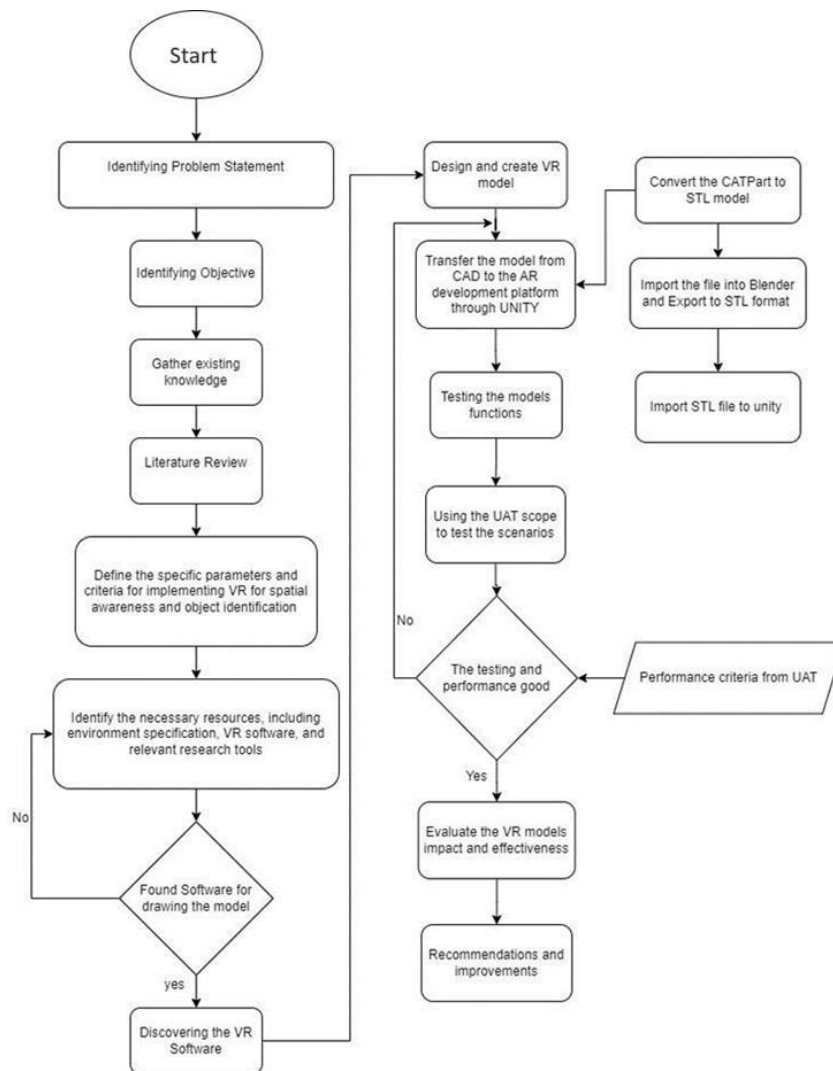


Fig. 1. The proposed Framework for Enhanced Teaching and Learning for Kids with Dyslexia

III. THE PROPOSED FRAMEWORK FOR ENHANCED TEACHING AND LEARNING ACTIVITIES FOR KIDS WITH DYSLEXIA

The basic idea behind this research is to provide an alternative method of learning and training about the inner workings of pipeline isolation plug technology by

adopting the Agile framework—the proposed framework for enhanced teaching and learning activities for kids with Dyslexia, depicted in Fig. 1.

Moreover, the proposed framework functionalities are explained below.

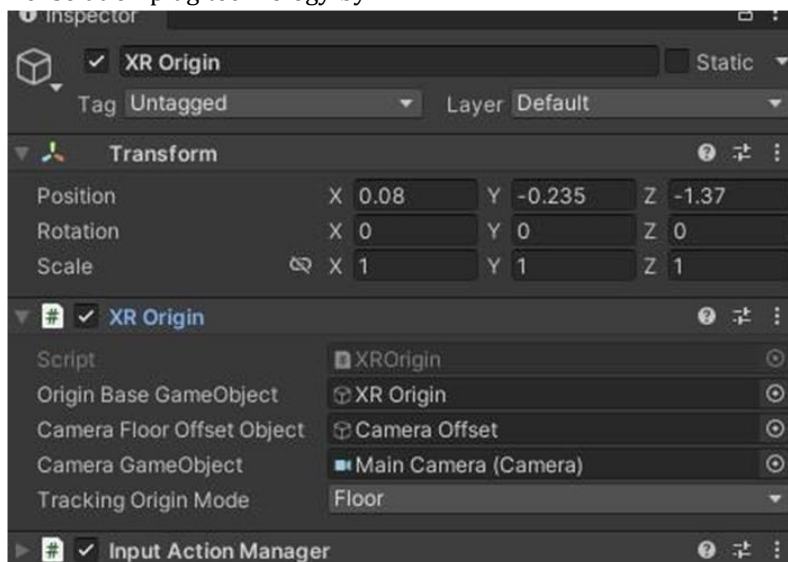


Fig. 2. Unity XR origin

A. User Acceptance Testing (UAT) and User Interface/User Experience (UI/UX)

We have conducted a detailed examination of the target audience and their requirements. We determined that the target audience consists of pipeline engineers and technicians, professors, and students who require a user-friendly interface to acquire information on the PIP intuitively. Based on this study, we created a basic yet effective user interface allowing users to obtain crucial information quickly. Thus, we employed the Unity XR toolkit and Unity UI creation tools to craft an immersive and interactive user interface (UI) for our VR model. Fig. 2 illustrates how the Unity XR toolkit played a pivotal role in ensuring the smooth compatibility of our model with the XR-origin VR equipment we acquired. This effective synergy enabled us to effortlessly incorporate 3D elements, animations, and user interactions, thereby elevating the overall user experience within the virtual environment.

B. Creating a VR Environment with Unity

The Unity XR toolkit and Unity UI building tools have created a Virtual Reality (VR) model for the learning environment. The objective is to create an interactive, immersive virtual reality environment that would enable an in-depth understanding of the functioning and design. The first job is to configure the VR environment parameters; this included making a plane

to serve as the base for the entire VR model shown in Fig. 3. The camera and user model have been imported from Unity's local library to provide a flawless connection with the VR equipment with the XR Origin and Meta Quest.

C. Importing Assets from Unity

The 3D models, textures, audio files, scripts, and other items that can significantly improve the creation process are available in the Unity Asset Store. Our goal in utilizing these resources was to expedite the development of a superior, immersive virtual reality setting. The main processes taken to acquire and incorporate assets from the Unity Asset Store into this research are outlined in the following phases. The first step in acquiring assets involves exploring the Unity Asset Store to identify suitable resources for our VR learning environment. This process included navigating the Asset Store via the Unity Editor or web browser, using search keywords and filters to find specific assets such as 3D models of educational tools, environmental textures, sound effects, and scripts for VR interactions. We also reviewed asset descriptions, screenshots, ratings, and user reviews to evaluate the quality and suitability of each asset for this research, ensuring that the selected assets were compatible with the version of Unity we were using and with the Unity XR toolkit for VR development. Depending on whether the assets

were free or paid, we purchased or downloaded the selected assets from the Unity Asset Store. We also reviewed and adhered to the licensing terms of the assets, including any requirements for attribution or usage limitations. Using the Unity Editor, we imported the downloaded assets into this research, accessing the Unity Package Manager to manage and import the asset

packages. We selected the down-loaded asset packages and imported them into this research, ensuring all necessary files and dependencies were included. Then, we organized the imported assets within the research hierarchy to maintain a clean and manageable structure.



Fig. 3. Unity Interface

D. Setting Up the Scene

After acquiring and importing the assets, the next step is integrating them into the VR learning environment. This involved creating and setting up the VR scenes where the assets would be used, designing the virtual environment, including the layout, lighting, and ambience to create an immersive experience, and placing the 3D models and other assets within the scene. We positioned, scaled, and rotated the assets to fit the intended design and functionality of the VR environment and added interactivity to the assets using the Unity XR toolkit, configuring objects to respond

to user inputs such as grabbing, moving, and manipulating virtual objects, as shown in Figure. Customization and enhancement of the assets were done to align with the specific needs of this research, which included modifying materials and textures of the assets to match the visual style and educational purpose of the VR environment, writing and integrating custom scripts to control the behaviour of the assets and add educational features such as feedback mechanisms and instructional prompts, and implementing animations and visual effects to enhance the interactivity and engagement of the VR environment.

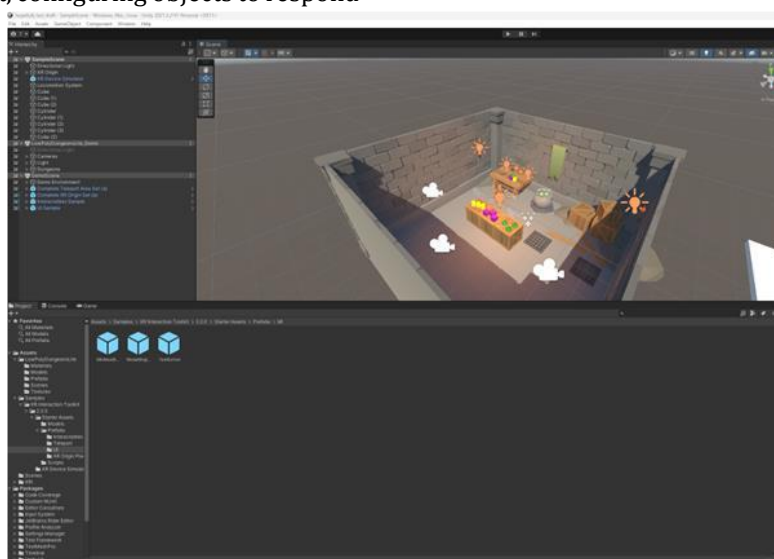


Fig. 4. Importing Assets from the Package Manager and Setting up the scene

E. Integrating XR Origin VR into this Research

During the development of the VR learning environment, integrating XR Origin VR proved to be a game-changer, especially given the constraint of not having a VR headset for testing and visualization. XR Origin VR, a versatile framework within the Unity XR toolkit, allowed us to create and simulate VR experiences without the immediate need for physical VR hardware. This was crucial for this research, enabling us to accurately simulate the VR environment and interactions, ensuring that the virtual scenes and user experiences were precisely designed and functional. By leveraging XR Origin VR, we could visualize and interact with the VR scenes directly within the Unity Editor. This involved setting up the XR Origin component, which lays the foundation for VR interactions such as head tracking, hand tracking, and object manipulation. Configuring the XR Origin allowed us to simulate the movement and viewpoint of a user wearing a VR

headset, facilitating the testing and refinement of the immersive aspects of the environment without needing the hardware. This approach ensured that the VR environment was designed to provide an engaging and intuitive user experience, particularly benefiting children with dyslexia by offering a well-crafted and interactive learning space. Moreover, integrating XR Origin VR into the research opened the potential for cross-platform deployment. The XR Origin framework is compatible with multiple VR platforms, including Oculus, HTC Vive, and Windows Mixed Reality. This meant that once the VR environment was fully developed and tested within the Unity Editor, it could be deployed across various VR hardware setups, ensuring accessibility and usability for a broader audience. The cross-platform capability also allowed us to future-proof the research, providing opportunities for scalability and adaptation as new VR technologies and platforms emerge.

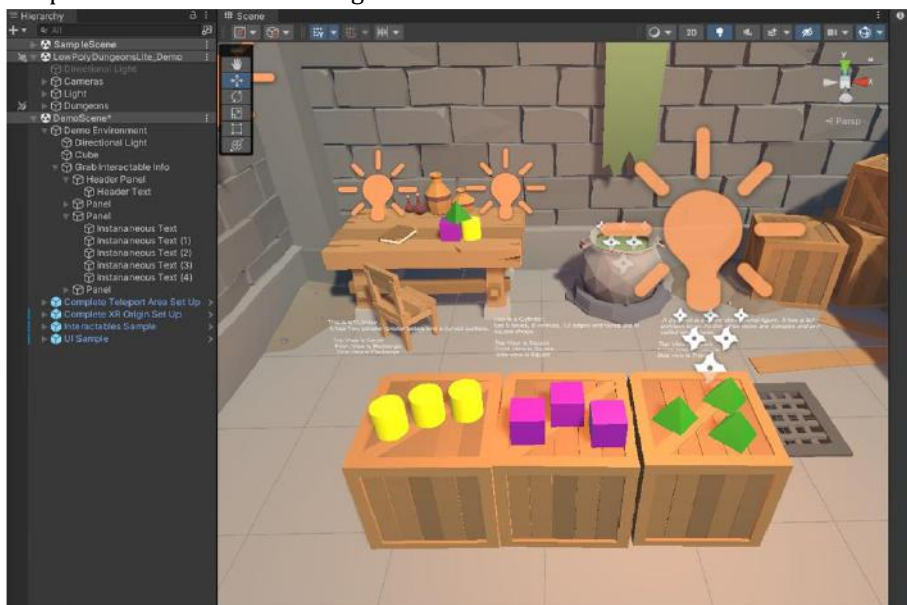


Fig. 5. Shapes and Texts incorporation

F. Adding Interactable Objects

This research mission focuses on incorporating interactable objects within the VR environment, specifically designed to aid children with dyslexia in learning object identification and spatial awareness. This was achieved by populating the virtual space with various geometric shapes—cubes, cylinders, and pyramids—integral to the educational content typically covered in a 10-year-old's curriculum. The primary goal was to create a hands-on, engaging experience that allows children to learn by doing, reinforcing their understanding of shapes and spatial relationships. We

programmed these objects to be fully interactable using Unity's XR Interaction Toolkit. Children can pick up, move, rotate, and stack these shapes, enabling them to engage in meaningful and enjoyable interactions, as shown in Fig. 5. This interactive element is crucial, transforming passive learning into an active, tactile experience. Children can better understand their properties and relationships by manipulating the objects, which is especially beneficial for those with dyslexia who may struggle with traditional learning methods. Additionally, we integrated floating descriptions and labels that provide immediate feedback

and information about each shape, enhancing the educational value of the VR environment. This multimodal approach caters to various learning styles, ensuring that all children, regardless of their preferred learning method, can benefit from the VR experience. By making the objects interactable, we not only aimed to create an engaging educational tool but also sought to provide a supportive and inclusive learning environment that addresses the unique challenges faced by children with dyslexia.

IV. RESULTS AND DISCUSSION

This section will present the findings from developing and implementing the VR learning environment, focusing on its effectiveness, user feedback, and potential impact on impaired children. The results will be discussed about this research objectives by providing insights into the success and areas for improvement of the VR model.

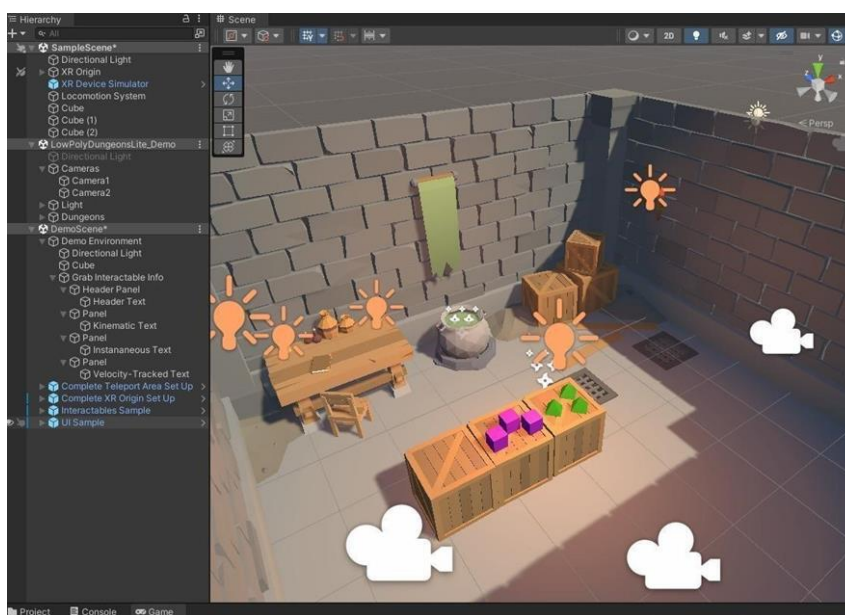


Fig. 6. Setup of the Environment to promote constant stimulation



Fig. 7. Final view of the finished prototype

A. Environment Setup and Design

The VR environment was successfully set up using Unity and the XR Interaction Toolkit. The development process involved creating a virtual classroom with various geometric shapes, including cubes, cylinders,

and pyramids, which were fully interactable, as shown in Figs 6 and 7. These shapes were positioned strategically within the environment to encourage exploration and interaction. Floating descriptions were added to each shape, providing real-time information to

the users. One of the primary goals of this research is to create an engaging and interactive learning experience. User feedback indicated that the VR environment was immersive and intuitive to navigate. Children could pick up, move, and manipulate geometric shapes easily, enhancing their understanding of these objects' properties and spatial relationships. The interactive nature of the VR environment kept the children engaged, stimulated and motivated to learn, which is a significant advantage over traditional learning methods.

B. Integration of XR Origin VR

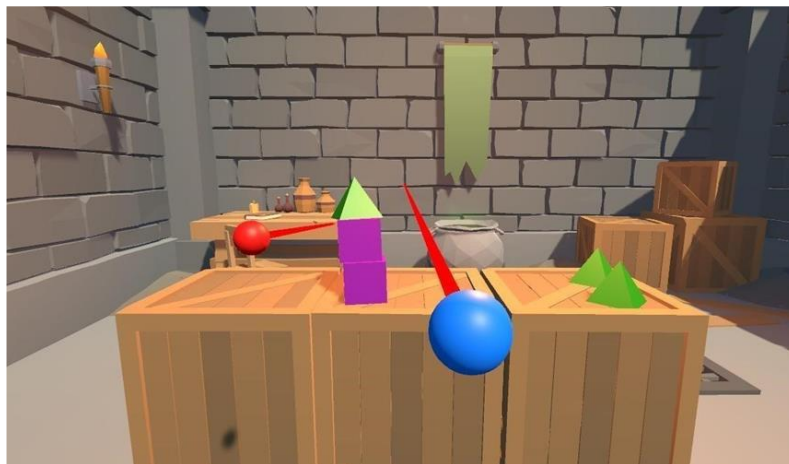


Fig. 8. Features of interacting and stacking using Origin VR

C. Learning Impact

One of the research's key objectives is to enhance object identification and spatial awareness in children, particularly those with dyslexia and dyspraxia. The VR environment proved to be effective in achieving this goal. Through hands-on interaction with the geometric shapes—cubes, cylinders, and pyramids, which were directly taken from a 10-year-old's textbook for educational reference—children developed a better understanding of the properties and relationships of these shapes, as shown in Fig. 9. This was evidenced by improved performance in post-interaction assessments, where children were asked to identify and describe the shapes, they had interacted with in the VR environment. The research also extended its benefits to children with dyspraxia and autism by explicitly labelling the left and right hands with red and blue colours, respectively. This visual aid helped these children distinguish between their left and right sides, significantly improving their spatial awareness and coordination skills. The consistent use of colour-coding reinforced the left-right distinction, which can stimulate neural pathways

The integration of XR Origin VR was a crucial aspect of the research, particularly given the lack of access to a VR headset. This feature allowed for accurate simulation of the VR environment on different platforms, including desktops and mobile devices, ensuring that the learning experience could be accessed widely, as shown in Fig 8. The cross-platform capability of the XR Origin VR proved to be effective, with minimal discrepancies in the user experience across different devices. This flexibility is particularly beneficial for educational institutions with limited resources, allowing them to provide VR learning experiences without requiring extensive hardware investments.

associated with motor coordination and spatial orientation. This method facilitated immediate learning within the VR environment and has potential long-term neurological benefits. Furthermore, the interactive and immersive nature of the VR environment offered significant medical benefits, including applications in rehabilitation. For instance, children with motor coordination issues could use the VR environment to practice precise movements in a controlled setting, improving their motor skills overtime. The hands-on interaction and the ability to manipulate and stack shapes helped children with nuanced motor skill challenges to practice and refine these skills in an engaging and non-threatening manner. The VR environment also allows educators and therapists to monitor real-time progress and adjust the learning experience. This adaptability ensured that the educational content was always aligned with each child's individual needs, enhancing the intervention's overall effectiveness. Additionally, the VR environment allowed for cross-platform capabilities, enabling children to access the learning modules from various

devices, ensuring accessibility and convenience.



Fig. 9. Simulation of the learning process and ability to interact and stack with objects

V. CONCLUSION

Integrating Virtual Reality (VR) technology in educational and therapeutic settings has shown significant potential in improving learning outcomes and addressing specific challenges faced by children with dyslexia, dyspraxia, and autism. This research aimed to create an immersive and interactive VR environment using Unity and the XR toolkit, which focused on enhancing object identification and spatial awareness. By incorporating geometric shapes from a 10-year-old's textbook and using colour-coded hands for left-right distinction, the research offered a comprehensive and engaging learning experience tailored to the target audience's needs. Children could interact with shapes hands-on in the VR environment, which led to a better understanding of their properties and spatial relationships. This interactive approach was particularly beneficial for children with motor coordination issues, enabling them to practice precise movements and develop better spatial awareness. The research's adaptability and cross-platform capabilities ensured accessibility, making it a valuable tool for educators and therapists working with children with special needs.

In future work, this research will include mathematics, science, and language arts could be integrated to provide a more comprehensive learning experience for children. Additionally, this research will address multiple areas of their curriculum and enhance overall educational outcomes.

The integration of emerging technologies such as

augmented reality (AR), artificial intelligence (AI), 3D image scanning of objects and machine learning (ML) should be explored to enhance the VR environment further. These technologies can provide adaptive learning experiences, predictive analytics, and more immersive interactions, making the VR model even more effective and engaging for children with special needs and introducing more complex structures which are not usually capable of being seen by impaired people and for education purposes.

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Between Tongues: The Battle for Linguistic Equity in Tanzanian Schools – An Autoethnographic Study

Scholastika Massawe

Received: 14 Aug 2024, Received in revised form: 11 Sep 2024, Accepted: 18 Sep 2024, Available online: 26 Sep 2024

Abstract— *This autoethnographic study delves into the personal experiences of both a student and a teacher navigating the dual-language educational framework of Swahili and English in Tanzania. The research investigates how these individual narratives enhance our understanding of the broader impacts of language policies. By integrating personal reflections with theoretical analysis and a comprehensive literature review, the study explores the profound effects of these policies on both students and teachers. The findings reveal significant advantages of using Swahili, the native language for the majority of learners, in fostering not only academic success but also emotional and psychological well-being. Conversely, the use of English as a medium of instruction is shown to exacerbate educational disparities and hinder the emotional health of students. Based on these insights, the study advocates for substantial revisions to the current language policies, suggesting a shift towards prioritizing Swahili to better meet the needs of the majority, thus promoting greater educational equity and inclusivity.*

Keywords – *Autoethnography, Linguistic Imperialism, Tanzanian Education, Language Policy, Educational Inequality*

I. MY POSITIONALITY STATEMENT

Today, I embark on a journey not just of distance, from the Eastern part of Africa in Tanzania to the academic halls where I now stand (USA), but also a journey of thought, reflection, and identity. As a second-year doctoral student in Language, Literacy, and Culture, my academic and personal voyage intertwines with the intricate web of language policy and planning in post-colonial countries. Speaking Swahili as my native tongue and English as my second language has not merely been an act of communication but a doorway to deeper insights into the socio-political, cultural, and educational landscapes that shape the world.

My interest in language policies and planning in post-colonial or global South contexts is not an abstract academic pursuit. It is rooted in my lived experiences as a student, a teacher, and now a researcher currently residing in the Global North. These roles, seemingly distinct, converge in my person, offering me a unique vantage point from which to examine and critique the mechanisms of language policies/language of

instruction in schools. In the classroom, I find myself at the micro-level, directly engaging with and sometimes contesting the very policies I study and implement. I am both a policy implementer and planner, an agent navigating the complex terrain of language policies in education.

My positionality is further complicated by the memories of linguistic punishment for not speaking "good English" in educational settings, an experience shared by many in Tanzania. This practice, reminiscent of colonial disciplinary measures, not only underscores the lingering shadows of colonialism but also challenges me to reflect critically on my role in perpetuating or challenging these legacies.

As I stand at the intersection of multiple identities: teacher, student, and researcher, I am constantly reminded of the tensions, resilience, triumphs, privileges, and responsibilities that accompany my journey. The privilege of education and the medium of instruction, which is not accessible to all in my homeland, places me in a unique position to

question, critique, and seek alternatives to the colonial legacies embedded in our educational practices. My journey of learning and teaching English, marred by instances of psychological and physical punishment, informs my critical stance on language policy and planning. It compels me to question: How different am I or my practices, as a teacher, from the colonizers who sought to erase our languages and, with them, a part of our identity?

In presenting this narrative, I intend to convey a personal experience while shedding light on the wider consequences of our language choices in education. These decisions can either contribute to or counteract epistemic injustice and have the potential to either liberate or oppress. In performing my duties, I am acutely aware of the fine line between mentoring and controlling. My objective is to cultivate environments that encourage educational equality and equitable access to knowledge.

II. INTRODUCTION

A simple online search on Tanzania's educational language shift in education reveals numerous claims about the transition from English to Swahili as the medium of instruction, a policy shift purportedly initiated under President Jakaya Kikwete. These headlines range from "Tanzania Replaces English with Kiswahili as its Official School Language" (Black Press USA, 2015) to "Tanzania banning Swahili in its secondary schools and setting English as a compulsory subject" (Face of Malawi, 2023), hinting at a radical educational transformation. Nevertheless, the complexities behind these headlines reflect a deeper narrative of struggle, adaptation, and ideological shifts within Tanzania's language policies in education. While Tanzania's implementation of mother tongue instruction in early education (UNESCO, 2009) has received global praise, the difficulties encountered during the transition period have drawn scrutiny from local scholars (Dady, 2020; Mpemba 2007; Nomlomo & Vuzo, 2014; Brock -Utne, 2007; Swila, 2009, Mapunda, 2022). This means Tanzania's language policy in education from secondary to higher education is problematic. Yet, the research methodologies used have often simplified these impacts into mere causes and effects, overlooking the rich tapestry of struggles, resilience, efforts, triumphs, and both productive and unproductive resistance that students and teachers in Tanzania endure. They navigate through a complex, unequal, and inequitable language policy in education,

facing challenges that go beyond academic performance and delve into the heart of their daily educational experiences.

It is from this perspective that I want to share my experiences as a student and teacher in Tanzania's primary and secondary schools. By providing an inside view, I hope readers will see, feel, and hear the extent to which this policy has been detrimental to students and teachers. As researchers exploring this area, we should not forget our past; any solutions or suggestions our studies might offer should be grounded in our history and reflect on what it means for students and teachers today.

Tracing the Evolution: Tanzania's Language Policy Through the Years

Tanzania's engagement with Swahili spans from its pre-colonial roots to its elevated status in the post-colonial period. It reflects the nation's concerted efforts to cultivate unity and establish a distinct identity through linguistic means. Originating as a lingua franca for trade on the East African coast and extending into the hinterlands through commercial interactions (Mazrui & Mazrui, 1995), Swahili was subsequently adopted by German and British colonial administrations as an expedient tool for governance and communication (Illiffe 1969; Clerke, 1960; Gottneid, 1976; Mazrui & Mazrui, 1995). According to Othman (2008), Swahili had gained popularity among the locals earlier before the British colonial rule on behalf of the League of Nations. This explains why it became significant during the struggle for independence in Tanganyika, now Tanzania's mainland and Zanzibar. As noted by Dady (2020) before colonization, African countries did not face difficulties selecting a Language of Instruction (LoI) as each community educated its children in its native language. It was rather because of colonialism and the imposition of Western educational systems in Africa that there was a need for a universal language for education that transcended linguistic differences among African communities (Alidou, 2004). The following section provides an overview of the linguistic situation in education in Tanzania, tracing its evolution from the colonial era to the present day. This historical context is crucial for understanding the continuities in language policy from the period of colonial rule to contemporary settings. Despite formal shifts towards independence and self-governance, the linguistic strategies and educational practices employed today bear striking similarities to those used by colonial administrators. These parallels underscore the urgent need for a decolonization of the educational system in Tanzania,

challenging us to rethink and reshape the way language is used as a tool of instruction and cultural transmission. This analysis will illustrate how the persistent legacy of colonial language policies continues to influence educational practices, highlighting the importance of revisiting and revising these policies to better reflect and serve the post-colonial Tanzanian context.

The Context of Language Policy During the Colonial Era

Germany, being the first Western country to colonize Tanganyika, encouraged the use of the Swahili language as an official language while limiting access to German (Roy-Campbell 2001; Swila, 2009; Moyd, 1996). With the shift to a British colony in 1919 after World War I, many changes happened in the colony's administration. The existing education system that promoted the use of Swahili throughout was shifted to only the first four years of school, and from the fifth year to tertiary education, English began to be used as a medium of instruction (Rubagumya, 1990 & Swila, 2009). One should remember that the British government employed indirect rule and a "divide and rule" policy which was a "conscious effort of an imperialist power to create and/or turn to its advantage the ethnic, linguistic, cultural, tribal, or religious differences within the population of a subjugated colony" (Morrock, 1973, pg 129). So, education was one of the ways that they could create the differences among the people of Tanganyika. Therefore, the main purpose of the British education system was to educate people who could provide service to the colonial administration.

The Context of Language Policy During the Post-Colonial Era

Post-independence Tanzania maintained the colonial curriculum and languages of instruction, using Swahili as LoI in the first four years of primary education and English from the fifth to secondary and post-secondary levels. However, with changes in the country's ideologies under Nyerere's socialism and Education for Self-Reliance policy, Swahili was cemented as the primary language of instruction in primary education, aiming to dismantle the colonial legacy and promote national unity (Swila, 2009). It is more interesting to note that Tanzania gained independence in 1961. Still, it was not until January 4th, 1967, that Swahili was made the official language, while English remained an official and prevalent language for official matters. Swahili was used when the citizens

were involved for political reasons since English was only spoken by the elite people (Massamba, 1987).

In the 1970s, following the study commissioned by the National Kiswahili Council, some efforts to switch from English to Swahili in secondary school heightened. Then, in February 1982, Nyerere appointed a Presidential Commission on Education, which recommended the changes to take place starting in 1985 (Lwaitama and Rugemalira, 1990). According to Gazzola et al. (2023), it is one thing to set an agenda and formulate a policy and another thing to implement it when it comes to public policy. In 1984, dissenting opinions began to emerge, challenging earlier recommendations. That same year, Lwaitama and Rugemalira (1990: 37) note that the Ministry of Education issued an ambiguous statement declaring, "Both languages, English and Kiswahili, will be used as media of instruction. English will be improved at all levels of education" (as cited in Sa, 2007 pg. 5). Further emphasizing the Ministry's stance, Nyerere highlighted the importance of English in secondary education, advocating for Tanzanians to learn and appreciate the language (Lwaitama and Rugemalira 1990, as mentioned by Sa, 2007, pg 5). The rationale for this shift has been the subject of speculation, with some research (Yahya-Othman and Batibo, 1996) suggesting the high costs associated with transitioning to Swahili as a prohibitive factor for the government at the time. This leads to the ongoing question: Why hasn't the government-initiated efforts to allocate funds for this purpose, which could have significantly benefited the country beyond the current state?

Nevertheless, Othman (2008) is critical of the government's indecisiveness about the status of the two languages, which explicitly favors English over Swahili. As Gazzola et al. (2023) point out, "Policymaking is about making choices to do something or nothing to address a public problem/issue. If abstaining from doing something is a deliberate decision, then also 'doing nothing' is a public policy" (pg. 44). The same policy practice that has been going on to date leads to claims that I have just shared at the beginning of this paper.

The Language Policy in the Present Era

According to UNICEF (2017) and World Bank (1990), as Ujamaa's influence waned in the late 20th century, Tanzania found itself navigating the tides of capitalism, unable to sidestep the global economic pressures and Structural Adjustment Programs (SAPs) promoted by international financial bodies like the IMF

and World Bank during the 1980s. Mazrui (1997) and Tandon (2008) noted that English, seen as a vestige of imperialism, reclaimed its dominance, impacting the socio-political and economic fabric of Tanzania more strongly than before. Today, the educational curriculum in both Swahili and English, crafted during the colonial era under Western influence, has sparked ongoing debates within the broader context of the country's ideological evolution. To put it succinctly, Tanzania's educational language policy has remained largely unchanged since the British colonial period. The introduction of the 2014 Education Policy did little to alter the language of instruction, instead adding layers of ambiguity to policy statements. This ambiguity underscores a deep-seated "indecision" that is entwined with the nation's historical, social, and political fabric, as discussed by (Brock-Utne, 2017; Yogi, 2010; Brock-Utne & Hopson, 2005; Mapunda, 2022).

Amidst these conflicting scenarios, the individuals at the grassroots teachers and students bear the repercussions of the inconsistencies in language policy. Swahili, being the native language for a vast majority of students from diverse backgrounds; be it rural or urban settings, affluent or less privileged families, remains central to their early development. However, a significant portion of these students are enrolled in private schools where English is the primary medium of instruction from an early age, a practice criticized for its detrimental impact on meaningful learning (UNESCO, 2017; Brock-Utne, 2007). Conversely, students in public schools encounter a jarring shift to English in secondary education, a transition fraught with challenges and marked by a sudden departure from their mother tongue (Nomlomo & Vuzo (2014) and Yogi (2017). As studies explain, this abrupt language transition experienced by students entering secondary education has profound implications for them and their teachers (Bikongoro, 2015; Tibategeza & Plessis, 2018; Rubanza, 2002). On the other hand, students who have been learning English from the start, despite initial hurdles, tend to navigate the educational system more easily as they progress (Nomlomo & Vuzo (2014) and Rubanza (2002).

For years, studies on the impact of Tanzania's language policy in education, especially from secondary to tertiary levels, have primarily used qualitative methods to explore the effects of using English as a medium of instruction. For example, a study by Nanai (2023) consolidates findings from multiple studies to offer a comprehensive view of the policy's impact on

education. This research identified a discrepancy between the goals of the policy, the design of the curriculum, and actual classroom experiences, which adversely impact learning. Another study by Birgit Brock-Utne (2002) investigated Tanzania's educational language policy using a qualitative approach. Her study, which included analyzing documents, conducting interviews, and classroom observations, revealed a disconnect between policy intentions and actual classroom experiences. She found that English, as the language of instruction, often obstructs student learning, contrasting with Kiswahili's potential to enhance understanding. However, external influences and systemic reluctance have impeded Kiswahili's adoption in higher education, despite its evident advantages for student engagement and comprehension.

More and similar studies like these have reduced these impacts to simple cause-and-effect scenarios, failing to capture the full spectrum of challenges, resilience, efforts, victories, and both constructive and counterproductive resistances that Tanzanian students and teachers face. They are navigating a network of complex, unjust, and unfair educational language policies, dealing with obstacles that transcend academic achievements and touch the essence of their everyday educational journeys.

This paper takes a novel approach to examining Tanzania's educational language policy by weaving together the personal and academic through autoethnography, a methodology not widely applied in this context. Furthermore, by adopting autoethnography, this paper aims to dive deeper into the personal experiences within Tanzania's education system, leveraging the researcher's own experiences as both a student and a teacher. This method allows for a nuanced exploration of how language policies affect learning and teaching on a daily basis, beyond what traditional research methods might reveal. It's an exploration of the complexities, struggles, and triumphs within the education system, offering a unique perspective that highlights the need for policy reforms grounded in the lived experiences of those most affected. Through this lens, the paper seeks to contribute to a more profound understanding of educational language policy in Tanzania, suggesting pathways for meaningful change.

III. METHODOLOGY

This study employs a reflective autoethnographic approach, strategically integrating personal narrative with a comprehensive theoretical framework and extensive literature review to explore the languages of instruction in Tanzania. Autoethnography, as defined by Ellis, Adams, and Bochner (2011), is a method that connects the personal to the cultural, placing the self within a social context. This methodology is particularly suited to addressing the complex interplay of personal experiences with broader cultural realities, making it an ideal approach for studies that seek to deeply understand personal educational experiences within specific cultural settings.

Data Collection

The data for this study were collected through the following autoethnographic methods:

1. **Personal Narrative:** This involves the crafting of detailed, evocative narratives that not only recount personal experiences but also invite readers to engage emotionally and intellectually with the text (Ellis, 2004). These narratives delve deeply into my experiences, specifically focusing on the mediums of instruction employed during my years as a student and later as an educator in various educational institutions in Tanzania and Uganda. Through storytelling, this method provides insight into the profound impact that language and teaching methods have on educational experiences and outcomes.
2. **Reflective Analysis:** Critical reflection is employed to dissect these narratives, enabling a deeper understanding of how personal experiences align with or contest existing educational theories and practices. This reflective process is crucial in autoethnography, as it facilitates the transformation of personal experience into broader cultural insights (Chang, 2008).
3. **Document Analysis:** A rigorous review of academic literature forms the backbone of the theoretical analysis in this study. The literature review helps to situate the personal experiences within existing research and theory, offering a scholarly backdrop against which personal stories are analyzed.

Setting

The setting of the study is inherently retrospective, focusing on past educational experiences in Tanzania and Uganda. These experiences span from various schools where I have been both a student and a teacher, encompassing a diverse range of educational environments. This retrospective analysis is vital in autoethnography, as it allows for a reflective examination of how past experiences continue to influence present and future educational and professional practices.

Significance of the Study

The use of autoethnography in this study offers significant insights into the personal and professional educational landscapes of East Africa, particularly in Tanzania and Uganda. By weaving together personal experiences with scholarly analysis, this method provides a powerful tool for understanding and potentially transforming educational practices within these cultural contexts.

So, what is Autoethnography?

Autoethnography transcends mere personal narrative; it's an in-depth exploration of self and how we interpret our place in the world. It involves understanding how we define and identify ourselves, and how others perceive us through our stories. This approach enables a mutual understanding, allowing others to see themselves in our narratives and vice versa. It delves into the tensions within our studies, questioning the necessity of these stories and aiming to provide more than just a description of our feelings about experiences. As Carolyn Ellis (2013) articulately points out, "For most of us, autoethnography is not simply a way of knowing about the world; it has become a way of being in the world, one that requires living consciously, emotionally, and reflexively. It asks that we not only examine our lives but also consider how and why we think, act, and feel as we do. Autoethnography requires that we observe ourselves, that we interrogate what we think and believe, and that we challenge our assumptions, asking over and over if we have penetrated as many layers of our defenses, fears, and insecurities as our project requires. It asks that we rethink and revise our lives, making conscious decisions about who and what we want to be. And in the process, it seeks a hopeful story, where authors ultimately write themselves as survivors of the story they are living" (p. 10).

IV. FINDINGS (MY AUTOETHNOGRAPHY)

Swahili Days: Echoes of Learning in Primary School

As an extroverted individual, participating in class discussions and answering questions came naturally to me during my primary school years. The walls were adorned with educational posters in Swahili. Our classroom was alive with laughter and dialogue. Bright paintings and colorful posters covered the walls, each piece bursting with stories of our community and creativity, all in Swahili. We sat at simple wooden desks lined up in rows, sharing space and ideas. In front of us, a big black chalkboard filled with our teacher's bold Swahili words guided our every day of class. Swahili words filled the room, sometimes spoken softly, sometimes sung out loud, and often debated warmly as we learned new things together.

Among my favorite subjects were vocational skills, where we ventured into the valley with our teacher, transforming the mud into various objects like cups, plates, and miniature houses. This hands-on learning facilitated entirely in Kiswahili, ignited our collective curiosity and fostered a profound connection to each lesson. Despite the complexity of new concepts, the language never served as a barrier; instead, it was a bridge that made even the most challenging topics accessible. I recall learning about osmosis in such a vibrant setting, where we brought potatoes and salt from home to observe this phenomenon firsthand. Classes were full of energy and cooperation. Our teacher welcomed questions, sparked debates, and made sure learning was a journey we took together. All these things were happening in the language we understood better. Studying in Swahili did more than just teach us school subjects. It tied us closer to each other and to our culture, helping friendships grow and making school a joyous place. For seven years, going to school was a joyous experience.

These memories lay the groundwork for everything I learned later. They show how deeply our language and culture are woven into our education. I share this with you to highlight how important language is in shaping not just our schooling, but who we are.

The next section will explore my transition period as I concluded my primary education and entered secondary school, where everything turned into a nightmare. This phase marked a drastic shift from the familiar and nurturing environment of primary school to a challenging and often daunting new world of secondary education.

English at a Cost: The Perils of Language Transition in Tanzanian Schools

The education system in Tanzania comprises seven years of primary schooling where all subjects are taught in Swahili, and English is introduced only as a separate subject. The expectation is that five years of studying English should sufficiently prepare students to switch entirely to English instruction upon entering secondary school. However, does this transition truly serve the needs of Tanzanian students? My personal experiences shed light on this critical question.

The shift to English in secondary school was jarring. This new academic language, with its complex structures and foreign vocabulary, created a profound chasm between my thoughts and their expression. Anticipating this shift, I had envisioned a seamless transition to learning in English, a notion that quickly unraveled into a challenging reality. The transition required grappling with new academic concepts while simultaneously mastering a new language, a dual challenge that proved more daunting than any home chore. This shift dramatically undermined my extroverted nature, as the fear of miscommunication or potential ridicule silenced me, making me long for the inclusivity of my Kiswahili-speaking classroom. This experience highlighted the enduring legacy of colonial education systems in Africa, where English, as a colonial remnant, still dominates as the primary language of instruction.

I remember the classroom feeling colder, and less inviting, as English words seemed to hover just out of reach. The warm Swahili posters were replaced by stark, authoritative signs proclaiming, "Speak English" and "No English, No Service," even adorning some teachers' office doors. This linguistic enforcement further alienated me, making the once inviting space of learning feel forbidding and impersonal. The stark shift from the familiar embrace of Kiswahili to the stark uncertainties of English required a strenuous period of adaptation. My classroom participation, once vibrant and active, dwindled as I grappled to translate my thoughts into a language that felt entirely foreign. The confidence I had through my primary school years evaporated, leaving me to navigate a landscape of isolation within the very walls that were meant to foster my growth.

Unlike me, my peers from English-speaking backgrounds seemed to traverse this transition with disconcerting ease. In primary school, my challenges were centered around understanding the content; it was

within my control to engage in extra evening classes to grasp difficult concepts. However, these difficulties were rooted in the language of instruction in secondary school. Extra classes became sessions of translation rather than comprehension, where I spent hours converting the English content into Swahili before we could even begin to address the underlying concepts.

This epistemic injustice extended beyond the classroom walls. It affected students like me, hailing from public schools, creating disparities in our academic performance not because the subjects were inherently difficult, but because the language made them inaccessible. The simple act of raising my hand to ask a question became a source of dread; I envied my classmates who could effortlessly grasp and discuss complex materials in English, engaging in meaningful conversations with our teachers.

Though some instructors attempted to bridge this gap by intermittently using Swahili, especially when the confusion was palpable across the classroom, their efforts were undercut by the reality that our examinations were in English. The constant reminder that these tests would judge not just our knowledge but our command of a foreign language was disheartening. It placed my peers and I, who did not have the privilege of a consistent English education, at a distinct disadvantage. The stakes were incredibly high, as these results would determine our futures, purportedly measuring our intelligence and understanding of the content.

The imposition of English extended beyond the academic to affect social dynamics and peer relationships. Speaking Kiswahili became a punishable offense, fostering a climate of anxiety and surveillance. This punitive approach to language use contradicted the cultural identity of a nation where Swahili is the heartbeat of Tanzania. I resorted to silence even outside the classroom. To avoid being labeled as a "Swahili speaker" and facing harsh punishment, I withdrew from socializing. My reluctance to engage in conversation stemmed from a fear of having my name reported and punished the next day. This environment fostered a deep resentment towards those who fluently spoke English, whom I perceived as boastful or complicit in maintaining this oppressive system. An incident that vividly captures the oppressive nature of this policy occurred when I was unable to explain my presence outside the classroom due to limited English proficiency, leading to unwarranted punishment. The fear of physical punishment, though severe, paled in comparison to the dread of the state exams. Knowing

that these exams could seal my academic fate forced me into rote learning, a strategy that prioritized memorization over understanding due to the language barrier.

This linguistic struggle did not end in Tanzania; it followed me to Uganda. There, while physical punishment was absent, the psychological torment of speaking "broken English" persisted. The assumption that fluency in English equated to intelligence was prevalent, and my attempts to communicate in English were often met with ridicule. In Uganda, there was a word for "broken English" Mbogo. This experience culminated in a classroom incident where my grammatical errors were mockingly written on the board, amplifying my fear of speaking and reinforcing the cycle of silence and humiliation.

These experiences underscore that the language of instruction, a vestige of colonial rule, serves more as a barrier than a tool of empowerment, perpetuating a cycle of silence and exclusion that affects many learners across Africa. The need for a more inclusive and empathetic approach to language policy in education is evident, as the current reliance on English continues to disenfranchise countless students who are educated in Swahili.

From Survival to Privilege: Navigating The English Divide in High School and College

At one point, I started to believe that English proficiency and intellectual abilities were interconnected. My four-year experience in Uganda, although traumatizing, laid the groundwork for my high school education in Tanzania, where English is the medium of instruction. Returning with newfound confidence, I felt that language would no longer be a barrier. I vividly remember actively participating in class discussions, especially in arts subjects that involved extensive reading and writing. I felt privileged; even though it was a private school, and many students came from English-speaking backgrounds, their confidence didn't seem to match mine. I believed I knew more than they did, a notion I learned the hard way. In Uganda, mastering English was a survival necessity. When my Tanzanian peers learned of my time in Uganda, they'd often remark, "Oh, that's why you can speak English," since it's uncommon for Tanzanians to use English throughout the day when everyone speaks Swahili.

In college, life became easier. I excelled in my courses because language was no longer an obstacle. With frequent presentations, my classmates often chose

me to speak on behalf of the group. I felt privileged, but I deeply understood it wasn't their fault, they simply hadn't had the same exposure to English as I had. Inside, I knew I wasn't fundamentally different from them; my advantage was merely circumstantial. However, in class, I found myself unduly fixated on my professors' grammatical errors during lectures, often at the expense of learning the actual course content. This focus was a direct transference of my past traumas associated with learning English, a language once foreign and fraught with difficulties. My experiences in Uganda, where mastering English was essential for academic survival, had ingrained in me a hyper-awareness of language accuracy, which now manifested as a critical lens through which I viewed my educators. This unintentional shift in focus from content to form was an echo of my earlier struggles, highlighting the deep-seated impact of my language journey on my academic interactions.

This preoccupation with grammatical accuracy often distracted me from the richer educational experiences that college had to offer. It was a paradoxical situation where my linguistic capabilities, once a barrier, had become a prism through which I viewed all academic exchanges. This perspective is both a testament to my growth and a reminder of the enduring scars left by my earlier educational encounters. As I navigated through my college years, this realization helped me to gradually shift my focus back to the substantive knowledge being imparted, striving to fully engage with the material beyond the surface structure of the language used.

Teaching in Translation: Balancing Language and Teaching in Tanzania

As a teacher, my experiences were layered and challenging, spanning pedagogical, linguistic, and emotional realms. When I was in college as a student teacher, teaching English seemed straightforward; the theories I was learning appeared practical and poised to facilitate a smooth learning environment. However, the stark reality hit during my first field practice. I was taken aback by the scarcity of resources in schools a situation I was familiar with as a former student, but its impact on teaching had never truly dawned on me. The large class sizes rendered the pedagogical theories, which mostly originated from contexts quite different from ours in the West, impractical in our setting. Adapting these theories to our local context was not something I had been prepared for in college; it was a skill I had to develop when I began teaching.

The diversity in English proficiency levels among my students was particularly daunting. Since most came from public schools, I needed to adjust my lesson plans to accommodate the majority, while also ensuring that more advanced students weren't neglected. This balancing act was a constant struggle. In English classes, immersion was feasible because language acquisition was the goal, but in subjects like history, using English as the language of instruction significantly slowed down the pace. Lessons that could have been delivered in 90 minutes stretched to 180, as I had to translate materials and ensure comprehension.

The pressure to cover the required curriculum while meeting my student's needs and preparing them for national examinations was overwhelming. I loathed reducing learning to mere memorization, yet often it felt like the only viable option. Objective tests, which allowed for educated guessing, became a crutch for many students, whereas essay questions led to chaos. Half of my students struggled to respond adequately, and some resorted to a mix of Swahili and English in their answers. Assessing these mixed-language responses posed an ethical dilemma: was I evaluating their understanding of the content, their English proficiency, or both?

Moreover, code-switching in class became a necessary strategy to foster understanding, though I had to be cautious of school authorities. The surveillance-like environment transformed my teaching from a passionate vocation into a series of covert operations, stripping away the joy and openness that should characterize the educational experience. Being tasked with disciplining students for speaking Swahili, their mother tongue and our national language, conflicted with my principles. The ideological clash between the school's policies, the broader educational norms, and my personal beliefs was a constant battle. I recall a conversation with the academic master about the rationale behind punishing students for speaking Swahili, to which he responded that such practices were believed to be helpful based on how previous generations, including myself, supposedly benefited.

Navigating these multifaceted challenges simultaneously was daunting. Each day in the classroom was not just about delivering lessons but about making a meaningful impact on my students' lives. How could I achieve this if we couldn't communicate effectively? If everything I taught seemed like mere noise to them? These experiences as a teacher have deeply influenced my perspective on education and continue to shape my approach to teaching and learning.

Revisiting Roots, Revising Realities: Engaging with Autoethnography for Educational Reform"

Now, as a researcher residing in the U.S., I occupy a 'third space', a unique position that allows me to reflect upon and analyze these experiences critically. Drawing inspiration from "Negotiating Language Policies in Schools: Educators as Policymakers" by Ofelia Garcia and Kate Menken, I recognized the pivotal role educators play in shaping and negotiating language policies. This understanding deepened my engagement with autoethnography, allowing me to explore the profound impacts of English as a medium of instruction. My journey, filled with ethnographic curiosities, continually reflects on the methodologies, questions, and interactions that define my fieldwork. Influenced by researchers like Chang (2013), who intertwined her professional interests with personal experiences in mentoring, I recognized the unique position I occupy as both a former student and a teacher within the educational contexts I study.

This reflective process is an active engagement with my past, aiming to enhance my understanding of how language policies impact education. It is a process of self-inquiry that is not just preparatory work (Bochner and Ellis 2006) but a fundamental component of the research itself. It challenges the conventional view of the researcher as an external observer and recognizes the researcher's identity as deeply embedded within the social fabric of the study context (Wall, 2008). My doctoral studies, enriched by a continual interaction with scholarly works and the evolving educational research landscape, advocate for a critical examination of these policies and their implications for social justice. By positioning myself within the narrative, I bridge the gap between observer and participant, offering unique insights into the complexities of language education in Tanzania and the broader African context.

This autoethnographic journey is both an academic endeavor and a personal quest to articulate the intricate links between language, identity, and education. It underscores the necessity for policies that reflect the linguistic realities and needs of the communities they serve, advocating for a more inclusive and equitable educational landscape. Through this third space, I contribute to the dialogue on educational reform, emphasizing the importance of local contexts and the voices of those directly impacted by policy decisions.

My experiences in Tanzania, Uganda and the U.S. serve as a lens through which I view and analyze the

broader implications of language policies, fostering a deeper appreciation for the nuanced challenges and opportunities within the field of education. Drawing from a series of 'aha' moments and the insights gained from my re-engagement with the culture of my upbringing, this journey challenges the conventional view of researchers as mere observers. Recognizing our deep embeddedness within our study contexts, this autoethnographic approach allows me to acknowledge and critically examine my biases and insights, extending my gaze to explore the interconnectedness within our fields of study.

V. DISCUSSION

The misalignment between language policy intentions and classroom realities in Tanzania's education system starkly mirrors my personal experiences as both a student and a teacher. Telli (2014) and Mtallo (2015) articulate this tension, highlighting the abrupt switch from Kiswahili to English at the secondary level, which disregards students' linguistic readiness and echoes my own struggles with linguistic disorientation and academic challenges. This abrupt policy shift, rather than aiding educational progression, complicates learning outcomes, suggesting that the use of English might be more detrimental a curse rather than a blessing.

The diverse viewpoints on the use of English versus Kiswahili, as explored by Telli (2014), highlight the critical need for more inclusive policy-making processes that genuinely reflect the linguistic and educational realities of Tanzanian students. Currently, the exclusion of teachers and students from these processes often results in policies that fail to meet the needs of those most affected. Reflecting on my own journey, the initial foundation provided by Kiswahili in early education was crucial. However, the jarring transition to English in secondary education was not only challenging but also detrimental, reflecting the broader national issues with language policy where the implemented practices often do not align with the policy dictates (Brock-Utne, 2017). My narrative underscores the systemic struggle with the language of instruction, highlighting how personal experiences can serve as a microcosm of national educational challenges.

Furthermore, the experiences detailed resonate with broader themes of linguistic imperialism, where, as in Tanzania, despite the presence of a local lingua franca, the colonial language continues to dominate critical sectors like education, thus perpetuating educational

inequalities (Phillipson, 1992). This dominance of English aligns with Pierre Bourdieu's concept of cultural capital, where mastery of the colonial language becomes a significant asset that individuals must possess to gain access to social and economic privileges (Bourdieu, 1986). The inappropriate use of English as the medium of instruction, rather than as a foreign language that students learn alongside their primary education, suggests a significant disconnect between language policymakers and established linguistic and language learning theories (Cummins, 2000). From a theoretical perspective, the imposition of English in Tanzanian education serves as a quintessential example of linguistic imperialism, embodying Bourdieu's idea of symbolic power, where the dominance of a colonial language not only facilitates global integration but also reinforces social hierarchies and educational disparities. This linguistic dominance exacerbates educational inequities, disproportionately disadvantaging those not proficient in English and perpetuating cycles of educational inequality.

The ongoing political debate often simplifies the issue to a choice between Swahili as a national language and English as an international language, neglecting the profound impacts these decisions have on identity and cultural beliefs. My experiences reveal that while English does not replace my identity, it introduces significant educational inequalities (Tollefson, 1991). Those who can afford private education are more likely to succeed, whereas those from lower-income backgrounds face overwhelming barriers, leading to high dropout rates and severe emotional and psychological impacts (Bourdieu & Passeron, 1990). Today, the rise of low-cost private schools in Tanzania, often lacking the standards of more established institutions but using English as the language of instruction, underscores the commodification of English in educational settings. This situation forces parents to choose these schools, not because of the quality of education, but because they believe English instruction is synonymous with better prospects for their children, illustrating how English is marketed as a commodity, disadvantaging those who cannot afford it (Rubagumya 2003; Tollefson, 2002).

VI. CONCLUSION AND IMPLICATIONS OF THE STUDY

Why not study ourselves before seeking to understand others? By revealing our own biases and perspectives, we pave the way for a more authentic,

reflective, and inclusive approach to researching language policies and instruction. This autoethnographic exploration is not merely a methodological choice; it is a declaration of the value of personal experience in enriching academic inquiry, ensuring that the voices within and beyond the academic sphere are heard, understood, and valued (Howlett & Nguyen (2020). Through this autoethnographic lens, I aim to convince readers of the need for a paradigm shift in studying language policy issues, especially regarding the medium of instruction in schools. It's a call to recognize the profound insights that personal narratives and reflections can contribute to understanding and addressing the complexities of language education in post-colonial contexts.

The complexities of Tanzania's language policy reveal profound implications for educational equity and effectiveness. This study highlights how policy inconsistencies and the abrupt transition from Kiswahili to English have disproportionately affected students and teachers. As a student and teacher, my journey exposes the policy's detrimental effects on students' psychological well-being, confidence, and academic performance.

COMPETING INTERESTS

The author declares no competing interests.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable. This study did not involve human participants, human data, or human tissue.

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ACKNOWLEDGEMENTS

Not applicable. No external support was received for the conduct of this research or the preparation of this article.

APPENDICES

Not applicable. This manuscript does not include appendices as all relevant data are contained within the main text.

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Financial Management Challenges Heads of Schools Experience in Public Secondary Schools in Mbeya Rural District, Mbeya Region, Tanzania

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Received: 22 Aug 2024, Received in revised form: 25 Sep 2024, Accepted: 02 Oct 2024, Available online: 07 Oct 2024

Abstract— Tanzania has decentralized financial management decision-making to school leaders and their communities. Management of financial resources is essential for the expansion of the skillful and resourceful use of finances in educational institutions. Financial management is the fundamental element on which the success of any organization depends. Where management is weak, success is hard to ascertain. This study explored the financial management challenges heads of schools experience in public secondary schools in Mbeya rural district. The data were collected from 66 respondents using questionnaire and interview guide. The study used simple random sampling and purposive sampling techniques. The quantitative data were analyzed using Statistical Package for Social Science (SPSS ver. 20) and qualitative data were analyzed through content analysis. The study results revealed that, heads of public secondary school face common challenges particularly on budgetary, school accounts, financial reviews, financial accountability and financial recordings which in one way or another reduce work ability and responsibility. The study recommends that, heads of schools should be given full mandate on utilization of capitation grants and other funds, management workshops should be conducted to both heads of schools and teachers, and also there should be a need of organizing regular parental meetings to curb managerial financial challenges facing heads of schools on provision of quality education in public secondary schools. The government should lay down a policy on managerial skills training for the newly appointed and continuing heads of schools as this will enhance effective school management, hence better attainment of school goals and objectives.

Keywords— Heads of Schools, Financial management, Financial Management Challenges.

I. INTRODUCTION

With increased school heads responsibilities, the demand for high quality and an improved education system for resolving the global demand of human capital to manage development programs is in need (Amirizei & Nwachukwu, 2018). Through financial management, administrators and management teams are able to manage the budget in a better manner and make informed decisions related to school budget (Espinosa, 2018). Financial management is one of the most fundamental practices in any organization in the world including educational institutions (Amirizei & Nwachukwu, 2018).

Tanzania has decentralized financial management decision-making to school leaders and their subordinates. Decentralization is believed to equip communities with better education compared to central authorities, since decentralization aligns schools with their local educational needs and preferences. School management and school heads are responsible for demonstrating accountability and transparency and delegating financial responsibility. The heads of schools are also responsible for income and expenditure, book-keeping, and other accounting works. The heads of secondary schools are required to have financial management skills, learning skills, analytical thinking skills, creative thinking skills,

problem solving skills, communication skills, teamwork skills, technological and digital skills, human relation skills and moral skills (Odide, 2021). Management of financial resources is essential for the expansion of the skilful and resourceful use of finances in educational institutions. Financial management is the fundamental element on which the success of any organization depends. Where the management is weak, success is hard to be attained (Owhondah, 2020).

In order for any institution or school to be succeeded, it should have proper utilization of its resources. The extent of educational goals and objectives of any nation would facilitate learning, enhance the acquisition of skills and knowledge for self-reliance and support improvement of the standard of living is a function of available finance resources and its effective management (Munge, Kimani & Ngugi, 2016). Effective school administration greatly focuses on optimal maximization of the financial resources to ensure that human, material and time resources are adequately or near-adequately provided to enhance effective and efficient in teaching and learning activities (Mercy *et al.*, 2014). The process of ensuring the proper use of funds, which are often scarce, are meaningfully sourced for, coordination and utilization in order to attain the purpose of allocation and accountability that leads to the term financial management and this is part of heads of secondary schools administrative functions (Vicente *et al.*, 2023). The financial management in schools is guided by many documents that are not available in some schools. School officials reflected different levels of appreciation for the efficacy of documents in ensuring that finances are appropriately managed (Espiritu, 2020). Most of the documents available for financial management are very useful in financial management in schools. The training sessions are held for the official in school financial management, a significant proportion from the quantitative data, indicated that training sessions were held (Robina, Bernard & Jack 2018). The study recommends continuously ensuring the availability of relevant guiding policy documents and financial management training sessions. The Ministry of Education should consider employing external auditors for checking school accounts in order to consistently prevent corruption and mismanagement of funds (Msoka, Muteti & Lyamtane, 2020).

This study is guided by Organization Systems theory which was developed by Hegel in the 19th century to explain historical development as a dynamic process which was used by Marx and Darwin in their work. The

Organization Systems theory is supported by the New Public Management Model (NPM) by Boston, Martin, Pallot & Walsh (1996) which is a management viewpoint model used by governments to modernize the public segment. The Organization Systems theory was also applied in America arms industry and later found application in education preparation, development and evolution amongst educationists. The Organization System theory is that which consists of various components and is the interdisciplinary study of systems in general, with the objective of elucidating principles that can be applied to all types of systems at all levels in all fields of research. Management of funds is not a stand-alone or an isolated activity but a process that exist in the school structure. Financial resources form the first important input in secondary schools.

Monetary resources are mainly derived from the parents and government. They are used in human and physical resources such as teaching and auxiliary staff, teaching and learning resources and school physical plant through a budget. The procedures within the system are the professional training and development offered by the Ministry of education and vocational training, regulation supervision services and professional growth. The output would be competence in financial management in public secondary schools. Therefore, it emerges that the school heads play a most important role in the management of school funds in public secondary schools. According to the model, there are three levels of conversion components which are interrelated and they include physical (school finances and infrastructure among others), human resources (teachers and other support staff) and time with effective education process. When managed skillfully, each conversion can expand the available resources and contribute to positive feedback. Education process can be affected by three major variables namely resources provision, material on which to work on and regulatory policies, ideas and attitudes which contribute to the education process.

The Organization Systems Theory is relevant to the study in that one of the main objectives of MoEVT is to ensure that the government avails funds for running school curriculum. Nevertheless, it is through a combination of strict implementation, budgeting and good reporting for MoEVT funds and all the other elements of secondary education that secondary schools in Mbeya Rural District can achieve their goals. The model system outcome is the process of both measurable and non-measurable value and in the long term process the measurable outcomes will lead to the

benefits of the society and to individual learners. Again, this theory is relevant to the current study since it advocates for a public sector management system that encourages prudent management of public resources. Additionally, this in turn demands that those in charge of the system should possess the necessary skills to effectively manage the resources as envisaged.

II. LITERATURE REVIEW

Rupia & Musa (2022) found that heads of schools are not properly prepared to manage financial resources after being appointed to the new positions. This led them to rely only on experience to control finances and not technical knowledge. This contributed to misappropriation of school finances and lack of budgeting. Therefore, the government should employ a number of strategies to improve financial management in schools such as: hiring qualified school accountants, train school heads, school heads to observe proper budgeting and be transparent in financial disbursement. Also school heads should involve teachers in financial decision making. (Sittar & Munawar, 2022 and Rupia & Musa, 2022).

Wasiche et al., (2018), on the issue of procurement challenges facing the newly appointed heads of schools, the study found out that school debt, frequent changes in policy, delay in funds and influence from sponsors were the main procurement challenges. The financial accounting challenges are lack of accounting books, poor record keeping, fraud and theft and lack of financial skills. On the concern about financial budgetary challenges, the study found out that inadequate financial skills, influence from stakeholders, inflation and school debt were the budgetary challenges facing the newly appointed heads of schools. The significant auditing challenges are like delay audit reports, ignorance of heads of schools on financial skills, irregular auditing and doubling up of heads of schools roles in schools. Auditing challenges are real issues affecting the newly appointed heads of schools so they should undertake training on financial management that is a key tool in their new appointments (Sulasmi 2020). A study on preparation and induction of newly appointed heads of schools would expound the understanding of the present study (Ugiriwabo, Tuyishime, Nizeyimana & Ntahobavukira, 2023).

Chruy and Tiep, (2017), revealed that many financial management challenges face school heads directors, staff and teachers. Moreover, a relatively large number

of respondents claimed not to have received any formal training in financial management. Furthermore, revealed that almost all of the respondents either disagreed or strongly disagreed with the responsiveness of national budget allocation to schools' needs. This study recommended that, Ministry of Education, Youth and Sports should consider the needs and availability of school resources in each school and make the budget allocation accordingly. Wadasen, (2024), revealed that school heads experience challenges in financial management which include lack of training, weak financial management skills, lack and/or delay of funds, absence of financial support staff, poor collaborative planning, numerous bookkeeping tasks, unorganized record keeping, frequent changing of policies, absence of permanently stationed bookkeepers, and adherence to complex laws and policies. School heads have reported best practices which include collaboration with school focal person for budgetary planning and the keeping of financial records in a safe place (Yizengaw & Agegnehu, 2021). To address the challenges faced by the school heads, different strategies must be used include the hiring of school heads competent in financial management, continuing education and upskilling of school heads on financial management, empowering school heads on funds acquisition, assigning bookkeepers to all schools, maximizing school governance councils, documenting and sharing of best practices, and the conduct of further research in relation to school financial management (Ndongwe & Kangai, 2023).

Omollo, Atieno & Onyango, (2016) revealed that there was a problem in cooperation among the members caused by lack of team work and financial knowledge. The school board members sourced funds from fund raising, parental contribution, donors and individual contributions. It has also been established that the board members faced challenges in financial administration. School board members should be involved in regular financial training and budgeting to overcome the increasing economic challenges. Saqee, Sittar & Munawar, (2022) indicated that heads of schools lacked the basic skills in financial management since they could not make statements for preparing bank reconciliation. The exposure to management training, academic qualification, and administrative experience influenced public school heads competence in financial management. The heads had not attended even a single course in financial management which implies that most of the heads are managing the public funds or/resources on trial-and-error muddling

through and this is very dangerous as it may lead to wastage of resources and legal implications on the part of heads who may unintentionally mismanage the funds. Heads are required to take mandatory training in financial management to enable them to manage schools more effectively and efficiently (Lacsa, 2022). Universities and teacher training colleges should revise their curriculum with a view to include courses on financial management aspects in schools and the ministry should set aside funds for in-service training.

III. RESEARCH METHODOLOGY

The study employed both qualitative and quantitative research approaches in collecting, analyzing and interpreting the obtained results. The target population involved people or respondents from 5 wards and 6 public secondary schools in Mbeya Rural District. The study employed purposive sampling and simple random sampling whereby each person has an equal chance of being selected and the required sample size of respondents was purposively and proportionally selected from each selected secondary school. The sample size involved 66 respondents. The study employed convergent parallel research design as a framework to guide the fact under study. Qualitative data were analyzed thematically and quantitative data were analyzed using frequencies and percentages using Statistical Package for Social Science (SPSS version 20). On the issue related to validation of instruments, it was observed by creating friendly atmosphere and avoiding any ambiguous instructions as well as by seeking experts opinions from the supervisor. For qualitative data, the researcher ensured trustworthiness through credibility, transferability and conformability. The researcher used the split-half technique to assess the reliability of data. Thus, in this study, the researcher used SPSS version 20 to examine the strength of the instrument whereby the piloted questionnaire was recorded by numbers and then coded into SPSS programme in the scale for processing and interpretation. The researcher was assisted by Cronbach Alpha to measure the results answered by respondents by looking at the value percentage.

IV. FINDINGS AND DISCUSSION

This chapter presents the empirical findings of the study which aimed to assess the financial management challenges heads of schools experience in public secondary schools in Mbeya Rural District. The findings

are presented in a mode which allows a logical flow of ideas as governed by the study objectives.

Socio-demographic characteristics of respondents

Respondents' demographic characteristics were gathered through the administered questionnaires and interviews. Demographic characteristics were age, education level and work experience. The respondents' characteristics gathered enabled the researcher to get the background characteristics of the respondents in relation to the study. This is essential for determining reliability of the data from study area.

Age of the Respondents

The study findings (Table 1) show that in the six selected public secondary schools, 24.2% of teachers aged below 35 years, and 39.4% aged between 36-44 years while 36.4% of teachers are above 45 years. The findings implies that teachers in the six public secondary schools from the five selected wards knew very well how financial management challenges face heads of public secondary schools.

Table 1. Years old of the respondents

Age	Frequency	Percent
Below 35 years	16	24.2
Above 35 years	26	39.4
Above 45 years	24	36.4
Total	66	100.0

Education Level of the Respondents

Education stands as a cornerstone of a nation's culture as well as an absolute necessity for economic prosperity and long-term national growth. Education is the bedrock of Nation genuine societal, political, and economic development. The study findings revealed that 53% of teachers had bachelor degree in education while 42.4% of teachers had a diploma in education and 4.6% had master degree in education (Table 2). Teachers with bachelor degree were mostly found in selected public secondary schools in Mbeya Rural District. The findings imply that financial management training is well known and understood about its meaning and advantages to the teachers. Also, the study findings imply that education is the foundation of sustainable development and is a central place in the transformation of individual lives as well as world economies. School management should provide a considerable portion of its resources in education

aiming at empowering the people with necessary skills, knowledge and expertise.

Table 2. Level of education of the respondents

Education level	Frequency	Percent
Diploma	28	42.4
Degree	35	53.0
Masters	3	4.6
Total	66	100.0

Experience of the Respondents

The study results (Table 3) revealed that the majority of respondents 65.2% reported having below 10 years of work experience, followed by 34.8% of those with above 10 years of experience. This means that teachers have good work experience and had valid levels of understanding about the issues related to financial management challenges facing heads of schools and being able to provide valuable insights into the subject matter.

Table 3. Work Experience of the respondents

Work experience	Frequency	Percent
Below 10 years	43	65.2
Above 10	23	34.8
Total	66	100.0

Financial Management Challenges Heads of Schools Experience

The challenges facing heads of public secondary schools on budgetary, school accounts, financial reviews, financial accountability and financial recordings are the most common factors which reduce work ability and responsibility (Wairima & Nasieku, 2019). The study found that heads of secondary schools still faced challenges in managing financial resources of secondary schools and training of principals in financial management in some parts not effective. This is caused by lack of motivation and insufficient time to attend training programs hampered for provision of financial management. The following were the areas of challenges as revealed by respondents supported by different literatures from different scholars;

Procurement Procedures and Accounting Guidelines

The study findings revealed that out of 66 respondents interviewed, 31 (47.0%) strongly agreed and 33

(50.0%) agreed about the subject matter (Table 4). This implies that heads of public secondary schools face challenges which reduce their ability of performing school financial activities in respectable manner.

Table 4. Compliance to the procurement procedures

Level of agreement	Frequency	Percent
Strongly agree	31	47.0
Agree	33	50.0
Disagree	2	3.0
Total	66	100.0

The findings converge with the statement of one of the participants who said that;

“Heads of schools are always not allowed to leave any amount of fund in school account according to the stated guidelines. This makes them to face challenges on making decision about procurement and accounting guidelines. So, the amount of fund brought accordingly to the number of students but it does not specify on how to follow the procurement procedures. The government is providing us with fund based on the number of students in the school; but the financial administrative activities are very difficult to run which limits the procurement and accounting activities” (Interviewee, 2024).

Another participant shared the views on the subject matter by saying;

There is a need for the government to undertake workshops and staff development especially to the school heads and deputy heads on financial matters instead of auditing to find out faults. Due to that, Staff development like the heads, deputy heads and the school’s development Committee can reduce financial management errors and incompetence (Interviewee, 2024)

Adherence to Procedures of Using Infrastructure Funds

The study findings (Table 5) revealed that 46 (69.7%) strongly agreed and 16 (24.2%) agreed that, the heads of schools face challenges on following procedures of construction funds. This implies that even if heads of public secondary schools have knowledge and skills on school financial management but still have challenges on how to make decision and follow proper procedures on infrastructure funds.

Table 5. Proper Procedures on Infrastructure Funds

Level of agreement	Frequency	Percent
Strongly agree	46	69.7
Agree	16	24.2
Disagree	2	3.0
Strongly disagree	2	3.0
Total	66	100.0

The findings from interview revealed that there is difficulty in preparing the infrastructure budget, especially by using the force account. One interviewee revealed that;

“I witnessed my head of school asking assistant from teachers to help him about using school budget on infrastructure fund procedures which raised some difficulties during the process and the head of school told the truth that when procedures are not well followed it is simple to be fired from the position. So, due to that, my suggestion is that ministry of finance should prepare special training on financial matters to the heads of schools especially on how to use the force account.” (Interviewee, 2024).

Another interviewed participant revealed that;

“Although the heads of schools may be having all important documents about financial matters, few of them use them because they are not aware of the application of the documents in making constructive agreements and decisions. They don’t have proper knowledge to read and understand the relevant sections which apply to financial

management. In most cases procedures are not being followed on making decisions when carrying out financial operations in constructions and procurement bases.” (Interviewee, 2024).

Implementation of Education Financial Guidelines

Heads of public secondary schools face challenges on issues of making sure that they follow financial guidelines which are instructed by the ministry of education. This lead them to ask assistance from the district financial expert to support the process. The truth is supported by 52 (78.8%) strongly agreement out of 66 respondents interviewed about the subject matter (Table 6).

Table 6. Implementation of the MoEVT financial guidelines

Level of agreement	Frequency	Percent
Strongly agree	52	78.8
Agree	5	7.6
Moderately agree	9	13.6
Total	66	100.0

The study findings converge with results from interview participant who said that;

“Heads of school are poor in following financial guidelines in running financial management activities because they lack sufficient skills on how to manage finances by ensuring the use of proper guidelines in maintaining funds in public secondary schools” (Interviewee, 2024).

Similarly, the findings correspond with the information provided by the head of school A, who remarked that;

“I have experienced that heads of schools fail to implement some financial tasks due to lack of proper understanding about government financial guidelines. So, they should be trained on financial management guidelines on public secondary schools in order to enhance their capabilities of following government financial guidelines” (Interviewee, 2024).

Another participant had this to say on the subject matter:

We face many challenges in these aspects and we provide report about it expecting assistance or training but I have seen the district auditors in very few occasions coming to induct us on school finances basing on the subject matter. In some aspects, the District Accountant often invites the heads of schools for some inductions and Internal Auditors are invited to look at school finance books as per directives. (Interviewee, 2024).

This implies that factors which face heads of schools during implementation of school financial management is lack of proper skills of following government financial guidelines.

Preparation and Presentation of Annual School Budget

The study findings (Table 7) revealed that 54 (81.8%) out of 66 interviewed respondents strongly agreed that heads of public secondary schools in Mbeya Rural District are challenged on the preparation of school annual budgets which need to be presented in a given financial year.

Table 7. Preparation of annual school budget

Level of agreement	Frequency	Percent
Strongly agree	54	81.8
Agree	7	10.6
Disagree	4	6.1
Strongly disagree	1	1.5
Total	66	100.0

One of the participants contributed on presence of poor budget reviews in public secondary schools which converge to the study findings by saying:

“In planning of school budgets always school board and head of school come together and prepare the annual cash flow. The budget is projected depending on the expected needs for the particular academic year. But they do not perform the work as needed something which reduce the ability of budget implementation since the heads of schools force to implement the budget according to the daily needs leading to

over utilization of funds provided” (Interviewee, 2024).

The findings also revealed that there are other factors leading to hardship in preparation of school financial budget such as budget forecast. The findings relate with the information provided during the interview with head of school C who remarked that;

“I came across with the situation of preparing the financial budget after being appointed to be head of school which leads me to fail in implementing some other school activities by focusing in one idea. This caused me to use my funds to find assistance from experts on how to prepare the school budget according to government plan. Thus, my suggestion is that heads of schools should be trained about financial management soon after appointment.” (Interviewee, 2024).

The findings also, relates with the information provided by the interview with the head of school B who said that;

“Even teachers should get training on financial management in order to expand their knowledge and understanding which will enhance the performance in budget manner. If possible, the government should employ accountants in those secondary schools to ensure proper financial management.” (Interviewee, 2024).

The study findings revealed that heads of public secondary schools face challenges on budgetary, school accounts, financial reviews, financial accountability and financial recordings which reduce work ability and responsibility. In this matter, heads of schools are not allowed to leave any amount of money in school account according to the stated guidelines which makes them to face challenges on making decision about procurement and accounting guidelines.

After presenting the findings as revealed by respondents from the field, here down, the findings of the study are seen to be supported by several literatures as follows;

Heads of schools are required to follow financial guidelines which are instructed by the ministry of education which makes them to face some difficulties as the result leads them to ask assistance from the

district financial experts to support the process (Scallion and Tangi, 2022).

According to Wasiche et al., (2018), on school debt, frequent changes in policy, delay in funds and influence from sponsors were the main procurement challenges. The financial accounting challenges includes lack of accounting books, poor record keeping, fraud and theft and lack of financial skills. The study found out that inadequate financial skills, influence from stakeholders, inflation and school debt were the budgetary challenges facing the newly appointed heads of secondary schools. The significant auditing challenges; delay audit reports, ignorance of heads of secondary schools on financial skills, irregular auditing and doubling up of heads of secondary schools' roles in schools. Heads of schools should undertake training on financial management that is a key in their new appointment. Preparation and induction of newly appointed heads of schools would expound the understanding of the present study (Olorunsola & Bela, 2018).

According to Wadasen, (2024) school heads experience challenges in financial management which include lack of training, weak financial management skills, lack and/or delay of funds, absence of financial support staff, poor collaborative planning, numerous bookkeeping tasks, unorganized record keeping, frequent changing of policies, absence of permanently stationed bookkeeper, and adherence to complex laws and policies. Despite these challenges, school heads have best practices which include collaboration with school focal person for budgetary planning and keeping financial record in a safe place. There is a need to hire school heads who are competent in financial management, continuing education and upskilling of school heads on financial management, empowering school heads on funds acquisition, assigning bookkeepers to all schools, maximizing school governance councils, documenting and sharing of best practices (Scallion and Tangi, 2022).

Rupia & Musa., (2022), revealed that heads of schools are not properly prepared to manage financial resources after being appointed to the position. This led them to rely only on experience to control finances and not technical knowledge which contribute to misappropriation of school finances and lack of budgeting. The government should employ a number of strategies to improve financial management in schools which include but not limited hiring qualified school accountants, train school heads, school heads to observe proper budgeting and be transparent in

financial disbursement. Also, school heads should involve teachers in financial decision making.

Nelius & Onyango, (2022), revealed challenges facing heads of schools in implementing financial control measures is lack of training and transparency, inadequate finances and poor cooperation with stakeholders. The heads of schools should be supported to acquire knowledge and skills necessary for effective financial management. The level of financial resource control functions displayed by heads of public secondary school is low. The issues related to this reality are lack of proper financial management abilities, lack of financial guidelines, political influence, and corruption among committee members. To improve the management of financial resources and maximize the benefits from those resources, heads of schools should become fully versed in all financial resource management procedures and skills which enhance schools to perform more effectively (Nachinguru & Mwila, 2023).

According to Chruy and Tiep, (2017) there is many financial management challenges facing school directors, staff and teachers. Moreover, a relatively large number of head of schools claimed not to have received any formal training in financial management. Also, suggested that Ministry of Education, Youth and Sports consider the needs and availability of school resources in each school location and make the budget allocation accordingly. Miriti, (2014) found that heads of secondary school still faced challenges in managing financial resources of secondary schools and training of head of schools in financial management is ineffective to some extent.

Lack of motivation to the heads of schools and insufficient time to attend training programs hamper provision of financial management. Effective financial management training programs should be developed based on identification and analysis of their needs. Training programs should also be devolved so that they can focus on specific training needs of principals in order to facilitate principals' acquisition of knowledge and skills required to improve financial management and performance of secondary schools (Issa & Mhagama, 2022).

Miriti, (2014), recommended that effective financial management training programs should be developed based on identification and analysis of their needs. Training programs should also be devolved so that they can focus on specific training needs of principals in

order to facilitate principals' acquisition of knowledge and skills required to improve financial management and performance of secondary schools. Research findings indicate that the design and provision of effective training involves three key components: needs assessment, training and development, and evaluation. The objectives of an effective training program should be determined by the identified training needs of trainees. Thus, the purpose of needs assessment is to design instructional objectives. Once instructional objectives are established, instructional programs can be designed and the training delivered. The development of performance criteria enables permit inferences about the effectiveness of the training program (Ngigi & Tanui, 2019).

V. CONCLUSIONS AND RECOMMENDATIONS

This section presents the two aspects which include; conclusions and recommendations of the study as explained below.

Conclusions

The study evidenced that, heads of public secondary school face common challenges particularly on budgetary, school accounts, financial reviews, financial accountability and financial recordings which in one way or another reduce work ability and responsibility. Also, the study stated financial guidelines instructed by the ministry of education which most heads of schools are required to follow make them to encounter with some difficulties as the result lead them to ask for assistance from the district financial expert to support the process. Findings also evidenced that, newly appointed heads of schools have been faced with some of the budgetary setbacks including inadequate financial skills, influence from stakeholders, inflation and school debt, out of this, it has been advised that heads should undertake full training on financial management where they may acquire variety of skills and that would act as a key in their new appointment.

Finally; the study concluded that heads of schools face managerial challenges such as overwhelming by managerial responsibilities, inadequate instructional learning materials, which sometimes make them to forget the issues of financial management procedures. On the effects of managerial challenges facing heads of schools on fulfilling their roles on provision of quality education, it was discovered that there were decrease of quality of education, low morale of teachers, heavy workload to both teachers and heads of schools and also it leads to poor academic performance.

Recommendations

The study recommends that heads of schools should be given full mandate on the issues related to utilization of capitation grants, school fees and infrastructure funds; management workshops should be conducted to both heads of schools and teachers and there is a need of organizing regular parental meetings to curb managerial challenges facing heads of schools on provision of quality education in public secondary schools. Apart from the recommendations given above, there should be enhancement of effective implementation of the basic financial control measures including; transparency, adequate finances and effective cooperation with stakeholders. Promoting the review of different mechanisms, procedures and standards settled for the utilization, monitoring and recording of school funds is also of great importance. The government should lay down a policy on managerial skills training for the newly appointed and continuing heads of schools as this will enhance effective school management, hence better attainment of school goals and objectives. The government should consider providing leadership training through workshops and seminars to managerial teams in schools. This will enhance effective school management in schools. Thus, heads of schools should be trained on financial management so that they can be effective in their daily school financial management. Training activities can be done by holding regular capacity building workshops which will keep them updated on any emerging issues.

Areas for further research

Based on the knowledge and experience obtained from this study, further studies should be done on the following areas:

- i. The best practices on financial management in secondary schools which include school boards towards enhancing financial performance for secondary schools progress.
- ii. An investigation about the impact of school funds allocation and academic performance to strengthen this aspect of finances and its role in improving teaching and learning outcomes.

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The importance of teaching paradigmatic lexical relations to EFL students: How to teach homonymy

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Received: 12 Sep 2024, Received in revised form: 10 Oct 2024, Accepted: 15 Oct 2024, Available online: 22 Oct 2024

Abstract

Developing vocabulary knowledge is crucially important for second language learners because vocabulary is the key determinant of all skills, and these are, in turn, of vital importance for academic success, both in children and adults. Vocabulary is essential for expressing thoughts, ideas, and emotions clearly and accurately. A strong vocabulary enables students to articulate their viewpoints more effectively in both written and spoken forms, facilitating better interactions in academic and social contexts. English vocabulary is rich in pairs of words, identical in sound and spelling but different on meaning. One of the problems teachers are usually concerned is how to explain to the students the difference between two words of identical form but completely separated meanings and two words of the same form whose meanings are different but still related. The problem of teaching the sameness of name combined with the difference of meaning might seem to present teachers with an extremely daunting task. Understanding homonyms is crucial for students because it enhances their linguistic skills and improves reading comprehension. It also aids in developing critical thinking when faced with language ambiguities. This paper aims at providing a carefully and necessary analysis on the methods, activities and tools teachers should use as to encourage ELF students to explore the meanings of new homonymous words they encounter, to empower their linguistic and communicative skills and create an effective and inspiring learning environment.

Keywords— *vocabulary, homonymy, paradigmatic relations, teaching, language skills, strategies*

I. INTRODUCTION

Without grammar very little can be conveyed, without vocabulary nothing can be conveyed (David Wilkins)

“The human spirit thinks with words,” wrote the 18th-century German thinker Johann Gottfried Herder, and although Herder’s words have often been disputed, they reflect a deep-seated human intuition that words matter. “Words matter a great deal. They matter in human relations (which are often shaped by names, titles, terms of address and kin terms), in the edifice of human knowledge (to mention only number words, the names of biological species, and the role of terminology in science), and in systems of religion, belief, and values” [Goddard & Wierzbicka 2014:2]

It almost goes without saying that vocabulary is an essential, non-negotiable building block of literacy. Given the importance of words in social life, in interpersonal communication, and in people’s interpretation of the world, most language teachers state that the single, biggest component of any language course is vocabulary. Teachers know how communication stops when learners lack the necessary words. Building a lexicon is an important language learning goal. Whether in the first (L1) or second (L2) language, a lexicon is the pressure point of comprehension developing vocabulary knowledge is crucially important for second language learners because vocabulary is the key determinant of all skills, and these are, in turn, of vital importance for academic success, both in children and adults.

II. THE IMPORTANCE OF TEACHING VOCABULARY

No matter how well the students learn the grammar, without words to express a wide range of meanings, communication just cannot happen in any meaningful way. The learning of word meanings requires more than the use of a dictionary, and vocabulary acquisition is a complex process. Nevertheless, in recent years vocabulary has not received the recognition it deserves in the classroom. Gairns and Redman emphasize the fact that “a vast amount of teaching time is consumed by giving definition, explanations, classrooms blackboards are often littered with masses of new lexical items and students compile page upon page of word lists they will rarely have the opportunity to practice” [Gairns & Redman 1998:1] Increasing vocabulary size is not the only goal of lexical development; building an L2 lexicon is also about improving the quality of lexical knowledge. Poor lexical quality is an impediment to L2 processing and use, and it slows down further lexical development.

Vocabulary is essential for expressing thoughts, ideas, and emotions clearly and accurately. A strong vocabulary enables students to articulate their viewpoints more effectively in both written and spoken forms, facilitating better interactions in academic and social contexts.

Something else also accounts for today's concern with the learning of vocabulary. That is the fact that scholars are taking a new interest in the study of word meanings. A few of research studies have recently dealt with lexical problems. Through research the scholars are finding the lexical problems frequently interfere with communication; communication breaks down when people do not use the right words. [Allen, 1983: 5]

As Gairns and Redman have pointed out “Some of the most amusing errors a learner can make in a foreign language arise from the lack of awareness of appropriacy of items” [Gairns & Redman 1998: 5]. Teaching vocabulary is a critical component of language education, as it plays a foundational role in effective communication and overall literacy development.

As the acquisition of the vocabulary is a branching process, what is crucial to be emphasized at this point is that words are not learned mechanically but associatively, especially in terms of paradigmatic lexical relations. Expanding our students' understanding of words meanings would engage them in social interactions and interchanges associated with a desire

to experience new areas of human cognition and as Morgan and Rinvoluceri state “learning words is a relational process. You could describe it as making friends with the words of a target language” [Morgan&Rinvoluceri, 2004: 6] whereas Lindsay and Knight put forth that “since the language system is complex, learners need to be guided through it. Learners need to know what a word means, what form it takes and how to use it” [Lindsay & Knight, 2006: 44]. Schmitt reminds us that “vocabulary and lexical units are at the core of learning and communication.

No amount of grammatical or other type of linguistic knowledge can be employed in communication or discourse without the mediation of vocabulary. Indeed, vocabulary and lexical expressions can sustain a great deal of rudimentary communication without -much support from other aspects of the language system” [Schmitt 2000:11]. A well-developed vocabulary instils confidence in students when they communicate. Understanding a wide range of words gives them the tools to participate actively in discussions, share their ideas, and express themselves more freely.

III. THE IMPORTANCE OF TEACHING HOMONYMY

English vocabulary is rich in pairs of words, identical in sound and spelling but different on meaning. Several word-forms seem to occur in different contexts with different meanings. Meaning is all pervasive in language. The other aspects of language - the sounds/letters, the morphology, the syntax - all serve the purpose of communicating meaningful messages between human beings. Gairns and Redman emphasize the importance of teaching homonymy as a means of recognising the boundaries between the lexical items [Gairns & Redman 1998:14] Vocabulary is essential for expressing thoughts, ideas, and emotions clearly and accurately

One of the problems teachers are usually concerned is how to explain to the students the difference between two words of identical form but completely separated meanings (homonymy) and two words of the same form whose meanings are different but still related (polysemy). The importance of recognizing the boundaries between the lexical items can be furtherly illustrated by having a brief look at both corresponding terms of polysemy and homonymy. As the concept itself denotes the term polysemy is used to describe “the existence of a single word form with two

different yet closely related lexical meanings” whereas the terms homonymy as “the existence of two or more words which are identical in sound form and spelling, or at least, in one of these aspects, but different in meaning”. [Antrushina, 1994, 45]. The problem of teaching the sameness of name combined with the difference of meaning might seem to present teachers with an extremely daunting task.

Teaching paradigmatic lexical relations of units whose significant (the phonological/graphemic form) is identical and signifié (the meaning) is different and etymologically distant can be fascinating but sometimes a confusing area of language study for students.

The complexity raised from the overwhelming number of homonymous words, the need to provide a clear and comprehensive understanding of specific lexical items, the need for embarking on a lengthy analysis as to achieve a satisfactory effective productive use of the words makes teachers doubtful on whether to dive deeply on the hidden aspects of words’ complicated semantic structure or on the other hand give cursory explanations and “decide” on whether the exploitation of these paradigmatic lexical relations is not that appropriate especially with beginners and elementary students. Teaching homonyms effectively requires a blend of creativity, practical exercises, and contextual understanding. Teachers should thoughtfully decide on how to provide specific vocabulary awareness strategies to help students grasp homonymy as a means of enhancing their vocabulary and comprehension skills.

Understanding homonyms is crucial for students because it enhances their linguistic skills and improves reading comprehension. It also aids in developing critical thinking when faced with language ambiguities. Teaching homonymy enriches vocabulary, encourages exploration of nuances in meaning, and promotes a deeper understanding of lexical system and language structure. Though struggling and challenging the process of introducing homonymic units might be, the whole experience might become enjoyable and enriching for both educators and students. The employment of a variety of methods and strategies will help students’ engagement in a learning environment that fosters vocabulary development and linguistic awareness.

Navigating at the complexities and the controversial nature of homonymy students will enhance their overall language skills and comprehension. As homonymy is particularly frequent

in English due to the monosyllabic character of English words and its analytic structure, introducing and explaining homonyms to EFL students would help them expand and enrich their vocabulary and express themselves creatively and accurately. Defining the concept of homonymy clearly and precisely will help students understand some basic characteristic features of English language structure such as the phonetic identity of words and stems or the predominance of free forms among the most frequent roots. Teaching homonymy might help students understand the complex nature of paradigmatic relations focusing on the way words or lexical units can substitute one another.

As homonymy can create ambiguity sometimes leading to confusion and misunderstanding, teachers should raise student awareness to an effective utilization of the contextual clues and the surrounding words. Students equipped with a good command of homonymy are often able to fully navigate on complex texts and communicative situations demonstrating full capacity of discerning multiple meanings, making accurate lexical choices, and proficiently succeeding in reading, speaking, and writing activities.

IV. HOW TO TEACH HOMONYMOUS UNITS TO EFL STUDENTS

There are some basic techniques which will encourage ELF students to explore the meanings of new homonymous words they encounter games, activities, and discussions. This engagement can motivate students to explore lexical system complexities laying out new perspectives on how to foster a deep comprehension and a complete appreciation of language ample dynamic possibilities of linguistic tools. As to empower students’ language skills and strengthen understanding we will align a list of strategies for teaching homonyms which may help teachers create an effective and inspiring learning environment and enhance their linguistic and communicative skills.

Visual aids

As generally known, visual aids provide concrete representation of abstract concepts facilitating and strengthening students’ understanding. Incorporating visual aids in the process of teaching homonyms can help students clarify each homonymous unit corresponding meaning and absorb each word specific lexical and semantic information.

Teachers might create **charts** or **flashcards** of a list of homonyms including images representing each meaning. This technique benefits visual learners and reinforces the concept through imagery.

Mind maps can be also considered as an effective technique. The homonym can be showcased at the centre and different meanings, uses and example sentences can be branched out.

Flowcharts can be used to illustrate how one homonym can lead to different meanings based on context. The teacher might also include example sentences for clarity or ask students to make sentences of themselves.

Comparative Charts: The teacher will design a chart with a list of pairs of homonyms along with definitions and example sentences. Students will work in groups and add other examples of their own. They will compare the meanings, memorize them and learn how to work collaboratively.

Posters Students may create posters for homonyms proper, homophones and homographs including definitions, respective pictures, and example sentences. These can be displayed in the classroom for ongoing reference which might reinforce the information over time.

By using visual aids teachers can effectively support the learning of homonyms while keeping the process engaging and fun for students. These aids contribute into the enhancement comprehension and retention.

Sentences

Teachers may ask students use homonyms in sentences, encouraging them to demonstrate the different meanings. For example,

- ❖ A **tear** rolled down its cheek. Your coat has a **tear** in it.
- ❖ The fan asked the footballer for his autograph. Engines are fitted with a **fan** to keep them cool.
- ❖ He went over again to **sink**. He saw the sun **sink** beyond the horizon

The best way to clarify the meaning of homonyms is through context. When students recognize and comprehend words, they can grasp the meaning of sentences and paragraphs. This procedure can lead to improved reading comprehension and proficient academic performance.

Quizzes

Quizzes may provide an alternative way to absorb lexical information about homonyms. Teachers might apply some activities and create quizzes with **multiple-choice questions** where students must choose the correct homonym based on the context of a sentence.

They may also choose **fill-in-the-blank activities** where they may design fill-in-the-blank quizzes where students select the appropriate homonym to complete the sentence. Thinking about the context and analysing the sentence structure help students promote thinking skills

Matching Games can also be used as an activity during which teachers may create a matching quiz where students match homonyms with their meanings or contexts. This activity is ideal for repeated practice and review.

True or False: Teachers may introduce *true/false statements* based on homonyms' definitions and contexts. This activity as a self-assessment tool, allows students to monitor their own understanding of the material offering a quick way to test comprehension and reinforce memory.

Games and Competitions can be enjoyable and challenging activities. Teachers may make quizzes competitive by organizing students into teams. They can earn points for each correct answer about homonyms, which can encourage collaboration and enhance peer learning.

Exit Tickets: At the end of a lesson teachers may give a short quiz (3-5 questions) on homonyms to assess understanding and retention. In this way it can be provided immediate feedback and help assess and improve students' understanding in a fun and effective way.

V. CONCLUSIONS

Teaching homonymy can be an enjoyable and enriching experience for both teachers and students. By employing a variety of methods—including clear definitions, interactive games, contextual activities, teachers can create an engaging learning environment that fosters vocabulary development and linguistic awareness. By navigating the complexities of homonymy, students enhance their overall language skills and comprehension facilitating better interactions in academic and social contexts.

Achieving good commands of homonymy helps students make connections between concepts and

understand differences raised from the complexities of semantic structure. Learning homonyms helps students understand how context influences meaning ensuring clarity and precision and making them better communicators and listeners. The acquisition of homonymy helps students become familiar with a wider range of vocabulary.

Knowing that a single word can have different meanings in different contexts broadens linguistic knowledge, critical thinking, and reasoning, as students must pay close attention to the surrounding text or conversation to interpret the word correctly. In this way they learn how to choose the right word form depending on sentence structure, making their writing clearer and more precise. Knowing the different meanings of homonyms ensures that students can express themselves accurately and avoid ambiguity in their writing.

In summary, teaching homonymy is vital for developing students' literacy skills, enhancing communication, promoting academic success, and facilitating critical thinking. A well-rounded approach to vocabulary instruction not only supports language development but also prepares students for a lifetime of learning and effective engagement in various contexts.

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Role of Psychologists and Psychological theories in Mental wellness of pupils in the context of National Education Policy-2020

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Received: 10 Sep 2024, Received in revised form: 08 Oct 2024, Accepted: 13 Oct 2024, Available online: 22 Oct 2024

Abstract

In view of increasing cases of mental health disorders among students especially the young ones, there is a need to incorporate psychological support into the education systems. This need is recognized by the National Education Policy 2020 through adoption of student centered education that includes the social, emotional, and psychological aspects of the student. This paper seeks to understand psychologists or theories of psychology that would support the enhancement of students' mental wellness under NEP 2020. Further, we explore the different theories of psychology including cognitive behaviorism, humanism, and social-cultural that help in identifying the students' psychological needs. Understanding of these theories assists educators to design a positive emotionally supportive climate conducive to the growth of emotional security, social skills, and intellectual abilities. Drawing from the literature in psychology, we present a discussion into integration of psychological principles in curriculum development, instruction and students' evaluation. It also looks at some of the threats that may inhibit organizational setups within the education sector from implementing mental health service delivery and ways of increasing successful implementation. The study implies that, for the realization of the NEP 2020 goals of a balanced education system with regards to mental wellness of the learners, collective efforts of educators, psychologists, parents and policy makers should be encouraged.

Keywords— Education system, mental wellness, National education policy 2020, Psychologists, Psychological theories.

I. INTRODUCTION

A. Mental Wellness

Mental wellness is the client's capacity to handle stress, work, interact with other people and handle their lives effectively. It embraces the feeling part of life, and psychological and social aspects of life, including thinking and feeling dimensions. Optimal positive mental health enables a person to deal with stress, form and sustain healthy interpersonal relationships and be productive in the society. Being labeled as AMHS it extends beyond the mere absence of mental

disorder but also encompasses such aspects of positive mental health as self-sufficiency, self-esteem, and effective coping mechanisms.

Concerning students' mental health, India is not very different from other countries, and more and more students experience stress, anxiety, and pressure. A high-stake competitive education system with significant focus on academic performance also has the effect of putting a lot of pressure on learners from childhood. This pressure is further complemented by parental and social push, and a society in which a

students' value is defined by his/her academic achievements. Anxiety, depression, and burnout are some of the growing health issues that are nowhere close to a solution since the issues predominantly go unnoticed due to inadequate knowledge and the shameful part of talking about health issues. Although few schools and universities formally pay attention to the cultivation of mental health by offering counseling and psychological services as well as mental health education, these activities remain sporadic and confined to large and medium-sized cities only. To date, many institutions do not have staff professionals to offer services for students' emotional support. Moreover, due to COVID-19, the students are getting more stressed and lonely in their homes as schools have shifted to online classes. Although there is an increasing consciousness about the issue, there is an extended demand to establish integrated mental health care schemes in the educational institutions of India to ensure that students who struggle academically or otherwise do not have to do so at the cost of their mental health.

B. Education system in India regarding mental wellness of pupil

The education system in India in the recent past has become conscious about mental health of students but the problem is not yet fully solved. In the past, students have been forced to focus more on their academic performance as well as competing with their counterparts, without much emphasis being laid on the students' emotional health which has led to increased stress levels among them. This is clearly seen most probably in key tests such as board tests that the students undertake, which most of the time tend to elicit a lot of pressure. The education system for the last few years, though, has gone through a radical change with a more integrative approach toward education. The National Education Policy (NEP) 2020 has highlighted the requirement of counselors and other professionals who could work for students' mental health and also the well-being of the students, in addition to the curriculum. Theoretically support from the schools can be enhanced by mainstreaming life skills, Counseling and stress management in the academic institutions. Thus, even now the mental health facilities within India's schools remain underdeveloped. The majority of schools have shortage of qualified personnel who can provide counseling services, and the main concerns here have low profile and are not verbally addressed. However, there are still many efforts needed to include mental wellness into

the educational process as a reliable factor that may deliver the students from the increasing pressures of the modern educational experience.

II. OBJECTIVES OF THE STUDY

1. To study the mental state of the pupils in India.
2. To study the role of psychologist in mental wellness of the pupils.
3. To study the psychological theories adopted in National Education Policy 2020 for mental wellness of the pupils.
4. To study the provisions made for mental wellness in context of National Education Policy 2020.

III. RESEARCH QUESTIONS

1. What is the mental state of pupils in India?
2. What is the role of psychologist in mental wellness of the pupils?
3. What psychological theories adopted in National Education Policy 2020 for mental wellness of the pupils?
4. What provisions are made for mental wellness of pupils in context of National Education Policy 2020?

IV. RESEARCH METHODOLOGY:

This research is fundamentally empirical in nature, utilizing secondary sources of data. A diverse array of published materials, including academic texts, various journals, governmental reports, policy documents, and educational psychology and mental health periodicals, has provided the relevant information collected for this work. The collected secondary data is then reviewed systematically to assess the applicability of theoretical constructs such as positive psychology NEP 2020 and cognitive behavioral theory to the wellbeing of students. This detailed review, in fact, establishes the beginning point for evaluating how psychological practices impact the Indian education paradigms.

V. DISCUSSION

5.1 What is the mental state of pupils in India?

The wellbeing of students in India has emerged as an important issue in recent years owing to various factors such as increased rate of change in society, academic stress and influences of the COVID-19 pandemic among others. Despite conducting an analysis of different research papers, the following themes emerge as some of the most important ones

concerning the Indian students' mental health: The studies continue to report elevated levels of stress, anxiety and depression among the students which have been attributed to academic pressure, societal pressure and competitive examinations (Jaisoorya et al. , 2021; Singh & Sharma 2022). According to Singh et al. , 2023 academic performance is a major source of pressure among the pupils, and this has the potential of causing mental health problems such as burn out and anxiety. For instance, Verma (2020) established that over 60% of the students felt high stress and its effects on their mental health were due to their academic load.

This has been exacerbated by the pandemic that has worsened mental health conditions. Some of the issues that could be observed included student fatigue in learning in front of the computer, lack of interactions with peers as well students feeling isolated and therefore developed depressive and anxious disorders (Suresh et al. , 2022). Banerjee and Meena (2021) reported that students especially from rural areas were more vulnerable to anxiety and stress during this period because they lacked adequate access to the digital platforms and resources during this period. Socio-psychological factors that also came out as major causes of poor mental health among the students include bullying, peer pressure and social media usage. The study conducted by Das et al. (2022) analysis found out that within one week 30% of students were bullied in some way that made them more socially anxious and less self-assured. Furthermore, excessive use of social media has also been linked with increased cases of depression, and sleep problems (Kaur et al. , 2021). The other critical problem is the low awareness of students' mental health since this is a taboo in most societies, and anyone who has mental health issues will not get the support they need from the society (Sharma et al. , 2022). People are afraid to discuss any issues related to mental health but even if they were willing to do so, there are no available professional services of psychology in schools which worsen the situation. According to Raj and Jain (2023), 70% of students stated that they did not like talking to teachers or counselors about mental health problems because of the society's prejudice. Other disparities with regards to students' mental health included; Another major finding revealed that female students were more anxious and depressed than male students (Kumar & Bhagat, 2023). This is most probably due to the fact that girls experience more pressure on various issues such as safety, expectations and roles that are societal in nature, which compromise their mental health.

5.2 What is the role of psychologist in mental wellness of the pupils?

Psychologists have a significant task of enhancing the mental health of pupils and this is important at a time when pupils are faced with challenges of increased academic pressures, social challenges as well as personal development challenges. The analysis of recent articles showed that school psychologists have a complex activity in promoting students' mental health through focusing on one, many, or all of the necessary tasks, including individual and group counseling, prevention, and climate promotion. According to the roles and responsibilities of a psychologist discussed in this course, one of the main roles is to do a psychometric assessment of students with mental disorders, learning disabilities, or emotional problems (Singh & Arora, 2022). If the condition is identified early, then the psychologist is able to refer the child to particular counselling, therapy, or learning facilitations that will prevent long term harmful effects as per the child like academic failure or excessive stress (Mehta & Verma, 2023). They also work together with the students for personal counseling so as to treat some of the psychological problems which include anxiety, depression as well as social problems. According to Sharma et al. (2022), the students who received individual therapy or counseling from the school psychologists showed better skills and strength. As such, this type of support is essential in helping the students take charge of their mental health and well-being, as well as academic difficulties faced. Besides the individual practice, psychologists take an active part in the organization of school-based activities and lessons. These programs may involve using cognitive and behavioral skills to address problems and reduce the tolerance of mental health disorders, which usually are exercising on management of stress, anger, and other feelings that may lead to worsen state of a person's mental condition (Rao & Gupta, 2022). For instance, Desai and Kumar (2021) present how mindfulness programs implemented by school psychologists improve students' stress and anxiety levels and the overall school climate. Another critical requirement of the job description of psychologists is to mediate for students, educators, and parents in the best and supportive support structure creation (Patel & Nair, 2023).

Psychologist gives advice to teachers on how to identify symptoms of pupils' possible emotional problems and how to act in a teacher capacity in terms of maintaining supportive environment. Also, they engage the parents

in order to ensure that the child with mental health needs receives the necessary support in home setting. It improves the efficiency of mental health treatments that are being offered and fosters a favorable climate for the learners. Clinical psychologists also play a part in the formulation of policies in schools in order to promote mental health. Several recent articles stress the importance of schools to incorporate developmental mental health promoting interventions; besides, child psychologists often coordinate such efforts (Banerjee & Singh, 2022). They fight for policies that would make these resources available, lessen the stress that students have to undergo during exams and include mental health in the syllabi. In addition, psychologists are actively engaged in the crisis intervention to students who experience such things as bullying, family issues, or loss (Reddy et al. , 2023). They also give the students an immediate psychological intervention; they assist students to manage their feelings; and most importantly, they make sure that school is always a safe haven for the students, emotionally. It is even more important in averting long term psychological effects of untreated trauma in patients. Finally, school psychologists are particularly crucial in efforts to de-stigmatization of mental health problems. As Raj and Deshmukh stated the psychologists in fact try to reduce stigma in schools by encouraging people to talk about their mental health (Raj & Deshmukh, 2023). This endeavour helps students to go for help without stigmatism hence boosting student's mental health tremendously.

5.3 What psychological theories adopted in National Education Policy 2020 for mental wellness of the pupils?

According to the National Education Policy 2020, a range of psychological principles supports the well-being of students, with the ultimate goal of creating a complete, student-centered method to education. The policy, although it does not point to specific psychological theories, relies on a number of foundational models to coordinate its measures for mental well-being. Analysis of diverse research papers shows that NEP 2020 stresses principles from Cognitive behavioral Theory (CBT), Humanistic Psychology, Developmental Psychology, and Positive Psychology.

A. CBT stands for Cognitive Behavioral Theory.

Consistent with CBT principles, the NEP intends to raise critical thinking capabilities and emotional management in the learning of students. Methodologies

in cognitive behavioral therapy bring attention to the correlation that exists among thoughts, feelings, and behavior, and the NEP Emphasizes that equipping students with problem-solving and emotion management skills plays an important role in their mental health (Verma, 2020). The focus of the policy is to recommend CBT strategies that assist schools in alleviating the stress and anxiety of their pupils by growing resilience and self-awareness.

B. Humanistic Psychology

The emphasis on holistic development in the NEP 2020 derives from the principles of Humanistic Psychology, as represented by the works of both Carl Rogers and Abraham Maslow. This theory interprets self-actualization as well as the improvement of self-concept and the gratification of personal potential as important. The purpose of NEP 2020 is to establish learning environments centered on each learner needs, which cultivates intrinsic motivation, empathy, and personal transformation (Mehrotra & Singh, 2021). The Humanistic method clearly shows that 'experiential learning' and supplying socio-emotional assistance promote emotional health.

C. Developmental Psychology

The contributions of Jean Piaget and Lev Vygotsky from developmental psychology provide important clues for the policy in addressing the ranges of cognitive, social, and emotional development that students display. Chakrabarti and Menon (2020) argue that children's mental health at every development stage is reliant on age-appropriate pedagogies and environmental support as per NEP 2020. According to the policy, teachers should be alert to student differences in development and must use teaching approaches that support mental and emotional growth.

D. Positive Psychology

The NEP 2020 embeds principles of Positive Psychology, which concentrates on inspiring well-being, happiness, and resilience, instead of just reacting to mental health challenges once they come up. The policy supports the advancement of skills, such as gratitude, optimism, and mindfulness, for students to develop a desirable cultural environment that actively fosters mental health (Prakash & Verma, 2021). An educational concentration on holistic learning strives to encourage well-being through the improvement of positive relationships, the cultivation of a growth mindset, and the growth of emotional intelligence.

5.4 What provisions are made for mental wellness of pupils in context of National Education Policy 2020?

It is important to have more focused and efficient mental health interventions for the students as highlighted by the National Education Policy (NEP) 2020 in India by including mental health support as an essential aspect of education. The policy supports setting up of wellness centers, and call for training of counselors and psychologist to attend to the growing soft health needs of students. The current studies have asserted how the NEP 2020 stresses on social, emotional and psychological aspects of care in school systems. As per Singh and Chatterjee (2021) it is further important to highlight that the NEP focuses on life skills, emotional health of the child, and Integrated education, which lays down the awareness about mental health among the students. This is where it suggests that all teachers training must incorporate a module that will help educators to identify students who are in distress and how to handle them.

In addition, as presented by Kumar and Patel (2022), according to the NEP 2020, flexibility in education and load on children need to be lessened as it puts pressure on children that leads to anxiety and depression among students. One policy extends the participation of students in co-curricular activities, games, and artistic performances in an effort to improve on their psychosocial health. Further, the NEP also supports routine mental health check-up in school in order to early identification and referral of suspected mental illness. However, the policy also seeks to break the stigma of mental health through the culture of speaking out on the issues in schools. Rao and Mehta (2021) note that in the new policy, mental health is incorporated into the very fabric of education as an integrated idea which combines the two major ideas that form the basis of the NEP. In general, the NEP 2020 lays down the guideline in support of an education ecosystem with a focus on the students' mental health alongside knowledge acquisition. The NEP 2020 lays huge stress on the emotional wellbeing of pupils and this is because an individual's psychological state is crucial for the growth and development of a holistic aspect of the person in question. Several key provisions are designed to support students' mental health within the school environment:

1. **Counseling and Psychological Support:** The NEP 2020 also envisages that qualified personnel such as counselor, and other trained personnel in human psychology should be employed in schools for support.

These professionals are required to engage with students and their mental and emotional wellbeing, to provide one on one and group counseling, as well as building the students' psychological armor.

2. **Reducing Academic Pressure:** Some goals of the Indonesian political education system in NEP 2020 include shifting away from the high academic pressure which is deemed as unnecessarily detrimental and establishing diverse and inter-connected structure of education. It means that it helps in the reduction of exhaustive and exam-oriented focus during preparations hence causing anxiety, depression, and burnout among the learners.

3. **Social-Emotional Learning (SEL):** SEL strategy is included in the policy to promote students' social-emotional development, improve their emotional skills, and is applied to foster problem-solving skills. SEL also promotes different skills and behaviors including dealing with others, handling emotions and making effective choices that are essential in the promotion of mental health.

4. **Teacher Training and Sensitization:** Teachers are viewed as the main drivers of mental health in the society. Mental health learning is therefore included in the NEP 2020 to propose that teacher training programmes should carry content that would allow teachers to identify signs for students struggling with mental health issues. Teacher training also involves provision of class conditions that enhance health of students.

5. **Mental Health Awareness Campaigns:** The policy also recommends schools to hold annual awareness activities for mental health with a view of eliminating its stigmatization. These campaigns target the students, teachers, and parents in order to encourage the use of words when dealing with emotions without the usual stigma of having to go seek for help.

6. **Inclusion of Co-Curricular Activities:** Understandably due to the necessity of providing an activity for children's emotional and creative stimulation NEP 2020 stimulates an inclusion of sports, arts, and co-curricular activities into school system. These activities are believed to promote mental health as they provide the students with outlets that help them relieve stress and/ or Choir.

7. **Mental Health Screenings:** The policy recommends periodic mental health check-ups for troubled children in schools to be attended to. This element is decisive when it comes to attaining mental health problems in the early stage and receiving the necessary helps.

In essence, NEP 2020 aims to create an educational environment that nurtures both the intellectual and emotional growth of students, ensuring that mental wellness is a core component of the overall learning experience.

VI. CONCLUSION

The paper presents a comprehensive model of responding to mental health difficulties. It gives important information regarding simple solutions such as counseling, group exercises, mental health check, and raising awareness among teachers, which helps educators and policy makers in nurturing the psychological welfare of students. In relation to the mental health components of the education system highlighted in the research, the study employs secondary data sources, and therefore, has scanty primary data on the practical application of NEP 2020 in schools. The paper can fail to provide quantitative evidence of psychological interventions in Indian schools, particularly in rural regions where there is little help available. The findings of this study can be useful for policymakers, school heads and teachers who would like to enhance school-based mental health promotion activities. Furthermore, this study will be useful for psychologists who would like to develop school-based mental health programs addressing the NEP 2020 framework. The paper can also be of use for the subsequent academic researches focused on the use of psychological theories in boosting the student's well-being in India in practice.

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Teachers' Perceptions on Integrating YouTube Videos in Teaching Narrative Writing

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Received: 12 Sep 2024, Received in revised form: 09 Oct 2024, Accepted: 16 Oct 2024, Available online: 22 Oct 2024

Abstract

Writing is a significant component in a language. Students anticipate lots of challenges in writing. Incorporating YouTube in ESL Classroom for teaching narrative writing is certainly an effective way in this millennial epoch. The aim of this research is to identify ways to blend YouTube in the classroom and the perception of teachers using it productively in classroom learning. This study uses a quantitative approach. Data is collected by distributing questionnaires to 28 teachers with 20 items listed using Likert scale to evaluate. The results of this research revealed that the teachers are highly keen to use YouTube videos to teach narrative writing. Hence, it can be contemplated that the teachers preferred to use YouTube videos to teach narrative writing.

Keywords— YouTube, narrative, writing, classroom, video, information

I. INTRODUCTION

In this epoch, technology has been integrated in almost all aspects of life. It is indubitable to turn a blind eye by drawing away or not adapting with the use of technology. Looking back at the education sector, technology has been used widely with many creative ways of teaching to stimulate students' eagerness in learning. What more among the presence of digital natives, teaching using web tool 2.0 is becoming renowned. There are many ways to inspire students. The advancement in technological tools has swept the yesteryears of using chalk and board, and heavy textbooks for almost all lessons. YouTube has been one of the prominent education tools commonly being used by educators and been incorporated in teaching. In language learning, writing is the most difficult skill to major. Ergo, teaching writing in a constructive manner will enhance student engagement in learning. The use of YouTube indeed, has exhilarated as the features of writing narrative with a proper generic structure which is similar to the plot of YouTube. The

main objective is to entertain the audience no matter if it is the reader or the viewer and generate ideas align to the conservative style of teaching (Nurhelfa, S.; et al.; 2024).

1.1 Background of the study

Students at higher secondary are unable to write an essay explicitly as their information on certain aspects is very shallow. Studies have shown that the integration of Information and Communication Technology (ICT) in teaching has the latency to cater to students with a new mode of studying in a fun way. Many researchers have conducted surveys incorporating technology in educating students in a classroom. The advancement in technology in India has made way for the teachers with ICT knowledge and techniques to instill the use of technology in class learning (Karunakaran, B.; et. al, 2021). Many people have the perception that YouTube is only being used as a source of entertainment to watch movies. It is notable that YouTube is presently used for three primary reasons which includes extracting

information, fun and for entertainment purposes learning and academic studies. The fact is YouTube videos are made by different people with varied situations, settings and structure. Thus, it is considered a conveying and educational instrument for the educator.

1.2 Problem Statement

The researchers' years of teaching in this field anticipated problems especially in the aspect of narrative writing. It was claimed, students are unable to narrate due to insufficient knowledge on certain events. Some students lack vocabulary which is the downside for further to construct sentences and develop into writing. Conversely, giving information on certain topics verbally is impossible for students who have little knowledge in writing. Not having any idea on certain characters, settings, plot or climax could be a challenging task for most of the students along with the low proficiency learners. Indeed, teaching writing is undeniably a difficult task for teachers (Moses, R.; Muhammad, M.; 2019).

1.3 Research Questions

1. How to utilize YouTube video in narrative writing?
2. What are teachers' perception towards the use of YouTube in narrative writing?

1.4 Research Objectives

1. To identify the use of YouTube video in narrative writing
2. To find out teachers' perception towards the use of YouTube in narrative writing.

1.5 Limitation of the Study

There are some restrictions in using YouTube. Many advertisers use YouTube as their marketing tool. Therefore, too many adverts are screened which defeats the purpose of it being used in the classroom as an educational tool. These adverts can be time consuming and create annoyance when there is a frequent interval while YouTube learning is in progress in an ESL classroom. To add on the setback, these website tools require premium payment to enjoy certain features. With this, teachers should pick and choose an appropriate YouTube to be used in ESL classrooms as some do not have good resolution. If it is being projected with low resolution, students will not understand the content and it overrides the aim of the lesson or study. Ergo, students will not be able to watch or listen to comprehend the videos for their writing. Moreover, YouTube should only be shown for

10 minutes in a lesson otherwise it creates boredom and defeats the purpose. Ultimately, students will not absorb the lesson and instructions given. Another common issue will be the internet access as lessons planned for the day will be interrupted with unstable wifi in school. In a recent article by Kohler (2021), the study identified several limitations likewise students perceive differently with various abilities. As a result, teachers have to be very precise with their options of choosing a suitable YouTube for their students to be reviewed in class indicating clear instructions. In accordance with that, students too tend to comprehend with distinctive capacity where teachers have to be vigilant otherwise students will choose not to invest in writing. In addition, prior knowledge they acquire help them with their understanding of the text (Kohler, S.; 2021). Considering all these issues, teachers' views and experiences are crucial to make this study fruitful.

1.6 Significance of the Study

This study explores the ways in which YouTube can be used effectively in ESL classrooms for teaching narrative writing. It is apparent students are excited with digital devices and with the advent of bringing these technological tools in the classroom. The excitement begins when they are given colorful pictures to explore and with some explanation from YouTube about the video that can assist them to string up sentences for their narrative writing. This paper further highlights the prominence of using YouTube which increases their knowledge on lexicon as they have minimal exposure in extensive reading. These techies only like adventures by looking at technological based education thus, using YouTube in ESL classroom will definitely be a win win game in motivating them in writing. The researchers have to be concerned on the YouTube they choose hence to be aligned with the audience and their learning objectives. This will help students in the note-taking process and to develop complex sentences and ideas. According to Journal of Language Education, the researchers have similar claims from the interviewees about YouTube giving them the opportunity to expand their writing as the video can be reviewed several times for better understanding (Muthoharoh, A.; et. al., 2021).

II. LITERATURE REVIEW

Current studies on the use of YouTube videos to enhance students' writing skills have been reported,

ranging from different boon that YouTube videos have brought to ELT classrooms.

2.1 Writing Skills and YouTube videos

According to Al-Atabi, A. J. (2020), writing is the process of simultaneously using variables with written content, form, sentence patterns, vocabulary, punctuation, spelling, letters, spaces and ideas to display knowledge and incorporate thoughts, feelings into a readable content so that the user could comprehend the message conveyed. In earlier research, Bouchrika, I. (2024) revealed that each writer has different purpose in writing, with various genres likewise memoirs, epic or anecdotes.

According to Safitri (2020), YouTube is the most popular social media platform for students to improve English skills. It manifests that video clips are the most preferable choice. Multimedia, especially YouTube videos, are visibly useful for learning and teaching. Learning activities that include YouTube videos have been found to be successful (Felanie, 2021) and helpful in increasing knowledge (Ismail et al., 2000).

2.2 Using YouTube Videos in Language Learning and Teaching

The use of YouTube videos in language learning plays a leading role in helping ESL learners understand their English lessons from elementary to higher education. Jarrett, N. (2022) pointed out that today's students can be classified as "digital natives". Shoufan, A.; et. al.; (2022) has claimed YouTube videos can inspire students by enhancing knowledge and stimulating ideas.

Another researcher has manifest that watching YouTube videos in class does help to improve students' oral skills because students focus on the pronunciation of real material. It reduced their levels of anxiety caused by the learning environment and led to an increase in their motivation to speak fluently (Qomaria, D.; et.al.; 2020).

Another study by Shafwati, D. et. al. (2023) argued that the use of video was also shown to contribute to students' listening skills due to the use of meaningful and real-life situational context and language compared to the use of an "audio only" approach. The findings of Tahmina, T. (2023) suggest that watching YouTube videos is preferred over other learning sources and that it can be more successful, thus strongly suggesting language learners and teachers who wish to improve writing fluency. Noortyani (2020) studied students' perceptions on learning

news writing on YouTube, which showed that the platform benefited students. Improving learning, mastering news concepts, improving information, practicing learning autonomy, and helping to build listening and writing skills are stated advantages.

According to a survey conducted by Pratama, et. al. (2023), which aimed to gain insights from students and teachers about the use of learning vocabulary by watching YouTube videos, many students consider YouTube to be a useful multimedia educational tool in language learning. Similarly, teachers believe that by watching YouTube videos, students can improve their ability to master the target language. Vocabulary development is achieved using accessible visual effects as well as watching video clips and writing text. It has been proven by using YouTube videos to help students improve their writing skills.

2.3 Positive Impact of Using YouTube Videos in ELT

Sihotang, R. A.; et. al. (2020) claimed that YouTube videos can not only attract students' attention, but also meet different learning needs by addressing at least four aspects of multiple intelligence, namely language/language, visual/spatial, music/rhythm and emotional intelligence. Watching the video allows the brain to respond on both sides of the hemisphere, which helps increase and deepen the students' understanding.

Several studies have been conducted to examine the effects of watching YouTube videos on the motivation of literature students and to point out its benefits in capturing students' attention by providing additional visual support. A study by Turku, M. (2024) showed that YouTube had a positive impact on students' learning experience of "boring" literature. Test results and students' feedback revealed that students had a better comprehension of the content after viewing the YouTube videos. This positive effect was also confirmed by Fazel, V.; (2024) who studied students' use of YouTube to learn Shakespeare literature. Setyaningsih, N. A. et. al (2022) found that well-trained English language arts teachers could creatively integrate YouTube videos to help students interpret complex texts. The positive impact of YouTube videos on students' understanding of Shakespeare's plays was also found by Nilsen, D. L. F.; et. al. (2022). Moreover, students not only have a better understanding of the content, but also of parody and irony in the text, which English literature teachers often find difficult to teach (Nilsen, D. L.F.; et. al.; 2022).

In addition to its positive impact on students, YouTube also provides real-life examples of language use for students. The researcher also points out that YouTube can be used in a variety of ways to develop language skills, genre knowledge and learn vocabulary in context. The study further emphasizes that YouTube's "authenticity" relates not only to its content, but also to the fact that language learners often use it, so that it "has the potential to connect learners with real English input by probably already being part of their life experience" (Aziz, A. A.; et. al.; 2022).

2.4 Limitations of Using YouTube Videos in ELT Classrooms

While YouTube videos offer authentic language learning and serve as a good motivational tool, it's important to examine their limitations to ensure high-quality instruction in English classrooms. YouTube can be difficult to access because it may be blocked in some schools. Other issues include the videos have inappropriate content which may violate the use of YouTube (Syam, S.; et. al 2023). In addition, few current studies have found problems such as not finding suitable videos and not making fuller use of them. Most likely teacher will face the challenge of getting the most appropriate video according to students' level and capability of understanding (Barnwell, P.; 2021). Sadaf, H. et. al.; 2024 emphasized the importance of "critically selecting appropriate material with proper educational value as parents have the opinion that YouTube had no value in learning. While it's particularly important to consider which YouTube videos to play in the classroom, teachers must also consider how to use them. However, Liao, C. H.; et. al. (2023) also noted that if the video is used only in a linear management, it will not have the effect of improving student motivation. Students still learn passively because they don't have much interaction with their teachers or peers.

To address these issues, Raine, P. (2020) outlined the different ways to teach English using YouTube videos. Firstly, YouTube videos can be directly "part of the command and attention capture mechanism". It can also be used as a teacher resource, and videos can be used as models for classroom activities likewise comprehension quizzes or discussions. In some case, the video is simply "part of the course and is not shown directly to elementary school students because the content may not be appropriate" however students can be taught to be Youtuber to create their own

channels portraying their proficiency in English. Secondly, even if some other videos cannot be played and cannot be part of a lesson, they can still "serve as a springboard for classroom activities" and provide teachers with lesson plan ideas. It would be even more useful if YouTube videos were used more to support teachers in delivering teacher-centered lessons.

2.5 Teachers' Perceptions on Using YouTube Videos in ELT

YouTube is also popular among teachers as a teaching tool. The perceptions of teachers can be explained by their view that watching YouTube videos can help motivate students. Teachers may need to carefully consider the different experiences students have when watching videos in their own time and in English lessons. The results addressed participants' perceptions of YouTube usage, with teachers often overestimating the level of students' liking of YouTube videos. More importantly, YuenPrakas, J. and Aslam, S. (2024) believed that the significant differences in YouTube's perceived usefulness may be related to current practices in the ELT classrooms.

2.6 Research Gap

At present moment, YouTube is commonly used in language classrooms. However, the study mentioned above was primarily concerned with the use of YouTube videos in secondary and tertiary institutions. Despite the importance of primary education for language development, minimal effort has been made to integrate YouTube videos in primary English classrooms. Briefly, little insights could be seen into the use of YouTube videos only in elementary schools. Moreover, while teachers' perceptions of using YouTube videos enhancing English writing classes influenced the way it was applied to teach, hitherto, not much attention was given to teachers' perceptions. Since teachers are the most critical element in education, it is pivotal to explore the perceptions on the use of YouTube videos.

III. METHODOLOGY

The study used both qualitative and quantitative research methods to explore the issues related to the teachers' belief towards the use of YouTube videos to teach narrative writing. The method used is questionnaires with open-ended questions.

3.1 Participants

28 English teachers from Klang Valley and Perak participated in the study. The teachers who

participated involved primary, secondary, and tertiary. Majority has been teaching English for 1 to 5 years, a handful has been teaching English for 6 to 10 years and some are more than 15 years. Most English teachers that participated in this study are well verse in ICT.

3.2 Instruments

The questionnaires were administered online using Google Form. The questionnaires were adapted from Yuen (2015) which covered the information about respondents' experience of using YouTube in class. The questionnaires were divided into three parts, mainly Part 1 personal information; Part 2 familiarity with ICT tools; and Part 3 statements devised on a 5-point Likert Scale. The 5-point Likert Scale went from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire contained 15 multiple choice questions for Part 1 and Part 2. Statements of Part 3 include an extra part that would yield qualitative data. In addition to the ratings, teachers needed to give comments about i) how YouTube-related homework motivates students to learn English narrative writing; ii) would you consider using YouTube videos in teaching of narrative writing, and iii) what possible challenges would you foresee.

3.3 Data Collection Procedures

A total of 28 in-service English teachers working from

different levels such as primary, secondary, and tertiary education were invited to answer the questionnaire. The questionnaires were given to the teachers by the researchers. A brief description of the study had been introduced before distributing the questionnaire. The researchers were present to give explanations to the participants when needed. The researchers would not help to answer or give any suggestions to the participants to ensure the unbiasedness of the data.

3.4 Data Processing

A total of 28 completed questionnaires from the teachers were collected. The data collected will be generated by Google Form and displayed in the chart. Items in the questionnaire devised on the 5-point Likert Scale will be shown in the table with frequency and proportions.

IV. FINDINGS AND DATA ANALYSIS

From the findings, the data was analysed, and the responses to the questions were tabulated and discussed in later chapters. The results highlighted that the teachers who have experience in teaching English ranged from 1 to 34 years. Most respondents were from the secondary level, followed by the primary level and tertiary level.

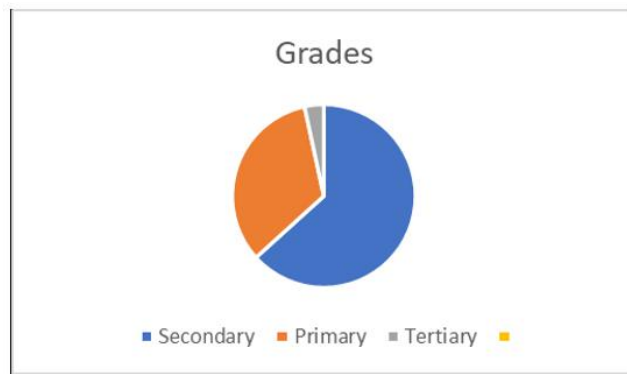


Chart 1. Grades that teachers teach

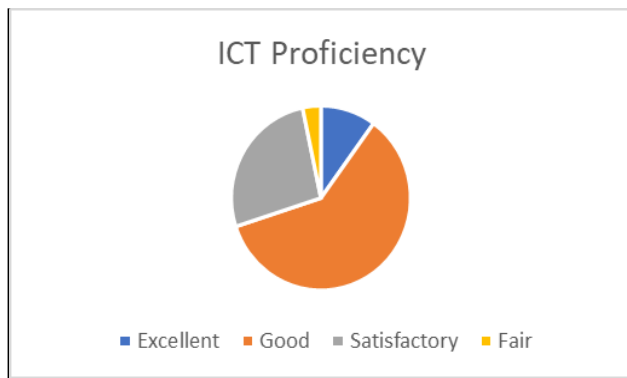


Chart 2 ICT Proficiency of the teachers

60% of the teachers were good at ICT and 10% of them were excellent users of ICT.

The usage of YouTube in teaching narrative writing					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	7.1	7.1	7.1
	Yes	26	92.9	92.9	100.0
	Total	28	100.0	100.0	

Almost 93% of respondents commented that they use YouTube in teaching narrative writing while only 7% of the respondents did not use YouTube in writing lessons.

YouTube videos can make narrative writing lessons interesting.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	17.9	17.9	17.9
	Agree	11	39.3	39.3	57.1
	Strongly agree	12	42.9	42.9	100.0
	Total	28	100.0	100.0	

Question 10 revealed that about 43% of respondents strongly agree that using YouTube videos can make narrative writing lessons interesting while 39% of respondents agree that using YouTube makes it interesting to learn narrative writing lessons.

YouTube videos helped students learn narrative writing better.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.6	3.6	3.6
	Neutral	3	10.7	10.7	14.3
	Agree	12	42.9	42.9	57.1
	Strongly agree	12	42.9	42.9	100.0
	Total	28	100.0	100.0	

Almost 43% of the respondents agree that YouTube videos helped the students to learn narrative writing better. Moreover, 43% of the respondents strongly agree that YouTube videos assisted the students to write narrative essays better.

YouTube videos help students to enjoy learning narrative writing in English classes.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.6	3.6	3.6
	Neutral	3	10.7	10.7	14.3
	Agree	11	39.3	39.3	53.6
	Strongly agree	13	46.4	46.4	100.0
	Total	28	100.0	100.0	

46% of the respondents strongly agree that YouTube videos helped the students to enjoy learning narrative writing. Moreover, 39% of the respondents agree that YouTube videos assisted the students to write narrative essays better.

YouTube-related classwork/homework can help students improve their narrative writing skills					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.6	3.6	3.6
	Neutral	3	10.7	10.7	14.3
	Agree	13	46.4	46.4	60.7
	Strongly agree	11	39.3	39.3	100.0
	Total	28	100.0	100.0	

Over 46% respondents agreed that YouTube related classwork or homework can help students improve their narrative writing skills. Whereas another 39% of the respondents strongly agree that YouTube related to classwork or homework can assist students to enhance their narrative writing skills.

Teachers will use more YouTube videos in English narrative writing classes.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	17.9	17.9	17.9
	Agree	12	42.9	42.9	60.7
	Strongly agree	11	39.3	39.3	100.0
	Total	28	100.0	100.0	

43% of the respondents agree that the teachers will use more YouTube videos in English narrative writing classes. Besides, 43% of the respondents agree that they will utilise more YouTube videos in English narrative writing classes.

V. DISCUSSION

In this discussion section, the researcher discusses the significant findings of the study, unexpected findings and limitations. As there are very limited studies on the use of YouTube in teaching narrative writing context, this study filled the literature gap by exploring teachers' perceptions towards the use of YouTube in narrative writing and exploring the actual practice of it in ESL writing classrooms. Such exploration provides valuable insights into how

teachers can use YouTube in narrative writing in ESL classroom in a constructive manner, as well as teachers' real feelings and challenges in using YouTube in teaching narrative writing. One of the most significant findings of the study was about how do participants usually use "YouTube" in teaching narrative writing? More than half of the participants choose to play the video in class as extra information (e.g. To provide videos about relevant vocabulary expansion for narrative writing on a particular topic).

This discovery also matches the point of Brown, D. (2021), which indicated that YouTube can be used in a variety of ways to develop language skills, genre knowledge and learn vocabulary in different context. There are also many participants who use YouTube videos to assign writing assignments, that is to say, most participants opt for YouTube videos as an auxiliary tool to teach narrative writing, rather than looking for video courses to teach writing directly from YouTube. This finding is similar to the statement made by Groshel, Z. in 2022, "Effective instructional video is not television-to-student instruction but rather teacher-to-student instruction, with video as a vehicle for discovery and education in the future.

From Responses from participants on Open-ended Questions, we can find that participants choose YouTube videos as an auxiliary tool to teach narrative writing, to a large extent, because YouTube video displays rich and interesting information, which can guide students' learning from many aspects of vision and hearing and can also provide interesting evidence for students' narrative writing. This finding is similar to Aziz, A. A.; et. al. (2022) who indicated that YouTube also provides real-life examples of language use for students.

Another significant finding of the study was the popularity of YouTube among ESL teachers' Writing classroom. In this study, most of the ESL teachers who participated in the questionnaire recognized the role of YouTube in narrative writing teaching, and there is a great possibility YouTube will be used to assist writing teaching in the future since they can get positive feedback from their own students. This also confirms that YouTube videos have been shown to be useful for learning and teaching. Learning activities that include YouTube videos have been found to be successful and helpful in increasing knowledge (Shoufan, A.; et. al.; 2022).

However, there were also some unexpected findings. When investigating the challenges that participants may encounter in using YouTube videos for narrative teaching in the future, the results show that participants are concerned that their students are losing interest in YouTube videos and are less interested in the videos they use in teaching than entertainment videos. One of the possible explanations for the disparity is that teachers often overestimate the level of students' liking of YouTube videos. Teachers may need to carefully consider students' different experiences when watching videos in their spare time and in English classes. It is also possible that

the short video industry is extremely developed at present, especially with applications such as TikTok flooding students' lives, making students too exposed to rich and interesting video resources, so that ordinary video resources will become boring to them when it comes to writing classes.

What's more, some other participants also worried that students will rely too much on YouTube videos. They were afraid that once students leave the YouTube video, it is difficult to write a good narrative. This further reinforces the notion that YouTube Video can attract students' attention (Diniyanti, K.L.; et. al.; 2022), but it cannot arouse much of their motivation and autonomy. In addition, some participants suggested that it is not so easy to find video resources suitable for students at their level and in line with the requirements of the syllabus. From these problems, we can see that there are still many areas that need to be studied urgently.

VI. CONCLUSION

As we are in the 22nd century learning, technology has dramatically improved our lives in many aspects. It has impacted and influenced our education system and provided great opportunities to many sources of applications. It is also important to foster and adapt with 22nd century learning, and teachers are highly expected to take a big step on planning strategically beforehand. Teachers should be aware of the education system and changes that take place each time, so that the learning process could be successful and upgraded by fulfilling the students' requirements. To introspect, the researcher anticipates this study will serve as another catalyst for teachers to enhance students' performance on language learning which is important in this age of information and communication technology.

6.1 Recommendations

This study has several limitations which gives room for further improvement. The list are as follows:

- 6.1.1 Although the study has revealed the merits of YouTube videos, other teaching skills of using these videos in the classroom and self-taught practices by students need more investigation to maximize the utilization in the language classroom.
- 6.1.2 The relationship between teachers' actual practice in using YouTube for language lessons and its impact on students' learning should be

explored in future.

- 6.1.3 This study focused on a single entity prioritising the teachers. Consequently, future studies can enhance the generalisation of the results by using larger sample sizes of teachers and students and more research instruments to add breadth and scope to the study.
- 6.1.4 As this study centralise on writing skill, other language skills such as listening, speaking and reading using YouTube can be explored as well.
- 6.1.5 More qualitative criticisms providing a better insight on the use of YouTube to teach writing skill is lacking in this study. As data collection was only in the form of surveys, there was less explanation from teachers.
- 6.1.6 The study only touches on the perceptions of teachers in using YouTube videos. However, students' perceptions have to be taken into account as well. The teachers' readiness to embrace YouTube videos does not imply students would favour too.

6.2 Suggestions

Based on the results and discussion of the study, it can be depicted that there was a notable value on the use of YouTube videos by teachers to teach narrative writing. The use of YouTube videos as an educational resource replacing textbooks serves as an alternative for teachers to promote writing. Teachers are requested to review current practice and integration of YouTube videos in the lessons by using a variety of activities and facilitating better communication with the students. Teachers needed to be provided with more professional development programmes that cater effective strategies to enable to utilize YouTube and other ICT tools in teaching. Training and capacity building such as creating, assessing and uploading YouTube videos would definitely facilitate the success of language learning.

There are also some challenges faced by teachers when utilizing YouTube videos in the classroom. Students tend to get bored of these videos as they are currently exposed to other interesting applications such as Tik Tok and Instagram. To overcome the boredom of students, teachers need to be selective in choosing videos that would be able to arouse students' interests. Teachers need to be enlightened on how to enable the students to interact with these videos to achieve the learning objectives. Teachers have to update with current writing videos which are more

interactive and gratifying for students. Moreover, to avoid students being too dependent on the videos to write narrative essays, teachers need to use these videos wisely in the classroom only when necessary. Students should be reminded that these videos serve only as a teaching aid to assist their writing task. With that in mind, the teachers' selection of appropriate YouTube videos will capture students' interests in learning narrative writing.

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Appendix

Questionnaire for ESL Teachers about the Use of YouTube Videos to Teach Narrative Writing

- 6.2.1 How long have you been teaching English? ___Year(s)
- 6.2.2 What grades do you usually teach? Primary
Secondary Tertiary
- 6.2.3 Please indicate your ICT proficiency. Excellent
Good Satisfactory Fair
Poor
Don't know ICT
- 6.2.4 What are your favorite ICT tools for teaching narrative writing? (List two that you like most)
-
- 6.2.5 Have you ever used "YouTube" in teaching narrative writing?
Yes (Please go to Q7) No (Please go to Q6)
- 6.2.6 Why do you not use "YouTube" to teach narrative writing?
-
- 6.2.7 How do you usually use "YouTube" in teaching narrative writing?
Playing the video in class as direct instruction (e.g. Teaching the skills of narrative writing)
Playing the video in class as extra information (e.g. To provide video about relevant vocabulary expansion for narrative writing on a particular topic.)
Getting students to write a narrative article after watching the video.

	Strongly Disagree 1	Dis-agree 2	Neutral 3	Agree 4	Strongly Agree 5
8. When I play YouTube videos in class, I usually play Malay videos.					
9. When I play YouTube videos in class, I usually play English videos.					
10. I think watching YouTube videos to teach my students narrative writing is interesting.					
11. I think YouTube videos helped my students learn narrative writing better.					
12. I think my students enjoy using YouTube videos to learn narrative writing in English classes.					
13. I have assigned YouTube-related classwork/homework on English narrative writing.					
14. I think students enjoy doing YouTube-related classwork/ homework on English narrative writing.					
15. I think YouTube-related classwork/homework can help my students improve their narrative writing skills.					
16. I will use more YouTube videos in English narrative writing classes.					
17. I will have more YouTube-related classwork/homework on English narrative writing.					

18. In your opinion, how would YouTube-related homework/classwork motivate students to learn English narrative writing?

19. Would you consider continuing to use YouTube videos in your teaching on narrative writing? If you would, what kind of activity would you focus on?

20. What possible challenges do you foresee?

Appendix 2

Responses from Teachers on Open-ended Questions of Questionnaire

18. In your opinion, how would YouTube-related homework/classwork motivate students to learn English narrative writing?

19. Would you consider continuing to use YouTube videos in your teaching on narrative writing? If you would, what kind of activity would you focus on?

20. What possible challenges do you foresee?

Respondent	Q18	Q19	Q20
Teacher 1	Get ideas and engages then	Expansion of vocabulary	Students easily get distracted by other things. Parents are apprehensive about their children using gadgets to watch YouTube for homework.
Teacher 2	A different approach always help	yes...mostly grammar	accent used by the youtuber
Teacher 3	Interesting topic	Descriptive essay	Speaker in the video has different English accent.
Teacher 4	Visually	Creative writing	Vocabulary
Teacher 5	More attention must be given by a teacher to teach writing such as giving guidance and feedback	Yes, Speaking activity	Difficult to motivate the students
Teacher 6	In this modern world where IT is a norm, the methods of teaching in a classroom too have to be elevated to allow students to be interested in the lesson taught. Allowing students to watch a Utube video related to their narrative writing assignment will truly be beneficial as they would be able to learn using creative vocabulary to express their ideas and feelings.. This a giant step in improving their narrative writing skills.	Yes, I would consider using Utube videos as one of my tools to support me in teaching narrative writing to my students. I would want my students to focus on writing interesting experiences which they might have experienced and if not imagined. They should be able understand on how to express their thoughts, opinions and emotions onto paper so as to do a good piece of productive writing that captures the reader's attention.	The challenges I foresee are that my students might get carried away with the notion of watching Utube videos in doing a good piece of writing that without its assistance they are unable to produce their write ups accordingly. This is something that I would need to explain to them to not rely totally on Utube but just view it as a guide for starters in doing their writings. It's going to be tough because nowadays every answer seeked seemsto be at a touch of a button at our fingertips.

Teacher 7	The visual, graphics and sounds will attract student attention. It is not a plain boring text	brainstorming	lack of resources
Teacher 8	Students can always refer to the youtube clip when needed	Writing grammatical correct sentences	Hopefully students will be more proficient in the language and be better writers
Teacher 9	It helps students to improve their listening and punctuation skills	Writing essay	Internet access
Teacher 10	Give them clearer pictures on how to write good narrative writing	Structures, Vocabulary and sample	To find great materials for certain topic
Teacher 11	It enhances their creativity in narrative writing	Yes I would. Vocabulary building, usage of "show & don't tell" technique.	Students lack of interest to watch you tube videos, perhaps changing to tik tok would help.
Teacher 12	They will be able to look up for information through various YouTube videos that provides numerous information in an interesting manner	Yes.. More to effective dialogues causes n effects or even ending well	Students might bit be able to understand the language used in the videos - depending on the students language level
Teacher 13	Youtube content is mostly accessible	Yes. Listening.	Students love to watch entertainment more than educational content.
Teacher 14	Live action	Grammar and pronunciation	To select related youtube lessons
Teacher 15	Yes, but I think it only applicable for high-proficiency and intermediate level of students. The low proficiency students somehow can't really understand much on what the video is all about and they just might ignore the task as they don't understand it.	Yes, as a stimulate ideas and as brainstorming activities.	
Teacher 16	More interesting and variety of choices	Yes, I can apply the RAFT-writing activity using the YouTube video. For example, I will let them watch a cartoon movie, like Cinderella. There are a few casts in the movie, and I will assign them to a particular role, and they need to	The inadequate vocabularies and the lack of understanding about the movie.

		watch the movie but write the narrative writing in term of the assigned roles' perspectives.	
Teacher 17	They can get inspiration	Yes	B40 pupils don't have ict facilities at home
Teacher 18	To ease n gives better understanding	Yes. Talking about whatthey have found in the video.	Students are really bored with videos
Teacher19	By watching the videos students are able to expand their knowledge.	Yes. For speaking	Nor sure
Teacher20	Membantu pelajar mendapatkan idea dalam penulisan.	Yes, getting students to do narrative writing after watching the videos.	Students who doesn't understand the language.
Teacher21	It motivates to get some information on their own and narrate their writing.	Ya. Saya bersetuju	Internet yang agak terhad dan lambat
Teacher22	More interactive	Not really, but may use to share information on how todo a task given.	Not all the students owngadgets and internet service.
Teacher23	Yes,they can use vocabulary that they have learnt to write the narrative writing	yes,techniques of writing	Internet connection
Teacher24	Diverse animations and music intrigue students in writing and enrich their imagination and knowledge, which narrative writing needs.	Yes...speaking activity	The students will spend time watching videos rather than writing the essay
Teacher25	Find proper and interesting YouTube videos in Englishwriting.	yes. I would focus on letting students watch a short videoof a story without narration, then ask them to write a short narrative passage for the video.	difficulty on finding a video with appropriate content which suits my students' level
Teacher26	Interested to learn	Yes, describe in sentences activity.	If students pay lots of attentions on YouTube videos, students will learn passively as they do not have much interaction with the teacher or their peers.
Teacher27	Youtube provides additional information	Yes. Speaking based tasks	Poor infrastructure in school
Teacher28	Pupils prefer to watch youtube rather than listen to chalk and talk	Yes, focusing on pre-writing	Infrastructure

Teacher29	Some concepts are difficult to grasp, YouTube provides visual understanding. For example my students never experienced flash flood, so showing video of flash flood helps them to write more creatively.	Writing diary and journal	Pupils waiting for teachers to spoon feed them. They are not willing to write on their own
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Assessing the Development of Environmental Awareness in CLIL Based Learning Environments

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Received: 13 Sep 2024, Received in revised form: 11 Oct 2024, Accepted: 18 Oct 2024, Available online: 24 Oct 2024

Abstract

The study investigates the impact of Content and Language Integrated Learning (CLIL) on the development of environmental knowledge and student engagement with key environmental issues compared to traditional teaching methods. A total of 100 middle school students were divided into two groups- an experimental group that received CLIL-based environmental instruction and a control group that received traditional instruction. Using pretest and posttest measurements, the study assessed changes in environmental knowledge and engagement with topics such as climate change, biodiversity and sustainability. The results showed that students in the CLIL group demonstrated significantly greater improvement in environmental knowledge, with an average posttest score of 81.9, compared to 66.2 for the traditional group. Additionally, qualitative observations indicated higher levels of student engagement in the CLIL group, as they actively participated in discussions and projects focused on environmental topics. The findings suggest that CLIL-based instruction is more effective than traditional methods in promoting both content knowledge and student engagement. The study highlights the potential of CLIL to enhance interdisciplinary learning by integrating language and environmental education, offering important educational implications for improving both academic outcomes and student involvement in global issues such as sustainability.

Keywords— *CLIL (Content and Language Integrated Learning), Environmental Knowledge, Student Engagement, Sustainability Education & Interdisciplinary Learning.*

I. INTRODUCTION

In recent years, the increasing demand for environmentally conscious individuals has prompted educators and researchers to explore effective methods for integrating sustainability and environmental awareness into educational curricula. One such approach that has gained prominence is Content and Language Integrated Learning (CLIL), a dual-focused educational model that promotes simultaneous language learning and content acquisition. CLIL, originally developed as a pedagogical framework to improve foreign language proficiency through immersion in subject-specific content, is now being adapted to foster environmental awareness in diverse

educational settings. This integration is seen as an innovative way to teach environmental concepts in an engaging, multilingual format that encourages both cognitive and linguistic development. The present study seeks to assess the development of environmental awareness in CLIL-based learning environments, examining how effectively the CLIL framework can contribute to fostering environmental literacy and sustainability among students. Environmental awareness has become a central concern in modern education due to the pressing need for sustainable solutions to global environmental challenges. The term "environmental awareness" refers to an individual's understanding of ecological issues, the recognition of

the interdependence between human activities and natural systems and the willingness to adopt environmentally responsible behaviors (Ünal & Dımişki, 1999). Educational systems worldwide are increasingly incorporating environmental education into curricula to raise awareness of climate change, biodiversity loss, pollution and resource depletion (Tilbury, 1995). This focus aligns with the broader goals of sustainable development, as outlined in the United Nations Sustainable Development Goals (SDGs), specifically Goal 4.7, which emphasizes education for sustainable development (UNESCO, 2017). Traditional environmental education programs often rely on specialized content delivered through science or geography subjects. However, these approaches may not reach all students effectively, especially those who are disengaged from traditional subject matter or lack interest in science-related topics (Palmer, 1998). To address this issue, educators have been seeking more dynamic and interdisciplinary approaches, such as CLIL, that can integrate environmental themes across a range of subjects and promote holistic learning experiences.

CLIL was first introduced in Europe in the mid-1990s as an innovative approach to language learning that simultaneously delivers subject content and language instruction. The dual-focus nature of CLIL ensures that students develop language proficiency while acquiring knowledge in subjects such as history, science, or economics (Coyle et al, 2010). The pedagogical flexibility of CLIL allows it to be adapted across different educational contexts, making it a versatile model for diverse subject areas, including environmental education. The key principle behind CLIL is that language and content are interdependent and mutually reinforcing; as students engage with subject-specific material in a foreign language, they develop both linguistic and cognitive skills (Dalton-Puffer, 2011). This dual-focus framework is particularly beneficial for teaching complex concepts like environmental issues, which require interdisciplinary thinking and the ability to understand scientific, social and ethical dimensions. One of the primary reasons CLIL is seen as a promising tool for environmental education is its ability to foster critical thinking and problem-solving skills. In a CLIL-based classroom, students are encouraged to engage with authentic texts, data and case studies related to environmental issues, which challenges them to analyze, evaluate and interpret information from multiple perspectives (Lorenzo et el, 2009). This active engagement with content not only improves language proficiency but also enhances students' awareness of

environmental issues and their ability to think critically about sustainable practices.

The integration of sustainability into CLIL-based learning environments is a natural extension of the model's interdisciplinary nature. Sustainability education, like CLIL, requires a cross-curricular approach, as environmental issues are inherently multifaceted and interconnected with various disciplines, such as science, economics, social studies and ethics (Sterling, 2001). By embedding environmental themes into language and content instruction, CLIL can provide a platform for students to explore these complex issues from multiple angles, deepening their understanding and promoting more informed, responsible behaviors. Studies have shown that students are more likely to retain information and apply what they have learned when education is contextualized and connected to real-world issues (Bransford, Brown, & Cocking, 2000). CLIL's emphasis on real-life application of knowledge makes it particularly suitable for sustainability education, as students can explore the environmental challenges facing their communities and the world at large. For example, a CLIL lesson on climate change might involve reading scientific reports, analyzing data on carbon emissions and debating policy solutions—all while using the target language. This type of immersive learning experience fosters both linguistic development and a deeper understanding of the environmental issue at hand. CLIL promotes cultural literacy, which is essential for understanding global environmental challenges. Environmental issues such as climate change, deforestation and pollution transcend national boundaries and require international cooperation to address. CLIL's focus on language learning helps students develop the intercultural competence needed to navigate these global challenges, as they are exposed to different cultural perspectives and approaches to sustainability (Marsh et al, 2008).

Given the potential of CLIL to foster environmental awareness, it is crucial to assess how effectively this approach can promote environmental literacy and behavioral change among students. While there is a growing body of research on the cognitive and linguistic benefits of CLIL, relatively little attention has been paid to its role in developing environmental awareness (Lasagabaster & Sierra, 2010). This study aims to fill this gap by exploring the impact of CLIL-based environmental education on students' knowledge, attitudes and behaviors related to sustainability. To assess environmental awareness in CLIL-based

classrooms, a mixed-methods approach is often employed, combining quantitative and qualitative data to provide a comprehensive understanding of student outcomes (Creswell & Plano Clark, 2011). Quantitative measures, such as pre- and post-tests, can be used to evaluate students' knowledge of environmental issues, while qualitative methods, such as interviews and classroom observations, can provide insights into students' attitudes and behaviors. By using a combination of these methods, researchers can assess not only the cognitive development of students but also their emotional and behavioral responses to environmental content.

II. SIGNIFICANCE OF THE STUDY

The significance of this study lies in its exploration of how Content and Language Integrated Learning (CLIL) can be leveraged to enhance environmental awareness among students. In an era where sustainability education is critical, this research contributes by assessing the effectiveness of CLIL in fostering both linguistic and ecological literacy. By examining students' knowledge, attitudes and behaviors related to environmental issues, this study provides valuable insights into how interdisciplinary, dual-focused educational models like CLIL can support the development of environmentally responsible global citizens. It fills a gap in current research by evaluating the potential of CLIL-based learning environments to actively promote sustainable development goals through an integrated approach, thus offering implications for curriculum design and pedagogical strategies in diverse educational contexts.'

III. METHODOLOGY OF THE STUDY

The study employed a quantitative research design to assess the development of environmental awareness in CLIL-based learning environments. A pretest-posttest control group design was used to compare two groups of middle school students- an experimental group that received environmental content through CLIL and a control group that received the same content through traditional teaching methods. Participants were selected using a random sampling method, with a total sample size of 100 students from Class 7th. The students were aged between 12 and 14 years and were randomly assigned to the two groups to ensure comparability in terms of age, background and prior exposure to environmental education. One tool, an Environmental Knowledge Test, was used to gather data. This test assessed students' knowledge of key environmental

issues, including climate change, biodiversity and sustainability. The test was administered to both groups before and after the eight-week intervention to measure any changes in knowledge. The intervention lasted for four weeks. During this period, the experimental group engaged in CLIL-based learning, where environmental content was integrated with language instruction. Students participated in activities such as reading environmental texts, discussing ecological issues and working on projects that combined language learning with environmental topics. The control group, meanwhile, received traditional instruction focused solely on environmental content without the language integration. Posttests were administered after the intervention to both groups to evaluate the impact of the teaching methods. The collected data were analyzed using paired t-tests to compare the pretest and posttest scores within each group and independent t-tests to compare the outcomes between the experimental and control groups. Cohen's d was calculated to determine the effect size of the intervention, indicating the practical significance of the results. Ethical guidelines were followed throughout the study, including obtaining informed consent from participants and ensuring confidentiality of their information.

IV. MAJOR RESEARCH QUESTION

How does CLIL-based instruction impact the development of environmental knowledge and understanding in comparison to traditional teaching methods?

OBJECTIVES OF THE STUDY

- A. To assess the impact of CLIL-based instruction on the development of students' environmental knowledge compared to traditional teaching methods.
- B. To evaluate the effectiveness of CLIL in enhancing students' understanding of key environmental issues, such as climate change, biodiversity and sustainability.

HYPOTHESIS OF THE STUDY

H01- Students who receive CLIL-based environmental instruction will show a significantly greater increase in environmental knowledge compared to students receiving traditional instruction.

H02- CLIL-based instruction will lead to a higher level of student engagement with environmental issues, as measured by their willingness to adopt

pro-environmental behaviors, compared to traditional instruction.

V. FINDINGS OF THE STUDY

This study aimed to assess the impact of CLIL-based instruction on the development of environmental knowledge and engagement compared to traditional teaching methods. The sample consisted of 100 middle school students, divided into two groups of 50 students each. The experimental group (n = 50) received environmental content integrated with language learning through CLIL, while the control group (n = 50) received traditional instruction focused solely on environmental content. The findings were based on statistical analyses of pretest and posttest data collected using the Environmental Knowledge Test.

- a) Pretest Scores- The mean pretest score for the experimental group was 57.1 (SD = 6.3), while the control group had a mean score of 56.8 (SD = 6.6). An independent t-test showed no significant difference between the two groups' pretest scores ($t(98) = 0.24, p > 0.05$), indicating that both groups had similar baseline levels of environmental knowledge before the intervention.
- b) Posttest Scores- The posttest mean score for the experimental group increased significantly to 81.9 (SD = 5.9), while the control group's mean score increased to 66.2 (SD = 7.4). An independent t-test revealed a statistically significant difference in posttest scores between the experimental and control groups ($t(98) = 12.34, p < 0.001$), indicating that CLIL-based instruction led to greater gains in environmental knowledge compared to traditional instruction.
- c) Effect Size (Cohen's d)- The effect size, as measured by Cohen's d, was 1.45, indicating a large practical significance for the CLIL-based intervention. This suggests that the integration of language learning with environmental content had a substantial impact on students' knowledge acquisition.
- d) The Environmental Knowledge Test, which assessed students' understanding of key environmental issues such as climate change, biodiversity and sustainability, showed significant improvement in the experimental group.

Score Improvement-

- i. Experimental group (n = 50)- Pretest mean = 57.1, Posttest mean = 81.9 (Mean increase = 24.8 points).
- ii. Control group (n = 50)- Pretest mean = 56.8, Posttest mean = 66.2 (Mean increase = 9.4 points).

These results demonstrate that students who received CLIL-based instruction had a significantly greater increase in environmental knowledge compared to those in the control group.

- e) Student Engagement with Environmental Issues- In addition to knowledge gains, students in the experimental group exhibited higher engagement in classroom discussions and projects related to environmental issues. Observations suggested that the CLIL approach fostered a deeper interest in sustainability topics, as reflected in their participation levels and enthusiasm during lessons. This contrasted with the control group, where engagement remained more passive and focused on content memorization.

VI. DISCUSSION OF RESULTS

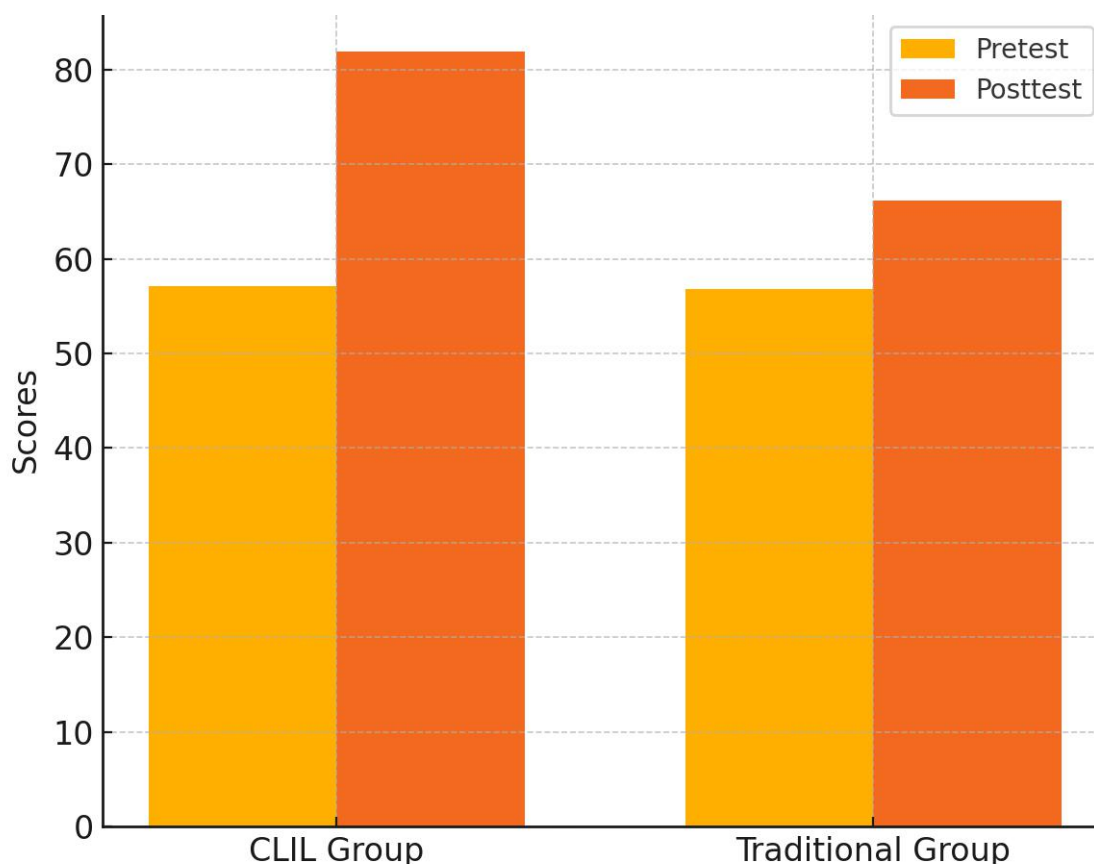
The discussion of results is aligned with the two core objectives, focusing on the impact of CLIL-based instruction on environmental knowledge and student engagement. The interpretation highlights how the findings relate to the study's objectives and the hypotheses.

1. The impact of CLIL-based instruction on the development of students' environmental knowledge compared to traditional teaching methods.

The significant improvement in the experimental group's environmental knowledge supports the idea that CLIL-based instruction allows students to engage with content more deeply due to the interactive nature of this approach. The structured integration of language and content learning offers multiple cognitive benefits. By processing complex environmental concepts through the lens of language learning, students are more likely to actively engage with, comprehend and retain the subject matter. The results reflect the effectiveness of CLIL in

enhancing the students' ability to critically analyze and understand environmental issues compared to

traditional teaching methods, which tend to focus more on rote learning.

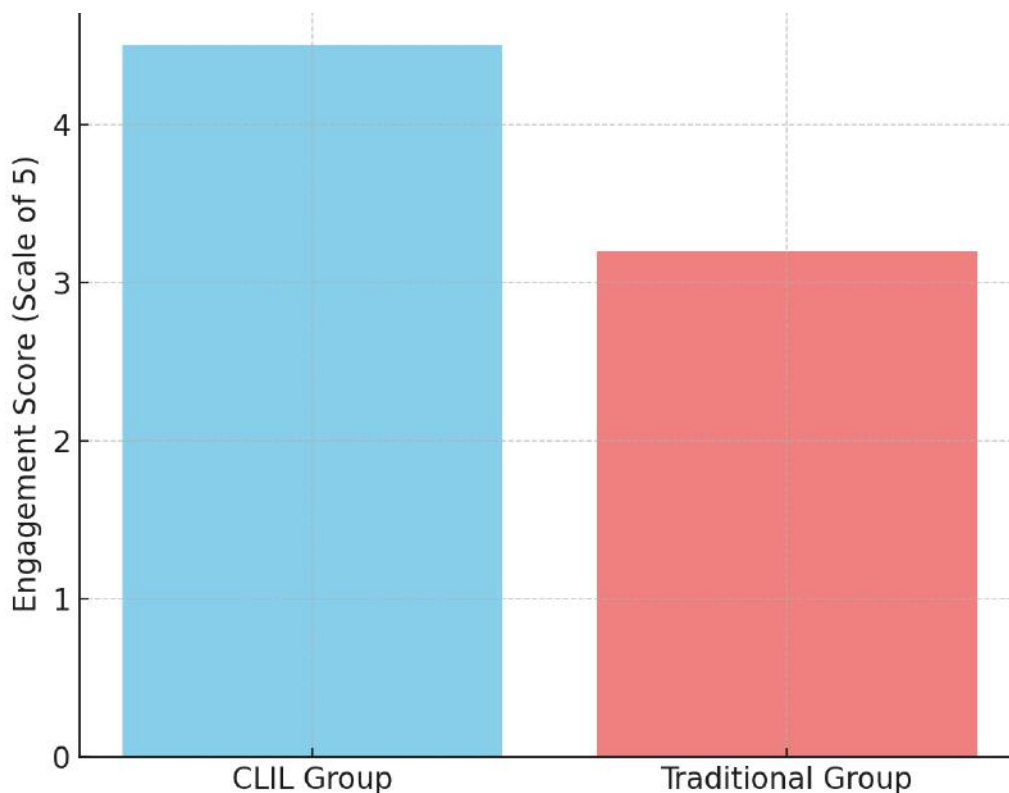


This graph shows that while both groups had similar pretest scores, the CLIL group demonstrated a significantly higher improvement in environmental knowledge after the intervention compared to the traditional group.

This deeper engagement is tied to the dual-task nature of CLIL, which requires students to process both linguistic elements and the subject content simultaneously. This cognitive demand may foster better memory retention and understanding, making CLIL a more effective strategy for content-heavy subjects like environmental education. The increase in environmental knowledge in the experimental group can thus be interpreted as a consequence of this holistic educational approach.

2. The effectiveness of CLIL in enhancing students' understanding of key environmental issues, such as climate change, biodiversity and sustainability.

The results suggest that CLIL's capacity to engage students goes beyond just improving their knowledge. The heightened interaction and active participation fostered by the CLIL methodology likely encouraged students to reflect on and discuss environmental issues more frequently and with greater interest. This indicates that the approach not only enhances cognitive engagement but also emotional and behavioral engagement with the subject matter.



The CLIL group exhibited higher engagement with environmental issues, scoring 4.5 out of 5, compared to the traditional group’s lower engagement score of 3.2.

The students’ increased participation in environmental projects and discussions demonstrates that CLIL can stimulate curiosity and personal involvement in the content, potentially leading to long-term behavioral changes. Although the study did not quantitatively measure pro-environmental behaviors, the observed

enthusiasm suggests that CLIL might motivate students to take greater interest in real-world environmental issues. The method encourages a learning environment where students feel more connected to the topics being taught, which is key to fostering a deeper understanding of complex issues like climate change and sustainability.

Hypothesis Testing

Hypothesis	Null Hypothesis (H ₀)	Test Statistic	P-value	Conclusion
Students who receive CLIL-based environmental instruction will show a significantly greater increase in environmental knowledge compared to students receiving traditional instruction.	There will be no significant difference in the increase of environmental knowledge between students who receive CLIL-based instruction and those who receive traditional instruction.	t(98) = 12.34	< 0.001	Reject H ₀ significant improvement in environmental knowledge in CLIL group.
CLIL-based instruction will lead to a higher level of student engagement with environmental issues, as measured by their willingness to adopt pro-environmental behaviors, compared to traditional instruction.	CLIL-based instruction will not result in a higher level of student engagement with environmental issues compared to traditional instruction.	Qualitative Observations	N/A	Qualitative support for greater engagement in CLIL group.

VII. CONCLUSION OF THE STUDY

The study sought to assess the effectiveness of CLIL-based instruction in enhancing environmental knowledge and student engagement with key environmental issues, such as climate change, biodiversity and sustainability, compared to traditional teaching methods. The findings confirmed that students who received CLIL-based instruction demonstrated significantly greater improvements in environmental knowledge than those taught using traditional methods. The interactive and integrative nature of CLIL fostered deeper cognitive engagement, allowing students to retain and apply their knowledge more effectively. Furthermore, qualitative observations indicated that CLIL also enhanced student engagement with environmental topics. While the study did not quantitatively measure pro-environmental behaviors, the students' active participation and enthusiasm in discussions and projects suggest that CLIL may foster a stronger connection to real-world environmental issues, potentially encouraging pro-environmental attitudes and behaviors in the future. Overall, the study provides evidence that CLIL is an effective pedagogical approach for both content and language learning. By integrating these elements, CLIL creates a more dynamic and immersive learning environment that not only enhances academic performance but also stimulates interest and personal investment in critical global issues. Future research should explore the long-term behavioral outcomes of CLIL-based instruction, particularly in terms of fostering environmentally responsible behaviors.

VIII. EDUCATIONAL IMPLICATIONS

The findings of this study have several important implications for education, particularly in the integration of CLIL-based instruction-

- **Enhanced Knowledge Retention-** The significant improvement in environmental knowledge for students in the CLIL group suggests that integrating language and content learning can deepen understanding and retention of complex subjects like environmental science. Educators can adopt CLIL strategies to enhance students' comprehension of content while simultaneously improving language proficiency.
- **Increased Student Engagement-** The higher engagement observed in the CLIL group indicates that combining language learning with relevant real-world issues, such as environmental

challenges, can foster greater interest and participation. This approach could be applied to other subjects, encouraging active learning and critical thinking, making learning more interactive and student-centered.

- **Promoting Interdisciplinary Learning-** CLIL offers a dynamic way to teach multiple subjects simultaneously, integrating language learning with content knowledge. This approach can be applied across disciplines, such as science, social studies and humanities, promoting interdisciplinary learning that prepares students for complex global challenges.
- **Real-World Application-** By engaging students with real-world topics through CLIL, such as climate change and sustainability, educators can make lessons more meaningful and relevant. This can lead to increased motivation among students and foster a sense of responsibility and global citizenship.
- **Support for Language Learners-** For students in multilingual settings, CLIL can be a valuable tool to support language acquisition while also delivering content knowledge. This dual approach benefits both language learners and native speakers by providing authentic contexts for language use, thereby enhancing both content mastery and linguistic skills.

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Transforming Technical Education: A Framework for Integrating AR/VR to Enhance Teaching and Learning in Universities

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Received: 19 Sep 2024, Received in revised form: 14 Oct 2024, Accepted: 19 Oct 2024, Available online: 24 Oct 2024

Abstract

University students need virtual reality and augmented reality since these technologies revolutionize the current learning process. What once was a dream is now a reality for students: with VR, one can enter virtual labs and conduct experiments or witness some ideas being depicted in a non-complex manner. AR in contrast overlays digital information to reality such as whilst in class the use of a screen on an object to enhance learning. They assist learners in handling the content in their own time and abilities, cooperation among students and acquiring job market skills. However, there are barriers in the integration of VR and AR technologies in education for example, cost, requisite technology, and teacher education. These challenges are discussed in this study and the potential of VR and AR in changing the face of higher education is discussed.

Keywords— *Virtual Reality, Augmented Reality, Higher Education, Immersive Learning, Interactive Teaching, Personalized Learning, Educational Technology, Simulation, Industry-Relevant Skills, Technological Infrastructure*

I. INTRODUCTION

Education is one of the most central values in our society that is present with great emphasis in the contemporary world. This begins right from childhood up to the time we grow old as adults. We learn in many different ways, often starting with formal schooling where we study a range of subjects. Traditionally, books have been our main source of information, but they usually rely on text with few visuals to help us understand. However, technology has rapidly changed how we learn. In recent years, advancements in technology have impacted nearly every industry, and education is no exception. We now have many new tools for learning. Before the COVID-19 pandemic, teachers often used screens to visually explain lessons. The pandemic forced much of education online, using

video calls, which brought both new opportunities and challenges for keeping students engaged. One of the most exciting technological developments in education is the use of Virtual Reality (VR) and Augmented Reality (AR). These technologies are generating a lot of interest because they have the potential to completely transform how we learn. Through VR a person gets into a simulated environment entirely; through AR, a person gets a real environment to which digital elements are added. This brought about an integration of the two worlds, namely the paper and the digital, to make learning much more interesting and practical. There is a notion that illustrates all these concepts which is Metaverse. Metaverse is the name given to a large virtual environment into which people can wishing to immerse themselves log in and assume personalised

alter egos, interact with others in much the same way as they interact in 'real' life – attend concerts or conferences via simulated events. Venture capitalists such as Meta (previously Facebook), Google and Microsoft are betting big on VR and AR to achieve the Metaverse. With these technologies in place, they are supposed to enhance the way we communicate, educate ourselves and even entertain ourselves. The Metaverse depends mostly on several major technologies: on the one hand, on blockchain technology that guarantees the security and transparency of transactions; on the other hand, on cloud technology that makes possible virtual experiences; and, finally, on artificial intelligence that makes these virtual environments appear responsive. Collectively these technologies are creating a new world known as the Metaverse and companies such as Microsoft and Nvidia are eagerly at the forefront. In education, the Metaverse could help solve such issues as absence of social interactions the students get exposed to, especially in online classes. Reconstruction of a new learning environment with the help of VR or AR can help to make an understanding of the material easier and increase the rate of memory retention. They also provide the teachers with more instruments to make learning more entertaining and productive, which is applicable in the modern practices of teaching that are based on the interaction and active involvement of students. Anyway, it remains for me to add that technologies such as VR and AR are now rapidly evolving and changing the system of education. Such tools can supplement learning in new ways presenting it as more appealing and interesting to students. But as the Metaverse expands, it indeed has the demographic to transform education as simulation and establishment of personnel for a complex world in the process of their formation.

II. RELATED WORKS

Researchers and practitioners believe that emerging technologies like Augmented Reality (AR) and Virtual Reality (VR) will open up new possibilities in educational settings because of recent developments in educational technology[1]. Teachers now find it easier to integrate VR/AR activities into their lessons because modern AR and VR equipment are more reasonably priced than their predecessors, which were once costly and sophisticated. AR enhances reality by superimposing virtual objects onto the real world, thereby creating a seamless blend of real and virtual environments. This augmentation promotes active, constructivist, and authentic learning. In contrast, VR,

especially when experienced with head-mounted displays (HMDs), isolates users from their physical environment, enabling focused attention on virtual stimuli[2]. Studies have shown that AR and VR are beneficial for education. AR-enabled training has been linked to enhanced student learning outcomes, positive attitudes, and higher motivation, according to a comprehensive analysis of 68 papers on the subject conducted by Kavanagh and Akçayır up until 2015[3]. One of the significant works established that the engagement of Augmented Reality (AR) in group activities assisted college students to grasp physics principles than the 2D simulation. AR, in addition to positively impacting the learning results, challenged the positive attitudes of the students during environmental projects. For instance in biology, it was found the use of AR activities urged the nine graders to learn a lot. Virtual Reality (VR) in education only considers aspects such as the features and the characteristics of advanced 3D views and dynamic visuals alongside interactions. Since the appearance of affordable VR accessories, virtual reality found its application in such spheres as mental health treatment, surgery and STEM learning. A problem associated with traditional education is that real-life, practical experiences are not incorporated; something essential as physics, requires [4]-[9]. To counter this a physics simulator was developed where the students can change settings such as gravity and mass which drove the retention higher than simple lectures.

With regard to safety training, a study discussed a conventional systematic review of immersive VR games that dealt with emergencies such as building evacuations. These VR games have been embraced in the education sectors since participants get real life experience for evacuations, mastery of self-protect measures, and spatial orientation among others. The study used various methods like surveys and interviews to measure learning outcomes. Another study looked at how VR is used in construction engineering education. They found that different types of VR, like immersive VR and 3D game-based VR, helped increase student motivation, focus, and interaction. VR was particularly useful in areas like design, safety training, and structural analysis [10]-[13]. The study also suggested that improving VR tools and combining them with traditional learning methods could make education even better. While there's been a lot of research on how VR benefits students, less attention has been given to how teachers feel about using AR and VR in the classroom. Some studies have explored teachers'

experiences with designing and implementing VR lessons, but they haven't focused much on what influences teachers to start using these technologies. Since teachers play a key role in bringing new technology into the classroom, it's important to understand their willingness to use AR and VR. In South Korea, the Ministry of Education is pushing for the use of AR and VR in digital textbooks across all grade levels. These are digital textbooks and come with a provision for additional media inclusion, which means that they are handy for presentation of themes in science, English, and social studies, among others. It enables the students to 'experience' things from the teaching content, such as being able to 'explore' the human body or fossils virtually. For teachers to take advantage of these new innovations, professional development programs include information on school technology, applying digital textbooks in their practices, and incorporating of AR and VR in teaching. Student that applied AR in their laboratory activities demonstrated enhanced skills in performance, safe handling of equipment's, and Positivity towards physics laboratory. VR in education also has the following advantages; The analysis of VR research indicated that VR can enhance learners' motivation and learning outcomes in case the virtual environment is realistic. Sometimes VR activity works very effectively, as in a case where a student is allowed to use advanced VR headsets to develop a particular skill through direct experience. For instance, one can have virtual lessons for the students in an elementary school whereby the students use the VR headsets to go on a virtual field trip which most of the time can be encouraging for the students[14]. In summary, although it has been recognized that VR enhances students experiences more studies are required if one is to understand how teachers feel about using of these technologies. There is more work to be done on the state of readiness and willingness of teachers to implement AR as well as VR in classroom among teacher, but majority of teacher are receptive to use AR and VR in their classroom teaching. It is thus important to recognize what shall encourage teachers to embrace a new technology and how this shall be done in relation to the use of AR and VR in teaching[15]-[16]. The purpose of this research is to gain further understanding into how teachers are employing these technologies and what motivates or inhibits them from doing so[18-20].

III. TRANSFORMING EDUCATION THROUGH VIRTUAL REALITY AND AR: BENEFITS, APPLICATIONS, AND CHALLENGES

a. *Virtual Reality*

Virtual technology is gradually revolutionising how technical education is delivered at universities. They provide a rich and engaging mode of learning that is quite interactive compared to the traditional approaches such as in engineering, medical, architecture, and computing disciplines. That is why VR can increase the efficiency of students' comprehension of the subject matter and the application of knowledge in these fields.

i. *Enhanced Learning Experiences*

1. *Immersive Simulations:* Learning through VR targets to enable student engage in some real life scenarios that may be complicated in the real sense. For instance, the engineering students can learn various mechanical layouts as machines and can experiment with variety of changes to see how they can shape the machines with out facing the dangers or costs of involving real prototypes.
2. *Virtual Laboratories:* A medical student can get into a virtual lab and practice dissection or surgery. This enables them to gain knowledge on human body parts and also to exercise their skills in the certain enclosed environment.
3. *Architectural Design:* One of the key ways in which architecture students can apply VR is to get an experience like walking through in a real life their designed buildings. This allows for them to learn how spaces relate to each other as well as how everything looks from the perspective of the first person. They also assist them to review any design flaws which they may need to correct before construction commences.

ii. *Increased Engagement and Retention*

1. *Interactive Learning:* VR brings the normal, monotone lectures to life by allowing the learners to have a practical feel of what is being taught. It allows the students not only sit and listen but also get involved in a virtual environment in which he/she can manipulate 3d objects, and take part in experiments, meeting other students as well. This makes learning to be exciting and more involving for all the people that are present in the class.

2. *Enhanced Visualization*: For instance, in chemistry, with VR, one is able to see the molecular structures or in mechanical engineering one is able to see the detailed mechanisms of certain machines in a better perception. This also ensures that learners have a factual view of whatever is being taught since abstract matter becomes well understood and easier for the students to remember.

iii. *Safe and Controlled Environment*

1. *Risk-Free Practice*: In most areas of training such as electrical engineering or medicine then there is always a lot of risk attached to the practical. As any traditional mean of training, sometimes students can perform dangerous techniques and therefore with VR, they can practice and make mistakes without any risk. For example, medical students can practice surgical operations and handling of emergent situations on mannequins and not real patients.
2. *Repeatable Scenarios*: VR enables the students to go through the procedures or do the experiment repeatedly until they master it. This is especially helpful in technical areas of expertise as it is imperative that practice be repeated often.

iv. *Collaboration and Remote Learning*

1. *Virtual Collaboration*: This makes it possible for students from different places to have a same setting and work as a team in the VR environment. This makes it easier for them to communicate on demanding tasks at the comfort of their respective establishments, which is wonderful for projects that require group work.
2. *Remote Learning*: Having good remote learning tools was highlighted the most by the COVID-19 pandemic, which caused the disruption of normal learning across the world. The implications can assist in transforming conventional classes into virtual classes in which students and teachers interact as they would in physical classes. Thus, education can go on undisturbed at the most extreme when people cannot be in the same physical space.

v. *Case Studies and Implementations*

1. *Stanford University's Virtual Human Interaction Lab*: This lab focuses on the positive of using

VR but in terms of learning and empathy. The pair produce events that provoke feelings and demonstrate how VR can be employed to explain intricate social and psychological concepts to people.

2. *Google Expeditions*: The VR system developed by Google allows students to go for virtual 'field trips' to innumerable locations in the world. This makes it possible for them to have exposures and get to places they may not get to in real life, thus enhancing their learning.
3. *Technical Training*: Technical education is gradually incorporating the use of VR to its training. For example, in mechanical engineering, the students can apply virtual reality to demonstrate how certain machines are used, and how they require repair, all this without having to spend a lot of money on the machinery.

In other words, VR is revolutionizing the methods applied in technical education since learning becomes far more engaging. It provides a safe place for practical exercises, enabling students to collaborate online, and designing reusable knowledge. This makes it a number one tool, particularly in areas where on-the-job experience is vital.

b. *Augmented Reality*

In education augmented reality or AR overlays additional digital information on to the physical world to make learning more interactive. Based on the existing classification there are several types of AR including marker based, marker-less AR, location-based, and projection-based, and those that overlay information. AR can be used with the help of the smartphones, computers, or electronic head gears. AR facilitates the learning process by allowing representation of items such as Animations, 3D models and Video over objects and makes it easier for students when trying to understand concepts. In subjects such as geography, geology, and city planning it has been useful as it allows the students to go on virtual field trips and let's them see and image how buildings appear in actual cities. AR also proves beneficial in transport education by making learning processes more engaging and informative.

Despite its potential, the literature shows a significant gap in comprehensive reviews of AR's pedagogical and technical contributions to higher education. By creating a cutting-edge analysis of augmented reality practices in education that is particularly in line with Industry 4.0 concepts, this study seeks to close these gaps. It aims to

provide conceptual frameworks for augmented reality's use in higher education and pinpoint ways in which AR might lessen the drawbacks of traditional teaching approaches. The intention is to stimulate more study in order to close the existing gaps and enhance augmented reality's application in education. Fig.1. shows the tools and technology used in various AR technologies. There are several types of AR technologies, classified based on the complexity of their outputs. These include location-based AR, superimposition AR, projection-based AR, marker-based AR, marker-less AR, and outline AR. For the purpose of object and location recognition as well as the augmentation process, each type uses a particular set of equipment, tools, and technology. Depending on the objectives of the project, different aspects can be added to the actual world. Animation clips, movies, 3D models, pictures, sceneries, orientation changes, full or partial item replacements, and improvements to already-existing objects with position and depth information as well as invisible lines and boundaries can all be included in this category. Utilizing particular platforms, tools, and interfaces is common while developing augmented reality technologies. Future curricula may incorporate augmented reality (AR)-based objects in a variety of ways when it comes to

teaching and learning at universities. These methods include object and element modelling, primarily used for visualizing drawings, books, and textbooks with AR applications. This facilitates the transition between the virtual and physical worlds. Additionally, AR can be used for process simulation, enabling real-time simulation of process flows, as well as for training and gaming purposes. While diverse technologies and research have focused on different skill sets required for success in education and industry, most reviewed publications emphasize the advantages of incorporating augmented reality (AR)-based technologies into educational settings. Analyzed data confirmed that AR technology enhances teaching and learning by providing engaging and motivating immersive content. This content promotes active student participation and creates a more effective and enjoyable learning environment. AR's interactive content helps students focus by minimizing physical distractions and enhances social skills by improving communication, fostering teamwork and discussion, and encouraging collaboration. Fig.2 shows the Traditional and conventional teaching methods' shortcomings and how they affect students' experiences and abilities in the classroom.

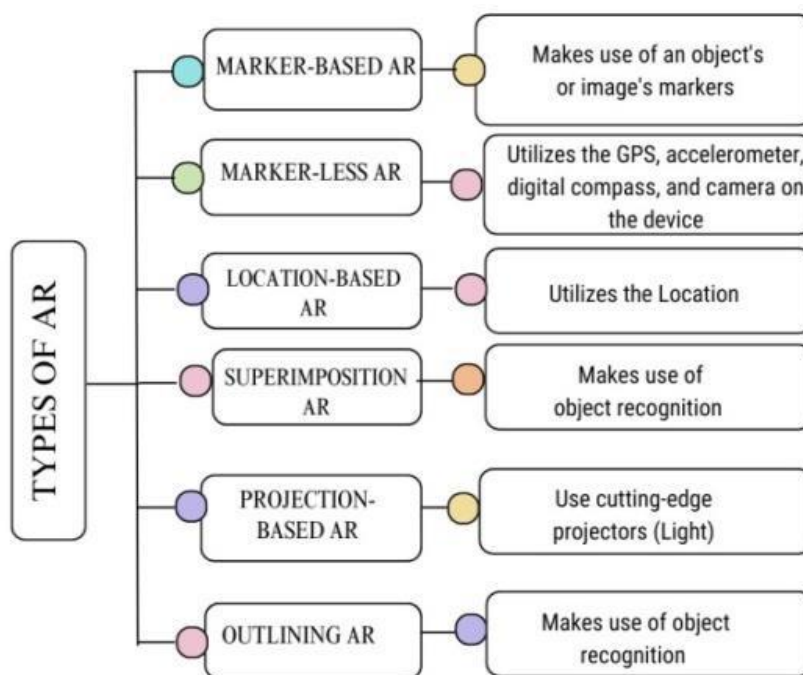


Fig. 1. Tools and technology used in various AR technologies

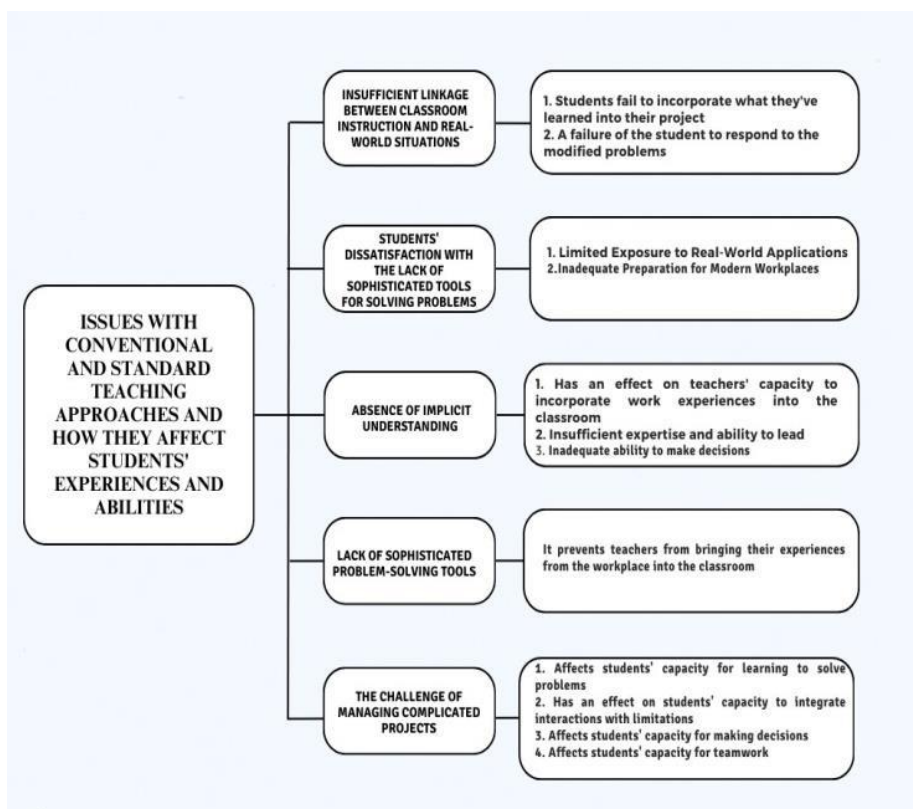


Fig. 2. Traditional and conventional teaching methods' shortcomings and how they affect students' experiences and abilities in the classroom

Although various technologies and studies have targeted Moreover, AR technology is considered a feasible innovation, as it can be accessed through handheld devices, mobile phones, tablets, and other commonly used gadgets. After using AR-enhanced teaching and learning settings, users and students indicated satisfaction and thought this technology was a good fit for higher education. AR positively impacts students' overall performance by enhancing both short-term and long-term learning. Technology-enhanced environments help students achieve more persistent learning through three-dimensional virtual content, leading to deeper and longer-lasting knowledge retention.

i. Benefits

1. *Enhanced Learning Experiences:* AR provides immersive and interactive environments that make learning more engaging and memorable. It can visualize complex concepts, making them easier to understand.

2. *Practical and Safe Training:* AR provides a safe space for students to practice and experiment without any risk. This is especially helpful in fields like medicine,

engineering, and technical education, where hands-on training is crucial but can be risky.

3. *Increased Motivation and Engagement:* By adding game-like features and interactive content, AR can make learning more fun and engaging, helping to boost students' motivation and interest in the subject.

4. *Improved Spatial Understanding:* AR helps students understand 3D landscapes and spatial ideas better, which is especially useful in subjects like geography, geology, and urban plan

5. *Accessible and Cost-effective Tools:* AR technology can be added to devices students already have, like smartphones and tablets, making it a budget-friendly option for schools and colleges.

ii. Applications

1. *Virtual Field Trips:* AR lets students explore various places and environments without having to leave their classroom, offering them virtual real-world experiences..

2. *Simulations and Labs:* AR can set up virtual labs and simulations for subjects like physics, chemistry, and engineering. This lets students run experiments and learn about processes in an interactive way.

3. *Geography and Geology*: AR offers 3D views of landscapes and geological formations, making it easier for students to understand and stay engaged with these subjects.

4. *Medical and Technical Training*: AR provides simulations for medical procedures and technical skills, giving students hands-on practice in a safe and controlled setting.

5. *Urban Planning*: AR lets you project virtual buildings and structures onto real-world environments, which is great for studying urban development and spatial planning.

iii. Challenges

1. *Perception as Entertainment*: AR is often seen mainly as a tool for gaming or entertainment, which can overshadow its real potential and benefits for education

2. *Technological Discomfort*: Using AR devices for long periods can lead to discomfort, like nausea and dizziness, which may make people less willing to use the technology.

3. *Resistance to Change*: Older educators might stick with traditional teaching methods rather than adopting digital tools like AR, which can slow down the use of this technology in classrooms.

4. *High Development Costs*: Developing and using AR resources can be costly, and there isn't always a standard way for schools to create and share these tools, which can make it harder to implement them effectively.

5. *Resource Interoperability*: Since there are no set practices of using AR content in schools, it is a challenge to share resources between schools. This leads to the creation of several working groups thus creating several distinct teams to work on the dully.

IV. METHODOLOGY TO INTEGRATE VR AND AR IN TEACHING AND LEARNING PROCESS AT UNIVERSITIES

Introducing technical education into Augmented Reality (AR) and Virtual Reality (VR) results in improving teaching and learning processes. These realistic tools enhance the teaching learning process by making it more explorative in that the students can make concepts real and work on exercises virtually. Therefore, to implement AR and VR in class effectively, it would be relevant to provide for a well-coordinated approach that meets the concerns of the learning context. Here is an easy way to institute AR and VR into

university technical programs a step by step guide. This framework aids in making these technologies to be incorporated within the curriculum in a manner that responds to learning objectives and needs to be grounded on adequate support in terms of training. In pursuing this goal, the reader is left with a concrete road-map that will enable educators and administrators to enhance their use of AR and VR technologies in order to enhance learning for students and prepare them for the modern workplace.

The proposed steps for integrating AR and VR into technical education include:

a. Needs Analysis

i. *Identify Educational Objectives*: Test which particular educational targets and outcomes can be enhanced with the help of AR and VR.

ii. *Stakeholder Consultation*: The importance of relevant information collected from the teachers, students, and professionals in the field is established to comprehend what people require and expect from AR and VR in education.

iii. *Gap Analysis*: Learn more about the current teaching practices and determine for what aspects of teaching AR and VR might be most applicable and improve the process.

iv. *Resource Assessment*: Check the available resources such as the available funds, the available space and any expertise present.

b. Technology Selection

i. *Market Research*: More information on the various AR and VR tools and platforms that will be most suitable for your project.

ii. *Vendor Partnerships*: Go to technology firms to source for equipment or obtaining the most suitable software for use.

iii. *Scalability and Compatibility*: Ensure that the selected technologies are scalable and compatible with the existing technologies in your organization.

c. Curriculum Integration

i. *Course Mapping*: Determine which selection of courses and modules would benefit the most from implementing AR and VR.

ii. *Content Development*: Develop AR & VR content in the form of lab simulations, concept models, or some sort of models that you may apply based on curriculums.

iii. *Pilot Programs*: Start pilot projects in several selected subjects as it is still unclear how effective the AR and VR tools are and to gain some feedback.

d. Training and Support

i. *Professional Development Programs*: Display seminars and training sessions which can assist the teachers in familiarizing themselves with the uses of AR and VR technologies.

ii. *Student Orientation*: Conduct awareness creation exercises in a bid to familiarize the students with AR and VR technology and how they can be adopted in their learning activities.

iii. *Technical Support*: Create a support team who in a bid to address issues of technicality and troubleshooting.

e. Implementation and Rollout

i. *Infrastructure Setup*: Install the required hardware and software as well as VR/AR applications, headsets, and AR equipment.

ii. *Incremental Rollout*: This will involve starting out with a few courses in order to find out how the technology works and how it could be implemented further on down the line to other courses and departments.

iii. *User Guides and Resources*: Provide easily accessible steps and tools that its adopters, students and teachers, may use to beneficially implement the use of AR and VR.

f. Evaluation and Feedback

i. *Evaluation Tools*: Provide ways of assessing how far the use of AR and VR in teaching is far in achieving its goal.

ii. *Feedback Channels*: Develop a feedback system for the teachers and students about their experiences of using AR and VR.

iii. *Review and Improve*: Using the feedbacks and assessments collect information on how to improve the AR and VR.

g. Sustainability and Scalability

i. *Funding and Budgeting*: Make sure that you have continuous inflow of funds and make sure that adequate amount is allocated for consistent updating and for growth of AR and VR technology.

ii. *Continuous Improvement*: AR and VR's content, as a rule, should be updated frequently depending on the received feedback and the latest advancements of technology.

iii. *Policy Creation*: Formulate policies and procedures for the implementation of AR and VR within the classroom.

h. Collaboration and Partnerships

i. *Work with Industry*: Organise industry collaborations so that students can learn from experts about contemporary examples and scenarios.

ii. *Research Partnerships*: Conduct research on how additional fields of knowledge AR and VR can be applied on.

iii. *Create a Community*: Create a platform for sharing experiences that teachers and students are currently employing in their classes regarding the application of augmented reality and virtual reality.

To incorporate AR and VR into their programs, universities require a roadmap that will guide the process, right from the starting point. This should require, creating this plan, inviting inputs for everybody concerned, how these technologies may be incorporated in the curriculum, prepare setting up all that is needed for these technologies, training all the teachers, bring in the changes gradually, and assess how things are going. Thus, by following this approach, universities will be in a position to get the best out of AR and VR in serving the best interest of the students and offering enhanced learning and outcome.

V. IMPLEMENTATION STRATEGIES AND USE CASES

Integration of AR and VR to universities entails acquiring the right equipment and software, integrating these technological tools into some courses and training the professors and learners. It may comprise virtual emulations to facilitate practical activities in a safe manner, modeling to explain key concepts as well as augmented reality to allow exploration of distant or past sites. That way it is possible to enhance the learning outcomes, how people interact with the content, and the experience in general.

a. Implementation Steps

i. Infrastructure Setup

1. *Hardware Setup*: Place Virtual Reality headsets, Augmented Reality devices, as well as other needed equipment in the classes and laboratories.

2. *Software Installation*: Place applications, platforms and tools for VR and AR on university

servers and personal devices of students and teachers.

3. Network Readiness: Make sure that all associations or incorporated confines are capable of providing high bandwidth and low latency that are ideal for delivering efficient augmented and virtual reality.

ii. Curriculum Integration

1. Course Mapping: Identify major areas of learning where with the integration of AR and VR it will create a significant impact.

2. Create Content: Create or locate interesting materials that comes in form of virtual laboratories, simulations, or models compatible with AR and VR.

3. Pilot Programs: The AR and VR can be integrated as pilots in some of these courses to see how effective they are, and then adequate feedback from the students as well as teachers is collected to optimize the results.

iii. Faculty and Student Training

1. Professional Development: Invite teachers to workshops and training sessions and make sure that they get acquainted with the main principles of using AR and VR in a lessons.

2. Student Orientation: Schedule meetings to explain to the students about the use of AR and VR in learning and demonstrate to them how the technologies will be implemented in their modules.

3. Ongoing Support: Provide constant assistance where necessary to guarantee that people use AR and VR appropriately.

iv. Evaluation and Feedback

1. Evaluation Tools: Find ways in which it is possible to assess the extent to which learning objectives are being met through use of AR and VR, level of satisfaction of the users and their level of active participation.

2. Feedback Channels: Implement methods by which students and teachers can present their opinions and interactions with AR and VR.

3. Review and Improve: Periodically review the comments and scores collected to make revisions and enhance the process of utilizing AR and VR.

b. Use Cases

i. Virtual Laboratories

1. Science and Engineering: Provide digital simulations so that students can perform experiments

with minimum hazards by handling dangerous substances, or to prevent them from destroying costly apparatuses.

2. Medical Training: It is preferable to create imitation of surgeries and other examinations and operations to let the students to have the flexible and controlled practice.

ii. Interactive Simulations

1. Physics and Chemistry: Introduce AR and, essentially, VR to make students 'watch' molecule formations or forces and 'feel' reactions. *Engineering:* Make the solid objects that is difficult to be illustrated to the students or which is difficult to be understood by them such as the engine, circuits, structures etc., and let the student to 'manipulate' the scarcely understood thing.

iii. Virtual Field Trips

1. Geography and Environmental Science: Illustrate to the students other regions, other setting and natural phenomenon that cannot be observed in the classroom.

2. History and Archaeology: From this perspective, selected sites can be students' historic locations and ancient cultures in Virtual Reality, thus, making real 'recreation'.

iv. Enhanced Visualization

1. Architecture and Design: Use VR insofar as once more students can only be allowed to 'stroll' through architectural projects and models that are recreated using an application of 3D. That is useful to them because it provides them with better resolution of space and detail in interior design.

2. Art and Culture: Make it possible for students to have the Real Life Experience through the virtual version of the artworks, sculptures and the cultured products. This in a way, arm them with a glance and probable better comprehension of such items.

v. Collaborative Learning Environments

1. Group Projects: To implement, create ethos that a student can collaborate with his peers irrespective of the geographical location they are in with regards to group assignments. This promotes the culture of constructiveness and generally the wellbeing of the team work; although the team members are not necessarily in the same location.

2. *Virtual Classrooms*: Develop a virtual teaching context that possesses elements that are so realistic that students have likened them with actual courses. This in turn alters student's participation and ensures that however many activities are conducted in class, the effectiveness of the activity is enhanced and the learning process made more enjoyable.

vi. Skill Development and Training

1. *Technical Skills*: Training through virtual reality involves the technical activities such as welding, machining, assembling, amongst others. This enables the students to perform these specific tasks on the simulation as they at the same time perform the practical on the real equipment.
2. *Soft Skills*: It can also be mentioned that with the help of AR and VR students can also improve the specific soft skills. For example, the students can solve conflicts, work in teams, or present in the virtual one that brings them confidence when interacting in real-life circumstances.

The use of AR and VR, thus, has a possibility of making the learning that students, who are in universities have, better by presenting the knowledge in a more appealing way. Whereby with the implementation of necessary technologies such as putting strong framework, training facilitators as well as students and constantly evaluating the program of a university, these technologies can improve the conventional absence of systematic approaches, enhance the students' comprehension of the tough concepts and prepare the students for their next endeavours. Fundamentally, the measures and samples have well illustrated how universities can integrate AR and VR into learning systems and the steps involved.

VI. RESEARCH GAP AND FINDINGS

a. Research Gap

- i. *Despite* the fact that the concept of integrating AR and VR into the extent of university education shows a great potential, there are several aspects that need further discussion. The effects of remote proctoring, virtual classrooms and online learning on the memory of students in their academics have not been well explored as most are in the short run and pilot studies. Moreover, there is little knowledge about the achievements of the usage of AR and VR in various grades and subjects in school or about the change of the respective tools according to the learner type. There are also few work done with relation to how expandable and cost effective it is to implement AR and VR in education.
- ii. *User Interaction and Feedback*: One of the challenges that I have identified in order to help educators get the best of the use of VR and AR in the classroom includes: Mention as to how the users engage with the technology and give feedback to the VR and AR systems? As of now, using voice commands, or hand gestures, there may sometimes be a misunderstanding as to what the users wish to express. Even more, the actual touch sense of users or the touch feedback that they get as well as the Field-of-View or FOV of what they perhaps need to see to qualify these interactions as very real and as effective as they could be, may also be quite limited. There are points that could be examined in greater detail in order that these aspects be enhanced, so that the VR and the AR tools became much more effective and interesting for the students could be examined.
- iii. *Cybersickness and Navigation*: Some questions to be managed are: More investigation is needed to address the issue of cybersickness, which happen when information from the virtual environment corresponds in conflict and leads to discomforts or nausea. The subsequent research should be concentrated on the enhancement of VR and AR devices' design and on the creation of the controls that enable the user to reduce these phenomena. Improvement of the functions of such systems can help to achieve a more comfortable condition for virtual environment interactions and worldwide entertainment.
- iv. *Systems and Networking*: The article shows us that there is still much to learn in order to combat synchronization issues and or latency issues when many users are interacting in VR and or AR environments. Investigations should be made on how to address such delays as well as enhance how data is transmitted together with the visuals to make it more integrated and seamless for the users.
- v. *Content Management and Privacy*: Further steps have to be taken regarding issues, how to approach the issue of user-generated content and how to incorporate privacy notices into the fields of vs virtual and augmented reality in education. These are the rules of how content can be uploaded and shared, how user's privacy will be protected, and how

copyright questions can be answered to protect both content contributors, and consumers.

b. Research Findings

- i. Enhanced Engagement and Understanding:** Integrating of AR and VR technologies has been proved to enhance students learning engagement and understanding. These tools enable the students to learn and rehearse the intricate ideas in the virtual laboratories and simulated websites and applications. This approach makes hard concepts easier to explain and it improves competence because learning is by practice, all happening in a protected area.
- ii. Improved Practical Skills:** While training skills that might not be easily practised, Training and practicing with the help of AR and VR has been shown be very effective. Virtual simulations give students an opportunity to train on procedures and on operation procedures, which qualify them when faced with scenarios that call for such training in real life. Such an approach is able to eliminate the gap between theoretical learning and practical experience as the students get to be exposed to a practical environment.
- iii. Challenges in Implementation:** It is clear from the above discussions that while adopting AR and/or VR there are advantages because of the increased engagement and better appreciation of a concept or model but there are also disadvantages. Such as high costs, technical challenges, and necessity for faculty and students to be trained, for them to fulfill their new roles. Solving these problems is critical to helping the concepts of AR and VR go mainstream and be used extensively in learning. Overcoming them, we will be able to ensure that these technologies are utilised to the maximum potential and become helpful tools for learning.
- iv. Need for Continued Research:** These are some research questions: Long-term effects of AR and VR in students; Comparing the effectiveness of different types of subjects with the use of AR and/or VR; Financial viability of the application of AR and VR in learning environments across contexts. This research will be very useful in enhancing how AR and VR is delivered in schools and make sure maximum benefits out of these technologies are derived.
- v. Enhanced Engagement and Interaction:** Some other technologies like virtual reality (VR) and augmented reality (AR) developed for the

educational process can significantly increase learning processes involvement and interest of students. Nevertheless, on these initially developed technologies, there is a problem of the interaction between users and the technologies, as well as the feedback process.

- vi. Synchronization and Performance:** As noted earlier for smooth and un-interjected learning virtues in both VR and AR classroom courses, there is a need to have the best synchronization coupled with the least possible lag time. With an option to choose regional servers and applying complex rendering it is still possible to control the flow of data transmission and guarantee the real-time performance.
- vii. Content Creation and Privacy Concerns:** With VR and AR set to revolutionize the way that people make and collaborate on content there are apparently large issues regarding content handling and, principally, privacy. But we can't forget about the safety of the content, and safety of the users themselves while constructing truly safe conditions for learning.

VII. CONCLUSION

Virtual Reality (VR) and Augmented Reality (AR) can play a significant role in transforming the ways in which university education is delivered, since these technologies enhance the attractiveness and interactivity of educational process. Many of these technologies make it easier for students to grasp and retain what they learn by integrating virtual and actual experience. They can offer the opportunities to rehearse the skills in safety, can support distance learning and teaming of students and enable students develop industry skills. But for the VR and AR to become popular in universities, there are some obstacles including the problem of high cost, problem of good technology system and the problem of training teachers. In any case, to ensure that all these technologies are used optimally and that students are prepared for the new and globalised world of workplace, more research and development on these tools is crucial.

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