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Highlights

- Cognitive Aspects of Adults
- Higher Education Teaching Philosophy
- Making Inclusive Education Policy
- Junior High School Educators' Strategies

Discovering Thoughts, Inventing Future

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Cognitive Aspects of Adults and Older Adults with Hearing Loss, Users or not of Hearing Aids: A Meta-Analysis

By Everton Adriano de Morais, Israel Bispo dos Santos, Giselle Massi, Gloria Ravazzi, Carolina Lamonica Batista Marques, Ana Carla Garcia, Amanda Monteiro Magrini, Kyla Munoz Galarza, Jéssica Raignieri, Adriana Lacerda & Ana Cristina Guarinello

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Abstract- *Purpose: Evaluate cognitive aspects in adults and older adults with hearing loss who use hearing aids, compared to those with hearing loss who do not use hearing aids.*

Research Strategies: A systematic search across seven databases and gray literature until May 10, 2022, sought studies of individuals aged >18 with hearing loss.

Selection Criteria: Both interventional and observational analytical studies were included, without language or publication date restrictions.

Data Analysis: Seven articles were included, revealing a correlation between cognitive aspects, hearing loss, and hearing aid use in adults and older adults. Comparisons were made between hearing aid users and non-users using validated cognitive questionnaires. Risk of bias assessment was assessed using the Joanna Briggs Institute Critical Assessment Checklist, followed by random effects meta-analysis. The GRADE tool determined certainty of evidence.

Keywords: *adults, older adults, hearing loss, hearing aids, cognition, cognitive decline.*

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Cognitive Aspects of Adults and Older Adults with Hearing Loss, Users or not of Hearing Aids: A Meta-Analysis

Everton Adriano de Morais [α], Israel Bispo dos Santos [σ], Giselle Massi [ρ], Gloria Ravazzi [ω], Carolina Lamonica Batista Marques [¥], Ana Carla Garcia [§], Amanda Monteiro Magrini [χ], Kyla Munoz Galarza [ν], Jéssica Raignieri [Θ], Adriana Lacerda [ζ] & Ana Cristina Guarinello [£]

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Results: Hearing aid users exhibited improved Mini Mental State Examination (MMSE) performance (MD = -1.47; CI95% = -2.53 - -0.40; I2 = 7.21%), albeit with low certainty.

Conclusion: While MMSE results indicated possible cognitive benefits for adults and older adults using hearing aids, the evidence remains uncertain. Developing a comprehensive psychological assessment tool encompassing language, memory, attention, executive functions, and socialization is recommended to ensure accurate evaluations of this population's health.

Keywords: adults, older adults, hearing loss, hearing aids, cognition, cognitive decline.

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I. Introduction

As individuals age, their body undergoes several physical and biological changes that can impact their quality of life. Among these changes, hearing loss and cognitive decline are common. Regarding hearing, it should be noted that hearing impairment is the third most prevalent chronic condition in individuals aged 65 years or older, affecting approximately one-third of this demographic[1].

Sensorineural hearing loss can give rise to emotional, social, and auditory consequences, as well as impact cognitive domains, including as memory and executive functions. Some authors suggest that the decline in temporal lobe structures, which play a vital role in auditory processing, may be associated with these changes[1].

One way to mitigate these declines is through the effective use of hearing aids (HAs), which can enhance sound reception and, consequently, improve language comprehension[2]. Additionally, the use of

hearing aids can stimulate the reactivation of neurons, revitalizing or strengthening neural networks that might otherwise be compromised due to age-related declines [3; 4]. Moreover, the use of hearing aids can contribute to an overall improvement in quality of life[5;6].

When considering the cognitive aspects in patients with hearing loss who use cochlear implants, a comprehensive meta-analysis noted that the cognitive improvements after cochlear implantation depend on time and the cognitive task assessed [7].Regarding the cognitive functions of hearing aid users, there is a scarcity of systematic reviews addressing this topic. Therefore, this systematic review aims to evaluate the cognitive aspects of adults and older adults with hearing loss who are hearing aid users, in comparison to individuals with hearing loss who do not use hearing aids.

II. Methods

This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Checklist[8].

- Eligibility Criteria

The acronym PICOS was utilized to determine the eligibility of studies included and excluded in this review, based on the following criteria.

- Population (P)

Studies were included if the sample comprised patients aged 18 years or older (adults and older adults) with hearing loss. Studies that exclusively focused on individuals without hearing loss or populations not composed of adults (>18 years) were excluded. Studies in which hearing loss was associated with mental disorders or conditions such as Alzheimer's disease or dementia were also excluded. There were no exclusions based on the gender or ethnicity of the population.

- Intervention (I)

Studies were included if the intervention of interest was the use of hearing aids. Studies involving users who underwent cochlear implant procedures were excluded.

- Comparison (C)

Controlled studies that compared hearing aid users and non-users or pre- and post-use of hearing aids were included. Non-controlled studies or studies that evaluated the outcome of interest in only one of the groups were excluded.

- Outcomes (O)

Studies that assessed cognitive aspects using validated questionnaires were included. Studies that did not assess the desired outcome or used non-validated assessment tools were excluded.

- Study Design (S)

Randomized, pseudo-randomized, non-randomized clinical trials, cohorts, case-control, and cross-sectional studies were considered eligible for inclusion. Descriptive studies, reviews, case studies, letters to the editor, case series, expert opinions, and guidelines were excluded. There were no exclusions based on language or date of publication.

- Information Sources and Search Strategy

Appropriate truncations and combinations of words (descriptors and free terms) were performed and adapted to the following electronic databases: EMBASE, Latin American and Caribbean Health Sciences Literature (LILACS), LIVIVO, PubMed/Medline, PsycInfo, Scopus and Web of Science (Appendix 1). The search in the gray literature was also used as a source of information, being carried out in Google Scholar, ProQuest Dissertation & Theses and Open Grey. The searches were carried out on August 10, 2021, and updated on May 26, 2022. The references found were managed using EndNote® X7 software (Thomson Reuters, Philadelphia, PA), and duplicate references were excluded.

Further, a manual search of the references of the included articles, and consultation with a researcher with expertise on the subject, was carried out to check for any relevant articles not retrieved by the search strategy.

- Selection Process

The article selection process was conducted in two phases, with each phase performed independently by a pair of reviewers.

Prior to starting the study selection, a reviewer calibration was conducted to ensure consistency in article selection. For this, the Kappa Coefficient of Concordance was calculated based on a preliminary literature search for this purpose. The selection of studies started only after achieving a coefficient value of > 0.7, indicating satisfactory agreement. During the first phase, the titles and abstracts retrieved were independently reviewed by the reviewers. Articles that did not meet the eligibility criteria were excluded at this stage. In the subsequent second phase, the selected studies were read in their entirety, again independently. In cases where discrepancies arose between the two reviewers and were not resolved through discussion, a third reviewer was consulted for a final decision.

To ensure transparency, independence, and confidentiality throughout all stages, the Rayyan website (http://rayyan.qcri.org) was used to manage the article readings. A team member, who was not involved in the selection process, acted as a moderator, overseeing the reviewers' activities at each phase.

- Data Collection Process

The same reviewers independently collected all the information from the articles and, when necessary, discussed it with two other team members. The collection process consisted of analyzing the research structure of the studies, as well as their characteristics

(authors, country, and epidemiological design of the study), aspects of exposure or intervention related to hearing loss or hearing aids, results achieved, and main conclusions related to the outcome of interest.

- Data Items

The mean score, along with the respective standard deviation and sample size for each group, was extracted from the included articles for each validated questionnaire used.

- Study Risk of Bias Assessment

The methodological quality of the included observational studies was assessed using the Joanna Briggs Institute Critical Assessment Checklist [9]. This stage involved three reviewers who independently evaluated the articles. Each evaluation domain was categorized as "yes" or "no" based on the appropriate checklist for the specific study design. Studies were classified as having a "high" risk of bias if the percentage of "yes" obtained was between 0 - 50%, a "moderate" risk of bias if between 51 - 69%, and a "low" risk of bias if above 70%. Discrepancies, if any, were resolved through discussions involving a fourth reviewer. For randomized interventional studies, the Cochrane Collaboration's tool for assessing risk of bias in randomized trials (ROB) was used. This tool encompasses seven domains: randomized sequence generation; allocation concealment; participant and professional blinding; outcome assessor blinding; incomplete outcome data; selective reporting; and other outcomes. Data for this analysis were categorized based on information provided in the study. In cases where details where insufficient to make an accurate judgement, the domain was marked as "uncertain."

- Effect Measures

For group comparisons, the calculation of the difference between means (DM) was used, comparing the mean scores of the hearing aids user and non-user group.

- Synthesis Methods

A random effects meta-analysis, weighted by the inverse variance method, was conducted using the DerSimonian and Laird estimator for the calculation of variance (Tau^2). The Higgins inconsistency index (I^2) was used to quantify the heterogeneity in the analysis. The significance level adopted was 5% and corresponding 95% confidence intervals (95%CI) were computed. The analyses and the forest plot were performed using Stata version 16.0 software (Stata Corp LLC, College Station, USA).

- Reporting Bias Assessment

Due to the inability to assess reporting bias through funnel plot analysis ($n < 10$), a comprehensive search strategy was employed, including the inclusion of a non-English language database (LILACS), to mitigate the potential for this bias.

A subgroup analysis was also conducted to ascertain the effect size for each epidemiological design of the studies included with the meta-analysis.

- Certainty Assessment

The certainty of evidence was assessed using the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) tool [10]. This tool assesses the certainty of the evidence generated at four different levels: very low, low, moderate, and high, considering five domains for assessing certainty: risk of bias, inconsistency of results, indirectness of evidence, imprecision, and publication bias.

III. Results

a) Study Selection

From the search strategy, 7187 articles were retrieved from the seven electronic databases after removing duplicate articles. In the first phase, involving the review of titles and abstracts, 37 articles were selected for full reading. Of this total, 30 were excluded (Appendix 2), leaving seven for analysis and qualitative synthesis (Figure 1).

No additional articles were included from the manual search or review of the gray literature.

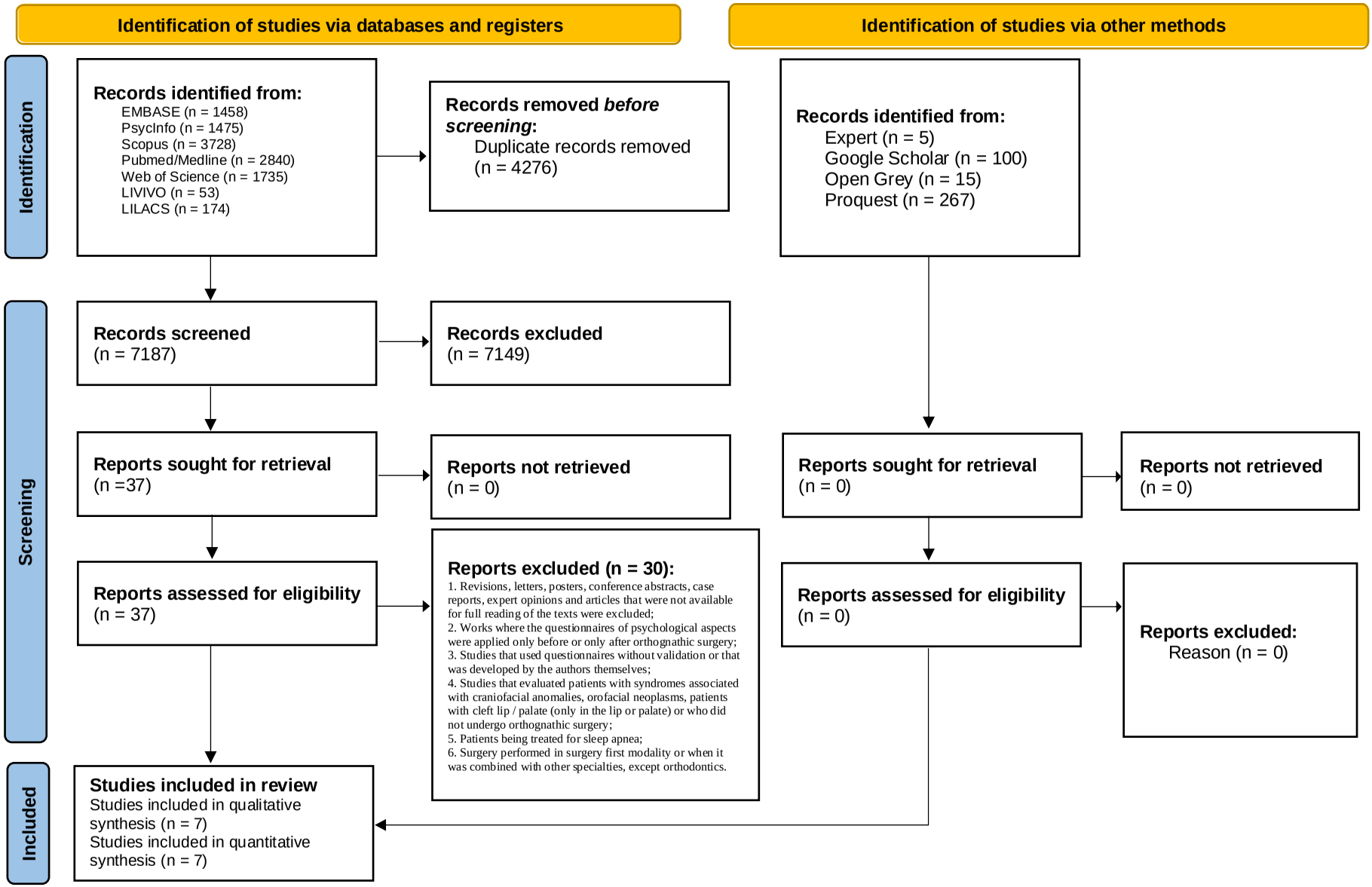

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Figure 1: PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources

b) Study Characteristics

Of the 7 articles included in the systematic review (Table1), all were published between 2011 and 2020. The selected studies encompassed various study designs, including cross-sectional observational, cohort and case-control design. One study was classified as a randomized interventional study.

The focus of these studies was on cognitive aspects and their association with hearing loss in adults and older adults. Table 1 provided a description of the study details, including authorship, publication year and country, study design, sample size, and mean age of participants, questionnaires used, results and conclusions. All the information presented was extracted from the included articles.

In the selected studies, the following psychological instruments were used for cognitive assessment of adults and older adults with hearing loss, users and non-users of hearing aids: Montreal Assessment Cognitive (MoCA) [4]; Mini Mental State Examination (MMSE) [11]; Wechsler Adult Intelligence Scale (WAIS) [12]; Visual Verbal Test; International Outcome Inventory for Hearing Aids (IOI-HA); Neupsilin [13]; The computerized Korean visual verbal learning test (VVLT) and Words-In-Noise (WIN) [3].

Table 1: Analysis and Qualitative Synthesis of the Articles

Author, Year, Country	Study design	Sample/Range or Mean Age	Questionnaire	Outcomes	Conclusion
Ávila VD, et al. 2011 (Brazil)	Cross-sectional	The sample consisted of 15 participants while 7 were male gender and 8 were female gender (MA = 73,3 ± 5,89)	IOIHA and MMSE	Regarding two groups: status normal Mini Mental (MMSE) and altered it was observed that most of the hearing aid user for a long time belongs to the group without cognitive impairment.	It was observed a trend of improved performance with hearing aids in participants without cognitive impairment
Choi AY, et al. 2011 (Korea)	Cohort	The study group comprised 18 participants (MA = 69.5 ±8.3 years) with sensorineural hearing loss who were fitted with HA and the control group comprised 11 participants (MA = 63.1±11.8 years) who were not fitted with HA	VVLT and WIN	There was no difference in mean age between the study group and control group. In the study group, total VVLT score (reflecting short-term memory) was significantly improved from before hearing aid use to 6 months after hearing aid use (P<0.05), and VVLT recognition score (reflecting learning ability) was also significantly improved from before hearing aid use to 6 months after hearing aid use (P<0.05), but there was no change in the control group. For VVLT latency score (reflecting efficiency of memory) and speech discrimination score in the WIN test, no statistically significant difference was found between the initial and 6-month assessments in the study group or in the control group (P>0.05)	The speech-related cognitive function of individuals with hearing impairment improved after using hearing aids. This finding indicates that hearing aids may induce acclimatization of the central auditory system.
Fell AC, Teixeira, AR. 2015 (Brazil)	Cohort	Thirteen participants were assessed before and three months after the fitting through the Mini-Mental State Examination (MA = 77 ± 9,02 years).	MMSE	It was found that there was a positive and significant correlation between scores in pre- and post-fitting,	The use of hearing aids improve performance in cognitive screening test (MMSE).

Fernandes DE, et al. 2021 (Brazil)	Randomized controlled trials	Three groups according to hearing aids technology: (A) premium; (B) basic; and (C) no amplification hearing devices.	NEUPSILIN	After the intervention, was observed differences in attention and memory scores ($p < 0.05$). Only reverse counting (A vs C) and recognition (B vs C) were observed in pairwise comparisons.	The level of technology of the devices had no impact on the overall satisfaction of new hearing aid users and suggest no effect on memory or attention after 12 weeks of use of hearing aids.
Gaeta L, et al. 2019 (EUA)	Case-control	Thirty older adults (60-80 years old) with mild to moderately severe hearing loss (cases) and 30 young adults (18-35 years old) with normal hearing (controls) participated in this study.	MMSE	Analyses between groups revealed no significant difference in MMSE scores. However, within-group analyses showed that education was a significant effect modifier for case participants.	The results suggest that the observed reductions in the MMSE score were mainly due to the loss of audibility of the test item. The negative effects of hearing loss may be greater in individuals with lower levels of educational attainment.
Lunner T. 2003 (Sweden)	Cohort	A total of seventy-two hearing aid users and without the use of HA (MA = 72)	Working Memory test and speed of speech processing.	The results indicate that, after controlling for age and hearing loss, significant correlations exist between the measures of cognitive performance and speech recognition in noise, both with and without hearing aids.	A good cognitive function is important for good performance in demanding listening situations, both with and without hearing aids.
Wong LL, et al. 2014 (China)	Cross-sectional	A total of 34 hearing impaired older adults (MA = 69,9 years ± 5,6). The results obtained in these participants were compared to normative data obtained in a general older population with similar demographic characteristics.	MMSE	Results showed that, even with appropriately fitted hearing aids, cognitive decline was significant.	When screening cognitive function, the presence of a hearing impairment should be accounted even with appropriately fitted hearing aids

c) Risk of bias in Studies

Regarding the risk of bias, observational studies were classified as "low" risk of bias, while the randomized interventional study was considered "moderate" risk of bias [13]. The methodological flaws identified were related to the shielding of outcome assessment and incomplete outcome data.

d) Results of Individual Studies

The included studies link hearing loss to poorer cognitive performance. Conversely, the use of hearing aids was related to better cognitive performance [14; 5; 3; 15; 18; 13]. The findings obtained from various assessment instruments demonstrated a correlation between hearing loss and cognitive impairment. Patients assessed with the MoCA and Mini Mental instruments exhibited subpar cognitive performance [19]. In tests evaluating intelligence and language aspects using the WAIS and Neupsilin instruments, it was observed that adults and older adults using hearing aids tended to achieve higher scores than non-users of hearing aids, particularly in subtests involving verbalization [19]. One study showed that regardless of the initial cognitive performance, hearing aids usage provided social and personal benefits for all evaluated older adults [5]. The data found on intelligence tests provides an understanding of intellectual aspects focused on verbal ability (vocabulary and comparative concepts or similarities) and execution (visuomotor ability and non-verbal intelligence). Another study revealed an enhancement in short-term memory and learning ability following hearing aid usage, an effect no observed among older adults who did not use hearing aids [3]. The Visual Verbal Test [5] and the Neupsilin[13] was applied to analyze and assess memory, attention and language skills. The results indicated that hearing aid users performed better on tasks requiring verbalization and short-term memory, suggesting that the use of hearing aids can help mitigate the effects of hearing loss on these cognitive functions. The International Outcome Inventory for Hearing Aids (IOI-HA) [5] was used to assess the satisfaction and benefits perceived by hearing aid users. This instrument, usually applied after the cognitive assessment, showed that the use of hearing aids provided social and personal benefits, regardless of the initial cognitive performance of the individuals. The computerized Korean visual verbal learning test (VVLT) and Words-In-Noise (WIN) [3]. were used to assess learning ability and word discrimination in noisy environments. The results showed that, even

with the use of hearing aids, individuals showed a decline in cognitive function compared to an older general population without hearing loss, suggesting that hearing deprivation is not completely compensated for using hearing aids.

In general, the data obtained from these tests indicate that hearing loss is associated with cognitive impairment, but that the use of hearing aids can mitigate some of these effects, especially in areas related to language and verbal memory. However, even with proper fitting of the devices, cognitive decline can persist, highlighting the need to consider mild or moderate hearing loss when screening cognitive function, even among hearing aid users. The authors cited in the data analysis state that this is because auditory deprivation is not being completely compensated for using ISADs, making it necessary to consider mild or moderate hearing loss, even in ISAD users when screening cognitive function [16].

e) Results of Syntheses

Three studies were eligible for inclusion in the meta-analysis, and only the MMSE cognitive assessment instrument could be assessed. When comparing the hearing aid user and non-user groups, a statistically significant difference was observed for the ISAD user group, indicating improved performance (MD = -1.47; CI95% = -2.53 - -0.40; I2 = 7.21%), albeit with a small effect size.

f) Reporting Biases and Certainty of Evidence

Among the three studies included in the quantitative synthesis, only one featured a longitudinal evaluation. Consequently, the studies were divided into subgroups based on the control group characteristic assessed, thereby reducing analysis heterogeneity (I2 = 0%; Tau2 = 0.00).

The majority of studied encompassed in the meta-analysis were cross-sectional observational studies. While the analysis revealed no inconsistency (Tau2 = 0.10; I2 = 7.21%) or imprecision (as indicated by a narrow confidence interval), the only study that showed statistical significance held the weight in the analysis due to its larger sample size and lower variance. Consequently, the certainty of evidence was classified as very low.

IV. Discussion

The primary objective of this systematic review was to investigate and analyze - from national and international literature - cognitive aspects in adults and older adults with hearing loss who are users of hearing aids as compared to those who do not use hearing aids. Generally, the results from the 7 eligible articles for review presented partial and inconclusive insights concerning the association between hearing loss and cognition, indicating limited or negligible effects of hearing aid use on the cognitive processes of adults and older adults.

One crucial variable to consider is the cognitive aspects of adults and older adults with hearing loss and the appropriate instruments are used for this population. In the selected studies, 8 instruments were identified: Montreal Assessment Cognitive (MoCA) [4]; Mini Mental State Examination (MMSE) [11]; Wechsler Adult Intelligence Scale (WAIS) [12]; Visual Verbal Test; International Outcome Inventory for Hearing Aids (IOI-HA); Neupsilin[13]; The computerized Korean visual verbal learning test (VVLT) and Words-In-Noise (WIN) [3]. However, none of these instruments were specifically tailored for individuals with hearing loss. While the objective of the instrument is to assess psychological aspects, with emphasis on cognition, it is crucial to consider the patient's sensory state when evaluating cognitive performance [5;15; 1; 13].

Several studies strive to understand the correlation between hearing loss, cognition, and hearing aid use, employing the instruments. One study found that individuals with hearing loss typically have low scores in cognitive assessment tests, noting that evaluations often neglect the individual's hearing capacity and focus solely on cognitive impairment [19]. This thus underscores the need for adapting cognitive assessment for this population. Based on this premise, studies suggest that the identification of hearing loss is related to cognitive function. Moreover, the best instrument for this population is the MoCA as it assesses mild cognitive impairment, even though it is not specifically designed for individuals with hearing loss [20; 21].

A previous sample study by used verbal-level cognitive tests [22]. This research identified a connection between auditory sensory issues associated with cognitive impairment, suggesting that older adults without hearing loss exhibited higher cognitive test scores than those with hearing loss. Notably, later research [4; 1] observed that cognitive impairment in older adults does not manifest solely within one intellectual domain, such as memory or attention, but rather across multiple domains. Additionally, these authors emphasized the need of considering acoustic competitiveness (noise, casual conversations in the same environment) while evaluating task-solving abilities, as environmental noise can influence an individual's processing speed and task completion during assessments.

Several studies within the sample [14; 3; 15] conducted comparisons between users and non-users of ISAD, revealing statistically significant differences in cognitive screening test scores between the two groups. The findings indicated that adult and older adult users of ISAD tend to have better scores in these tests, so the authors consider the importance of the proper hearing

aid user in contributing to sensory and cognitive improvement.

Additional studies [3; 16; 23] emphasize the importance of assessing the cognitive capacity of older adults, relating it to other variables, such as the degree of hearing loss, the use of hearing aids and how this use is managed. In a preliminary study, researchers found that indications of cognitive decline are linked to various factors, such as hearing deprivation, inadequate hearing aid adjustments, and challenges in fitting the device [16]. Furthermore, other studies explain that factors, such as language gaps, memory and attention deficits, limited education, and daily noise can imped the cognitive process, even with technology intended to enhance hearing. Therefore, it is important to investigate the real circumstances of patients in relation to their cognitive traits and auditory sensory loss for better monitoring of their development [17; 18].

Despite the thorough search for available literature concerning the cognitive aspects of adults and older adults with hearing loss. It is recommended that new studies be conducted to facilitate further investigations. The quantitative analysis conducted in this study through meta-analysis reveals a limitation in terms of research involving cognitive test scores among older adults with hearing loss - both users and non-users of hearing aids. For instance, among the five cognitive tests covered in this study, meta-analytical investigation was only feasible for the MMSE. The other tests did not present possibilities for meta-analysis. Another significant point pertains to the production of studies aimed at exploring multiple domains involving cognitive abilities such as memory, attention, temporal and spatial orientation, processing speed and language.

Conversely, the data derived from this systematic review has contributed to the identification of the performance of adults and older adults with hearing loss who use hearing aids, particularly in terms of overall cognitive characteristics, including memory, attention, and language. Additionally, the data suggests that, in the future, it is necessary to map and build assessment instruments and/or batteries that enable a more comprehensive perspective of the patient with hearing loss, encompassing involves a range of variables to be measured.

V. Conclusion

Older adults with hearing loss, who use appropriately adapted hearing aids, might experience a lesser impact on cognitive functions.

Social aspects and biological factors associated with aging could potentially influence the cognitive decline, even among those individuals who use hearing aids. However, the evidence for this outcome remains uncertain, and further studies are required to ensure greater robustness of the generated estimates. Furthermore, it is important to be careful about the comprehensive assessment of adults and older adults. Despite variations in results, a more comprehensive examination of the individual trajectories of these individuals is necessary. The parameterization of multidomain psychological assessment instruments, with a particular focus on older adults and adults with mild, moderate, and severe hearing impairment, is also recommended.

Data Availability Statement

This systematic review obtained its registration through the PROSPERO (International prospective register of systematic review - Centre for Reviews and Dissemination - University of York) protocol - CRD420 21261320.

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Appendix 1: Search Strategy for Each Electronic Database

Electronic Database	Keyword Search
EMBASE	('hearing aids':ti,ab,kw OR 'hearing aid':ti,ab,kw OR 'ear molds':ti,ab,kw OR 'ear mold':ti,ab,kw OR 'hearing loss':ti,ab,kw OR 'hypoacusis':ti,ab,kw OR 'hearing impairment':ti,ab,kw OR 'persons with hearing impairments':ti,ab,kw OR 'hearing impaired persons':ti,ab,kw OR 'hearing impaired person':ti,ab,kw OR 'hearing disorders':ti,ab,kw OR 'hearing disorder':ti,ab,kw OR 'dysacusis':ti,ab,kw OR 'presbycusis':ti,ab,kw OR 'age related hearing impairment':ti,ab,kw OR 'hearing difficulties':ti,ab,kw OR 'sensorineural hearing loss':ti,ab,kw) AND ('neuropsychological tests':ti,ab,kw OR 'neuropsychological testing':ti,ab,kw OR 'neuropsychologic tests':ti,ab,kw OR 'neuropsychologic test':ti,ab,kw OR 'neuropsychological test':ti,ab,kw OR 'cognitive function':ti,ab,kw OR 'cognitive test':ti,ab,kw OR 'cognitive tests':ti,ab,kw OR 'cognitive testing':ti,ab,kw OR 'cognitive':ti,ab,kw OR 'cognitive aging':ti,ab,kw OR 'mental status and dementia tests':ti,ab,kw OR 'mental status and dementia test':ti,ab,kw OR 'general practitioner assessment of cognition':ti,ab,kw OR 'gpcog':ti,ab,kw OR 'montreal cognitive assessment':ti,ab,kw OR 'mental status tests':ti,ab,kw OR 'mental status':ti,ab,kw OR 'mental status test':ti,ab,kw OR 'neurocognitive tests':ti,ab,kw OR 'neurocognitive test':ti,ab,kw OR 'neurocognitive':ti,ab,kw OR 'neurobehavioral cognitive status examination':ti,ab,kw OR 'cognistat':ti,ab,kw OR 'mini mental state examination':ti,ab,kw OR 'mini mental status examination':ti,ab,kw OR 'mini-cog':ti,ab,kw OR 'clinical dementia rating':ti,ab,kw OR 'clinical dementia rating scale':ti,ab,kw OR 'dementia rating scale':ti,ab,kw) AND ('aging':ti,ab,kw OR 'senescence':ti,ab,kw OR 'old people':ti,ab,kw OR 'older adults':ti,ab,kw OR 'old age':ti,ab,kw OR 'elderly people':ti,ab,kw OR 'biological aging':ti,ab,kw OR 'aged':ti,ab,kw OR 'elderly':ti,ab,kw OR 'adult':ti,ab,kw OR 'adults':ti,ab,kw)
LILACS	("Hearing Aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hypoacusis" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Age related hearing impairment" OR "Hearing difficulties" OR "Sensorineural hearing loss" OR "Aparelhosauditivos" OR "Aparelhoauditivo" OR "Moldesauditivos" OR "Molde auricular" OR "Perdaauditiva" OR "Hipoacusia" OR "Deficiênciaauditiva" OR "Pessoas com deficiênciaauditiva" OR "Problemas de audição" OR "Disacusia" OR "Presbiacusia" OR "Deficiênciaauditivarelacionada à idade" OR "Dificuldades de audição" OR "Perdaauditivaneurossensorial" OR "Audífonos" OR "Audífono" OR "Moldes para losoídos" OR "Molde para losoídos" OR "Pérdida de audición" OR "Hipoacusia" OR "Deficienciaauditiva" OR "Personas con deficienciasauditivas" OR "Personas con discapacidadauditiva" OR "Trastornosauditivos" OR "Trastornoauditivo" OR "Deficienciaauditivarelacionada con la edad" OR "Dificultadesauditivas" OR "Pérdidaauditiva neurosensorial") AND ("Neuropsychological Tests" OR "Neuropsychological Testing" OR "Neuropsychologic Tests" OR "Neuropsychologic Test" OR "Neuropsychological Test" OR "Cognitive Function" OR "Cognitive Test" OR "Cognitive Tests" OR "Cognitive Testing" OR "cognitive" OR "Cognitive Aging" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Test" OR "General Practitioner Assessment of Cognition" OR "GPCOG" OR "Montreal Cognitive Assessment" OR "Mental Status Tests" OR "mental status" OR "Mental Status Test" OR "Neurocognitive Tests" OR "Neurocognitive Test" OR "neurocognitive" OR "Neurobehavioral Cognitive Status Examination" OR "COGNISTAT" OR "Mini Mental State Examination" OR "Mini Mental Status Examination" OR "Mini-Cog" OR "Clinical Dementia Rating" OR "Clinical Dementia Rating Scale" OR "Dementia Rating Scale" OR "Testes neuropsicológicos" OR "Teste neuropsicológico" OR "Funçãocognitiva" OR "Teste cognitivo" OR "Testes cognitivos" OR "cognitivo" OR "Envelhecimentocognitivo" OR "Testes de estado mental e demência" OR "Teste de estado mental e demência" OR "Avaliaçãocognitiva do clínicogeral" OR "Avaliaçãocognitiva de Montreal" OR "estado mental" OR "Teste do estado mental" OR "Testes neurocognitivos" OR "Teste neurocognitivo" OR "neurocognitivo" OR "Exame do estadocognitivoneurocomportamental" OR "Mini exame do estado mental" OR "Avaliaçãoclínica de demência" OR "Escala de avaliaçãoclínica de demência" OR

	"Escala de avaliação de demência" OR "Pruebasneuropsicológicas" OR "Pruebaneuropsicológica" OR "Funcióncognitiva" OR "Pruebacognitiva" OR "Pruebascognitivas" OR "cognitivas" OR "Envejecimientocognitivo" OR "Pruebas de estado mental y demencia" OR "Prueba de estado mental y demencia" OR "Evaluacióncognitiva del médico general" OR "Evaluacióncognitiva de Montreal" OR "estado mental" OR "Prueba de estado mental" OR "Pruebasneurocognitivas" OR "Pruebaneurocognitiva" OR "neurocognitiva" OR "Examen del estadocognitivoneuroconductual" OR "Mini examen del estado mental" OR "Mini estado mental" OR "Calificación de la demenciaclínica" OR "Escala de calificación de la demenciaclínica" OR "Escala de calificación de la demencia") AND ("aging" OR "Senescence" OR "old people" OR "Older adults" OR "Old age" OR "elderly people" OR "Biological Aging" OR "aged" OR "elderly" OR "adult" OR "adults" OR "envelhecimento" OR "Senescência" OR "idosos" OR "Adultosmaisvelhos" OR "Velhice" OR "idosos" OR "Envelhecimentobiológico" OR "envelhecido" OR "idoso" OR "adulto" OR "adultos" OR "envejecimiento" OR "Senescencia" OR "personas mayores" OR "Adultosmayores" OR "Vejez" OR "Envejecimientobiológico" OR "anciano" OR "ancianos" OR "adultos" OR "adultos")
PubMed/Medline	("Hearing Aids"[MeSH Terms] OR "Hearing Aids"[All Fields] OR "Hearing Aid"[All Fields] OR "Ear Molds"[All Fields] OR "Ear Mold"[All Fields] OR "Hearing Loss"[MeSH Terms] OR "Hearing Loss"[All Fields] OR "Hypoacusis"[All Fields] OR "Hearing impairment"[All Fields] OR "Persons with hearing impairments"[MeSH Terms] OR "Persons with hearing impairments"[All Fields] OR "Hearing impaired persons"[All Fields] OR "Hearing impaired person"[All Fields] OR "Hearing disorders"[MeSH Terms] OR "Hearing disorders"[All Fields] OR "Hearing disorder"[All Fields] OR "Dysacusis"[All Fields] OR "Presbycusis"[MeSH Terms] OR "Presbycusis"[All Fields] OR "Age related hearing impairment"[All Fields] OR "Hearing difficulties"[All Fields] OR "Sensorineural hearing loss"[All Fields]) ("Neuropsychological Tests"[MeSH Terms] OR "Neuropsychological Tests"[All Fields] OR "Neuropsychological Testing"[All Fields] OR "Neuropsychologic Tests"[All Fields] OR "Neuropsychologic Test"[All Fields] OR "Neuropsychological Test"[All Fields] OR "Cognitive Function"[All Fields] OR "Cognitive Test"[All Fields] OR "Cognitive Tests"[All Fields] OR "Cognitive Testing"[All Fields] OR "cognitive"[All Fields] OR "Cognitive Aging"[MeSH Terms] OR "Cognitive Aging"[All Fields] OR "Mental Status and Dementia Tests"[MeSH Terms] OR "Mental Status and Dementia Tests"[All Fields] OR "Mental Status and Dementia Test"[All Fields] OR "General Practitioner Assessment of Cognition"[All Fields] OR "GPCOG"[All Fields] OR "Montreal Cognitive Assessment"[All Fields] OR "Mental Status Tests"[All Fields] OR "mental status"[All Fields] OR "Mental Status Test"[All Fields] OR "Neurocognitive Tests"[All Fields] OR "Neurocognitive Test"[All Fields] OR "neurocognitive"[All Fields] OR "Neurobehavioral Cognitive Status Examination"[All Fields] OR "COGNISTAT"[All Fields] OR "Mini Mental State Examination"[All Fields] OR "Mini Mental Status Examination"[All Fields] OR "Mini-Cog"[All Fields] OR "Clinical Dementia Rating"[All Fields] OR "Clinical Dementia Rating Scale"[All Fields] OR "Dementia Rating Scale"[All Fields]) ("aging"[MeSH Terms] OR "aging"[All Fields] OR "Senescence"[All Fields] OR "old people"[All Fields] OR "Older adults"[All Fields] OR "Old age"[All Fields] OR "elderly people"[All Fields] OR "Biological Aging"[All Fields] OR "aged"[MeSH Terms] OR "aged"[All Fields] OR "elderly"[All Fields] OR "adult"[MeSH Terms] OR "adult"[All Fields] OR "adults"[All Fields]) #1 AND #2 AND #3
Web of Science	1.TS=("Hearing Aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hypoacusis" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Age related hearing impairment" OR "Hearing difficulties" OR "Sensorineural hearing loss") 2.TS=("Neuropsychological Tests" OR "Neuropsychological Testing" OR "Neuropsychologic Tests" OR "Neuropsychologic Test" OR "Neuropsychological Test" OR "Cognitive Function" OR "Cognitive Test" OR "Cognitive Tests" OR "Cognitive Testing" OR "cognitive" OR "Cognitive Aging" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Test" OR "General Practitioner Assessment of Cognition" OR "GPCOG"

	OR "Montreal Cognitive Assessment" OR "Mental Status Tests" OR "mental status" OR "Mental Status Test" OR "Neurocognitive Tests" OR "Neurocognitive Test" OR "neurocognitive" OR "Neurobehavioral Cognitive Status Examination" OR "COGNISTAT" OR "Mini Mental State Examination" OR "Mini Mental Status Examination" OR "Mini-Cog" OR "Clinical Dementia Rating" OR "Clinical Dementia Rating Scale" OR "Dementia Rating Scale") 3.TS=("aging" OR "Senescence" OR "old people" OR "Older adults" OR "Old age" OR "elderly people" OR "Biological Aging" OR "aged" OR "elderly" OR "adult" OR "adults") 4.#1 AND #2 AND #3
Livivo	TI=("Hearing Aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hypoacusis" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Age related hearing impairment" OR "Hearing difficulties" OR "Sensorineural hearing loss") AND TI=("Neuropsychological Tests" OR "Neuropsychological Testing" OR "Neuropsychologic Tests" OR "Neuropsychologic Test" OR "Neuropsychological Test" OR "Cognitive Function" OR "Cognitive Test" OR "Cognitive Tests" OR "Cognitive Testing" OR "cognitive" OR "Cognitive Aging" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Test" OR "General Practitioner Assessment of Cognition" OR "GPCOG" OR "Montreal Cognitive Assessment" OR "Mental Status Tests" OR "mental status" OR "Mental Status Test" OR "Neurocognitive Tests" OR "Neurocognitive Test" OR "neurocognitive" OR "Neurobehavioral Cognitive Status Examination" OR "COGNISTAT" OR "Mini Mental State Examination" OR "Mini Mental Status Examination" OR "Mini-Cog" OR "Clinical Dementia Rating" OR "Clinical Dementia Rating Scale" OR "Dementia Rating Scale") AND TI=("aging" OR "Senescence" OR "old people" OR "Older adults" OR "Old age" OR "elderly people" OR "Biological Aging" OR "aged" OR "elderly" OR "adult" OR "adults")
Scopus	TITLE-ABS ("Hearing Aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hypoacusis" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Age related hearing impairment" OR "Hearing difficulties" OR "Sensorineural hearing loss") AND TITLE-ABS ("Neuropsychological Tests" OR "Neuropsychological Testing" OR "Neuropsychologic Tests" OR "Neuro-psychologic Test" OR "Neuropsychological Test" OR "Cognitive Function" OR "Cognitive Test" OR "Cognitive Tests" OR "Cognitive Testing" OR "cognitive" OR "Cognitive Aging" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Test" OR "General Practitioner Assessment of Cognition" OR "GPCOG" OR "Montreal Cognitive Assessment" OR "Mental Status Tests" OR "mental status" OR "Mental Status Test" OR "Neurocognitive Tests" OR "Neurocognitive Test" OR "neurocognitive" OR "Neurobehavioral Cognitive Status Examination" OR "COGNISTAT" OR "Mini Mental State Examination" OR "Mini Mental Status Examination" OR "Mini-Cog" OR "Clinical Dementia Rating" OR "Clinical Dementia Rating Scale" OR "Dementia Rating Scale") AND TITLE-ABS ("aging" OR "Senescence" OR "old people" OR "Older adults" OR "Old age" OR "elderly people" OR "Biological Aging" OR "aged" OR "elderly" OR "adult" OR "adults")
PsycINFO	("Hearing Aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hypoacusis" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Age related hearing impairment" OR "Hearing difficulties" OR "Sensorineural hearing loss") AND ("Neuropsychological Tests" OR "Neuropsychological Testing" OR "Neuropsychologic Tests" OR "Neuropsychologic Test" OR "Neuropsychological Test" OR "Cognitive Function" OR "Cognitive Test" OR "Cognitive Tests" OR "Cognitive Testing" OR "cognitive" OR "Cognitive Aging" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Test" OR "General Practitioner Assessment of Cognition" OR "GPCOG" OR "Montreal Cognitive Assessment" OR "Mental Status Tests" OR "mental status" OR "Mental Status Test" OR "Neurocognitive Tests" OR "Neurocognitive Test" OR

	"neurocognitive" OR "Neurobehavioral Cognitive Status Examination" OR "COGNISTAT" OR "Mini Mental State Examination" OR "Mini Mental Status Examination" OR "Mini-Cog" OR "Clinical Dementia Rating" OR "Clinical Dementia Rating Scale" OR "Dementia Rating Scale") AND ("aging" OR "Senescence" OR "old people" OR "Older adults" OR "Old age" OR "elderly people" OR "Biological Aging" OR "aged" OR "elderly" OR "adult" OR "adults")
PROQUEST	noft(("Hearing Aids" OR "Hearing Aid" OR "Ear Molds" OR "Ear Mold" OR "Hearing Loss" OR "Hypoacusis" OR "Hearing impairment" OR "Persons with hearing impairments" OR "Hearing impaired persons" OR "Hearing impaired person" OR "Hearing disorders" OR "Hearing disorder" OR "Dysacusis" OR "Presbycusis" OR "Age related hearing impairment" OR "Hearing difficulties" OR "Sensorineural hearing loss")) AND noft(("Neuropsychological Tests" OR "Neuropsychological Testing" OR "Neuropsychologic Tests" OR "Neuropsychologic Test" OR "Neuropsychological Test" OR "Cognitive Function" OR "Cognitive Test" OR "Cognitive Tests" OR "Cognitive Testing" OR "cognitive" OR "Cognitive Aging" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Tests" OR "Mental Status and Dementia Test" OR "General Practitioner Assessment of Cognition" OR "GPCOG" OR "Montreal Cognitive Assessment" OR "Mental Status Tests" OR "mental status" OR "Mental Status Test" OR "Neurocognitive Tests" OR "Neurocognitive Test" OR "neurocognitive" OR "Neurobehavioral Cognitive Status Examination" OR "COGNISTAT" OR "Mini Mental State Examination" OR "Mini Mental Status Examination" OR "Mini-Cog" OR "Clinical Dementia Rating" OR "Clinical Dementia Rating Scale" OR "Dementia Rating Scale")) AND noft(("aging" OR "Senescence" OR "old people" OR "Older adults" OR "Old age" OR "elderly people" OR "Biological Aging" OR "aged" OR "elderly" OR "adult" OR "adults"))
Google Scholar	(("Hearing Aids" OR "Hearing Loss" OR "Persons with hearing impairments" OR "Hearing disorders") AND ("Neuropsychological Tests" OR "Cognitive Aging") AND ("aging" OR "adult"))
Open Grey	(("Hearing Aids" OR "Hearing Loss" OR "Persons with hearing impairments" OR "Hearing disorders") AND ("Neuropsychological Tests" OR "Cognitive Aging") AND ("aging" OR "adult"))

Appendix 2: Excluded Articles and Reasons for Exclusion (n=31)

Author, Year	Reason for Exclusion
Al-Yawer F, et al., 2019	2
Ambert-Dahan E, et al., 2017	1
Bruckmann M, Pinheiro MM, 2016	2
Claes AJ, et al., 2018	2
Dong Y, et al., 2018	2
Edwards JD, et al., 2017	2
Ellis RJ, Munro KJ, 2013	2
Gorecka MM, et al., 2018	2
Granick S, et al., 1976	2
Humes LE, 2020	2
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Van Rooij JC, Plomp R. 1991	2
Wingfield A, et al., 2005	2
Yumba WK, 2019	2
Yusof Y, et al., 2019	2
	2

Subtitle

1) Studies in which the population consisted only of people without hearing loss, or studies in which the study population was not adults (> 18 years), or when hearing loss was associated with mental disorders or disorders, Alzheimer's Disease, or dementia; 2) Studies in which none of the groups were composed of hearing aid users, or studies where the sample was composed of cochlear implant users; 3) Uncontrolled studies, or where the assessment of interest was performed only in one of the groups; 4) Studies that did not assess the outcome of interest or where it was assessed by non-validated tools.

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Higher Education Teaching Philosophy: An Academia Research Syllabus Approach

By Joel Laffita Rivera

European College for Liberal Studies

Abstract- The study aims to provide a comprehensive literature framework about the subject it addresses. It uses this approach to develop and put forward a based subject curriculum setting for academic research-doing classrooms. The syllabus is the guideline that, bests distinguish the teaching high-performing management at university level. It is a written prospect that underlines information about academic courses, or classes, yet leading to define expectations and responsibilities. It thus becomes a model designed to develop students professional thinking and writing. The study relies on the educational principles stated in the Experiential Learning Theory (ELT) to underline the need for universities to look at the updating of their postgraduate curriculums design and preparation from these educational perspectives: the First is, students' Google search engines academic research-doing reliance. And the Second is, research academic teaching courses-based Flipped Learning. The study has used a qualitative approach to investigate the subject presented. This criterion included the collection and analysis of academic and scientific materials such as papers, books, and Internet-accredited websites. The result of this study is intended to benefit the academic and scientific community, respectively.

Keywords: academic research-doing, google search engines, advanced research skilled-knowledge foundation, academic research-doing curriculum approach.

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I. Introduction

The syllabus is the guideline that, bests distinguish the teaching high-performing management at university level. It is a written prospect that underlines information about academic courses, or classes, yet leading to define expectations and responsibilities. It thus becomes a model designed to develop students professional thinking and writing (Gifford, 2003); (Parks and Harris, 2002).

Accordingly, there is nothing more consequential with that research criterion than academic research-doing based Google search engines, which users-statistic based on this particular search-engine speaks for itself (Nicola, 2025). This, in turn, creates a degree of competences for universities to produce high qualified academic research-doing postgraduate-skilled-alumni. It thus becomes a need for universities to look at the updating of their postgraduate curriculums design and preparation from these educational perspectives: the First is, students' Google search engines academic research-doing reliance. And the Second is, research academic teaching courses-based Flipped Learning.

At the present research study theory undertaking, is understood that the educational principles stated in the Experiential Learning Theory (ELT) (Kolb 2015; Kolb & Kolb 2017); (Sims, 1983) copes with the present research study proposal. Because when advancing foundation knowledge regarding postgraduate teaching courses refers, it means Advanced Research Skilled-Knowledge Foundation according to the four-stage cycle of experience, perception, cognition, and behaviour regardless learners-learning-preferences.

Based academic research-doing works have suggested that, technology indeed mediated experiential learning (Selina and Martin, 2023). It is not a surprise, but a fact that points directly to what should be called: At the Fingers' Click! Mainly when searching information by using Google search engines refers.

a) Research Concern and Problem-Setting

As switches in modern society relate to academic teaching courses-based technology use and students' technology use-reliance continue to rise, it does the interrelation of these trends. It thus becomes a must for universities to take the necessary management measurement regarding this matter to excel their postgraduate research teaching programmes. Because students' Google search engines academic research-doing reliance and research academic teaching courses-based Flipped Learning leads to real-life experiential learning to developing said trend input and output. Hence, the significance of the study-problem rests on, empirically speaking, looking at the proposed-research project academic-practicality. This, to decode what appears to be an Educational Technology ongoing phenomenon.

Real-life Edtech evidence suggest that the pace of technological advancement shows no signs of slowing, and we certainly won't be returning to simpler times barring catastrophic turns of events, so that so alarm that going digital could be the only way to keep up with the rapid pace of the modern world (Stephen, 2020). Consequently, using computer as mediator in all kinds of academic teaching courses has turned out to be more than essential tool. Technology in/for education purposes represent not only a today need but, a future

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one as well. As such, it is becoming a matter of Educational Technology. Such is the truth that the literature highlighted that the advancement of technology has significantly amplified the field of educational technology (Moore, Dickson, & Galyen, 2011).

The literature also addressees this regard towards newest high-tech advancements such as Artificial Intelligence (AI) in academic research-doing, and many other fields with significant advanced-research-doing scientific results (Somasundaram, 2023); (Aayushi, 2023). In other words, moving forward the subject here analysed. Accordingly (Ramteja, Yusuf, David & Ibrahin, 2023) developed an AI-augmented intelligent educational assistance framework based on a powerful language model (i.e., GPT-3) that automatically generates course-specific intelligent assistants regardless of discipline or academic level. They argued that supporting self-paced learning and encourage creative thinking skills, academic institutions must redefine their approach to education by offering flexible educational pathways that recognize continuous learning, yet technology assistance.

Although academicians are showing concerns relate to the use of Artificial Intelligence (AI) in academic research-doing (Webinar, 2023), yet it is not new that, as happened in the past, concerns and scepticism used to rise when we do have to confront changes intended to challenge our self-apprehended, I would say.

Artificial Intelligence (AI) is, so far, another computer tool which can be used to develop academic research-doing. Likewise, Google Search engines, and other search-engines as well. Search engines can be considered the precursors of Artificial Intelligence (AI) and human interaction reliance regarding research-doing. It is not a coincidence that Google already counts with AI-AI-Research. All of this, bringing to the table the meaning of At the Fingers' Click! Who does not when searching information refers? We all, academician's researchers and university students know the answer.

That is a real-life teaching and learning tendency that universities cannot ignore, mostly when applying computer as mediator into academic research-doing. As quoted by (Beetham & Sharpe, 2013), "Rethinking pedagogy for a digital age".

The strong link between today students and technology reliance when teaching and learning process refer, have led to the developments of technology-based methods. Old teaching methos, however, have been redesigned to cope with this human society unprecedent development. For instance, the Flipped Learning (FL) method, where traditional classroom practices have been switched to a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into dynamic, interactive learning. The student studies the theory at home and practice what they have learned in class, constantly interacting with ICT and working collaboratively (Iberdrola Web, 2024). Accordingly, the present research study based-subject proposal approach.

b) Research Study Theory Backing

The theory framework backing this research study is the Learning Cycle Theory (ELT). This theory was developed by (Kolb 2015; Kolb and Kolb 2017). Kolb's theory has a holistic perspective which includes experience, perception, cognition and behaviour. It is a method where a person's skills and job requirements can be assessed in the same language that its commensurability can be measured (Sims, 1983). Hence, the present study uses this theory academic and scientific experiential learning concept to underline the need for universities to look at the updating of their postgraduate curriculums design and preparation from these educational perspectives: students' Google search engines academic research-doing reliance and research academic teaching courses-based Flipped Learning because the interrelation between these themes leads to real experiential learning for the development of academic research. In other words, learning by doing!

By nature, academic research-doing involves the four-stage cycle of experience, perception, cognition and behaviour. As shown in Figure 1 and respective disclose:

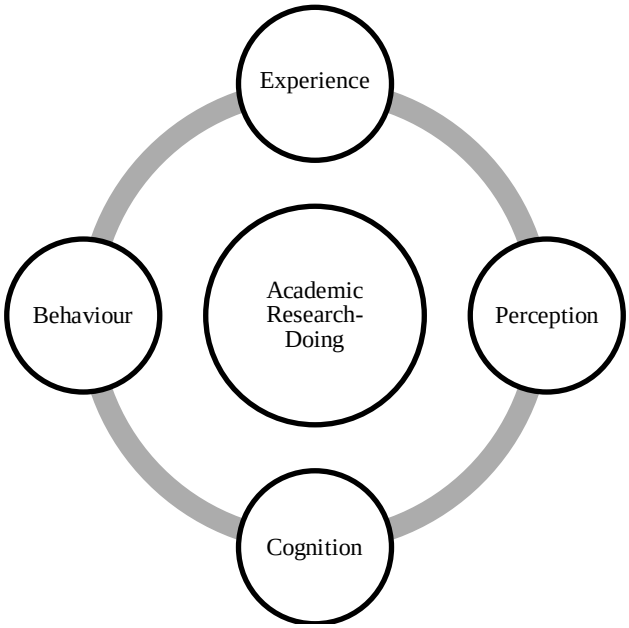

Figure 1: Based ELT Academic Research-Doing Approach

Experiential Learning is the process of learning by doing. By engaging students in hands-on experiences and reflection, they can better connect theories and knowledge learned in the classroom to real-world situations (Kent State University, 2024). It is a remarkable fact based - Kolb's theory conceptuality. Although the model has been essential in providing deeper and more precise understanding of learning processes across various contexts (Leydi, 2024), yet it has been criticised a swell (Ryder & Downs, 2022).

The Based ELT Academic Research-Doing Approach shown in Figure 1indeed leads to learning by doing for these educational reasons: postgraduate research-projects. Whether the research-project is conducted by an individual, which is the case of final-grade according to a given subject based-studies, or a group given assignment, the investigation-self-nature involves students' observation of the physical phenomenon their research-project would be addressing. This requires them to develop a critical knowledge and understanding of their research area. As result, their research-project significant-and-originality-expected-output. Indeed, the Kolb's theory holistic perspective based on experience, perception, cognition and behaviour. Hence, there is nothing more accuracy to contextualize this theory view about experiential learning than academic research-doing. Furthermore, it can be used to compute said degree student's skills and job requirements (Sims, 1983).

c) Research Study Objective

This research study aims to provide a comprehensive literature framework about the subject it addresses. It uses this approach to develop and put forward a based curriculum setting for academic research-doing classrooms.

d) Research Questions and Hypotheses

The review of the subject analysed led to question and theorize, respectively:

HQ1: To what degree are postgraduate relying on Google search engines to carry out academic research-doing projects?

HQ2: To what degree are Google search engines reliance to carry out academic research-doing projects effected postgraduate learning?

H1: There is significant reliance on Google search engines by postgraduate to carry out academic research-doing projects.

H2: There is no significant level of learning effect on postgraduate students when relying on Google search engines to carry out academic research-doing projects.

II. Literature Review

Historically, universities, as educational bodies, have advanced their teaching programs because of incorporating into their curriculums-based society scientific developments. Otherwise said, these trends-subjects-teaching-specializations. In this context, universities have been evolving, and will continue to do so in the future. Of course, technology and its multiple facets cannot be excluded when universities' reliance on technology as subject to be taught and as channel to impart academic courses refer. Such is the truth that Artificial Intelligence (AI), for instance, is not only a today subject being taught at universities worldwide (Harvard Business School Web, 2025); (Tilburg University Web, 2025); (The University of Science and Technology Web, 2025), but also a tool used to boost academic and scientific research-works (Somasundaram, 2023); (Aayushi, 2023). Accordingly, Google search engines

and university students' reliance on it can be used for this purpose, too. It thus becomes a necessity for universities to rethink pedagogy for a digital age, as (Beetham & Sharpe, 2013) have pragmatically quoted.

The literature review was intended to provide proper academic and scientific summary of the literature-search. It thus relied on the study keywords: Academic research-doing; Google search engines; Advanced research skilled-knowledge foundation; Academic research curriculum approach. Internet repositories such as Google Search and Google Scholar were searched. This first-hand data-gathering encompassed academic and scientific papers, books, Wikipedia Web, and Internet Accredited Websites.

The empirical literature has underlined academic research-doing from different perspectives. (Ted, 2019) argued that Doing Academic Research is a concise, accessible, and tightly organized overview of the research process in the humanities, social sciences, and business. With this in mind, they provided a practical guide to doing research. (Ekpe, 2017) quoted that a researcher is a critical examiner of data triangulating, cross-validating, and cleaning to ensure accuracy. The book' context (Ekpe, 2017) explains how to design a research project, describes the research process, and defines research types, designs, methods and instruments. (Ekpe, 2017) argued that, university teachers have been having a difficult time trying to drill their students in the difficult, but rewarding art of scientific writing. They have often complained about the low standards of extended essays and theses their students produce. These pieces of research work constitute the culmination point of the years spent in the University and are supposed to reflect how high the standards of the institution are and how adequately its products are being prepared for the job market. On the other hand, (Ekpe, 2017) also quoted that, poor projects are a sign that their authors still have a long way to go, and do not give a positive impression of the training institution they graduate from. Indeed, this matter requires developing research-doing curriculums.

Although those research-works provide significant insights about academic-research-doing, yet is all about the academic and scientific research-doing requirements a researcher must acknowledge to carry out the research-project accordingly. Of course, this goes well with postgraduate. However, the big question is: how much are they aware of said criteria? Well, while the academic and scientific writing criteria to carry out a research paper matter, constructing the research-based theory and making it outclassing through a well-structured research paper, indeed it does as well. In other words, said university degree students have to be, in terms of research-doing, on board. It is not about prohibiting students from using Google search engines when they write their semester papers (Mitchell, 2021) but about developing research-doing skilled-knowledge-foundation.

Methodologically speaking, Google Search engines provide the most amplified research-gate-database worldwide, which At the Finger Click anyone can access it. (ScholarsEdge Web, 2024) quoted that, in the contemporary landscape of digital research, effective search engines play a crucial role as indispensable tools for scholars seeking access to a wide array of scholarly materials at no cost. Leading the cohort of research paper search engines is Google Scholar, a platform that stands out for its unrestricted access, democratizing the availability of academic information. This guide prioritizes free search engines tailored for research papers, with the objective to optimize the efficiency of scholarly investigations. As such, Google Scholar stands out as one of the best websites for research papers, utilizing Google's robust search capabilities tailored to academic literature. It provides complimentary access to a diverse array of scholarly subjects. It frequently includes full-text PDFs, making it a comprehensive resource for articles from academic journals, conference proceedings, theses, and dissertations.

(Arga Web, 2025) stated that, in today's world, online research often begins with a search engine, which is just as relevant for researchers as it is for anyone else seeking information. An effective search engine should provide users with relevant results, have a simple design and user-friendly interface, and offer helpful tools to refine or expand a search. Google has been the most popular search engine for many years. As such, the web provides a list of the search engines one can consider when researching. Among these search engines, Google Scholar, a tool specializes in searching through scholarly articles and publications, although it is related to the most popular generic search engine. Many academic professionals use it regularly due to its advantages, such as comprehensiveness and automation. Unlike a manually curated database, the tool retrieves the most of the information automatically from all over the internet using algorithms. Still, if further assistance is needed for the paper, it is recommended to explore other available services.

Notably, postgraduate rely heavily on said internet repository to carry out their research-projects (Presetyawan, Heriyanto, and Arfa, 2024), yet what they need the most is precisely the research-doing academic assistance. One of the principles that bests characterize the Education system cycle in terms of teaching, is considering when doing so, students- foundation-knowledge to enhance it according their new advanced-subject-based-studies-program. Of course, this applies to postgraduate courses based on research-doing. For instance, using Google Scholar can help them deal with the hardest heading of a research-doing, which is the

literature review. Because this, is more than quoting a list of academic and scientific research-doing works, it does work if students have fully devolved research-skilled-knowledge-foundation.

In this context, there is a need to design a research-doing curriculum to target the level of difficulties thought students encounter when doing research, but more importantly, advancing their research skilled-knowledge-foundation. With this in mind, the present study uses (Kolb 2015; Kolb and Kolb 2017) theory of holistic perspectives-based experience, perception, cognition and behaviour, a method where a person's skills and job requirements can be assessed in the same language (computer), which commensurability as such can be measured (Sims, 1983), to accomplish the research objective: providing a comprehensive literature framework about the subject analysed. And use this approach to develop and put forward a based curriculum setting for academic research-doing classrooms.

Academic research conducted by Siti and Amira (2022) analysed the postgraduate students' difficulties in research writing. 39 master's students majoring in English Language Education at one of the universities in Malang were surveyed. The data on the thesis writing difficulties were gathered through a close-ended questionnaire designed based on the theory proposed by Harris (2020), consisting of three aspects: research skills in the introduction, research method, and finding and discussion parts. The data was analysed quantitatively by measuring the mean, mode, and percentage from each scale. The results revealed that many master's students encountered difficulties in most three aspects.

Siti and Amira (2022) study-result copes with the present research intended objective. Notably, the level of difficulties postgraduate encountered has much in common with constructing the research-based theory and making it outclassing through a well-structured research paper, yet academic and scientific writing criteria meters too. This observation and many other suggest that, the crux of the matter is not about postgraduate technology reliance to carry out academic-research-doing, but developing through given based-subject-curriculum research-skilled-knowledge-foundation.

All this, pinpoint the need to count with curriculums designed to develop postgraduate research -doing skilled-knowledge foundation. In other words, taking on these students' prior foundation knowledge to skill it. As such, testing new concepts gives concrete experience, which can be observed and reflected upon, allowing Kolb 2015; Kolb and Kolb 2017) theory of holistic perspectives-based experience, perception, cognition and behaviour cycle to continue (Abdulwahed, Nagy, & Zoltan, 2009), yet said curriculum setting. Intended to define expectations and responsibilities. A model-designed to develop students professional thinking and writing (Gifford, 2003); (Parks and Harris, 2002).

In this context, the literature review is also adding recommendable texts to help postgraduates handling on Research-Doing:

a) Based Research-Doing Classroom Guideline

Extracted Text: An outline for a research paper (White, 2024).

If you do search on the internet, you will find many different "outlines" for what should/could be in an academic paper, whether research-driven or thought-driven (i.e. your work and thinking – or, to put it another way, your considered opinion). I have long forgotten where the one below comes from, but it is one I use to structure my main academic papers when writing for a specific audience – I have published many papers, articles, monographs, and books over the last thirty years, and I have an active "readership" and I now always write for my readership/audience.

So, here is AN outline – one that works for me:

Introduction: Tell me what you are going to tell me

This needs to be 'to the point' – in general, it is around 200-600 words and can often be used as the 'abstract' (usually limited to 400 words) … it is always written last.

Literature Review: Tell me what everyone else has already said on the topic.

This can be as exhaustive as you like and needs to be thoroughly well-researched, properly cited (parenthetical citation is optimal), and adequately referenced. If you are going to be selective in your choice of references, then explain why you are making that choice.

Current Study: Tell me what the other writers are missing.

It is essential; it identifies the topic of your contribution to the knowledge base. You should be aim to either enlarge the knowledge base (add new knowledge) or re-analyse existing data/re-interpret existing information. It is sometimes used to identify the 'research question' or the 'research hypothesis'. Tell me why this is important to find out.

Methodological Design: Tell me how you will get the data you need.

This does not need to be hugely lengthy (except in a Dissertation or Thesis), but it does need to demonstrate that you have chosen an appropriate methodology for conducting the research. It should also tell me about your 'research sample' if you are collecting primary data. Remember, each and every field of study (discipline) has its own usual selection of research methodologies and if you are using an interdisciplinary approach, then you will use a 'mixed methodology'.

Methodological Analysis: Tell me how you intend to analyse the findings.

This is a brief discussion of what models, theories, and other basic tools you plan to use for the analysis. This is sometimes referred to as the 'theoretical framework'.

Results: Tell me what you have found out, tell me about the data collected.

This section is often incorporated into the Analytical Discussion.

Analytical Discussion: Tell me what the data told you.

This is an in-depth discussion of what you found out, and your interpretation of it. This uses the Methodological Analysis. This is often the largest section in the paper, and you need to go deep in your thinking, and you need to explain why what you have found out is relevant and important. You should also suggest how and why we can apply the findings. You can also tell me about the limitations and issues you have encountered, whether your fault or not.

Conclusion: Tell me what you have told me.

This is a summary of the paper and is usually followed by any recommendations for further research, or application, or policy implications etc.

Bibliography/References: Tell me ALL the reference sources you used (so that I can check them if I want to).

b) Literature Research-Doing Classroom Guideline

Research - doing Templet - Private (2025). Extracted Text: United International Business Schools (UIBS). European College for Liberal Studies (ECLS).

This chapter reviews what has already been written in the field on the research topic. The literature cited should support the theoretical argument being made and demonstrate that the author has a grasp of the significant ideas and findings that pertain to their topic. Refer to the APA manual for additional information concerning literature reviews.

1. Historical Background
   a. Put things in perspective. This is more than just a chronology and does not necessarily have to include every detail since day one.
   b. What are the major issues, controversies, etc., that impact your study? Include background on all relevant variables.
2. Theory Relevant to Research Questions/ Hypotheses
   a. What theoretical models/perspectives inform your research?
   b. Compare and contrast competing theories and justify the theoretical foundation of the dissertation.
   c. Describe how the theoretical foundation of the dissertation applies to the problem.
3. Current Empirical Literature Relevant to Research Questions/Hypotheses
   a. *Include in this section:*
      i. Literature relating to individual variables.
      ii. Literature relating to specific combination of variables (specifically examine background and relevant background literature) relevant to the dissertation.
   b. This should be more than a listing of studies. What common thread holds them together? Use transitions to tie one section with another effectively.
   c. Incorporate discussion of strengths/weaknesses of methodology in previous studies and which you are building on/hoping to avoid/improve upon in your study.
4. Use headings and subheadings liberally to organize this section. Consider making a "concept map" of relevant literature for organizational purposes (do not include in the dissertation text, however). This section should be reflective of deductive reasoning, starting broadly and narrowing the focus as the chapter progresses.

III. Methodology

The study has used a qualitative approach to investigate the subject presented. This criterion included the collection and analysis of academic and scientific materials such as papers, books, and Internet-accredited websites. This methodology can be considered based literature research reviewing. As such, backing the present study theory approach. The literature extracted from the research-works are directly associated with the present study based-subject-analysis, and it has been used in the study-framework according to the academic scientific criteria. It is a first-hand data gathering which Internet repositories such as Google Search and Google Scholar helped to obtain and process accordingly. As shown in Table 1 and Figures 2 and 3, Data Collection and Representation:

Table 1: Search Literature Data Gathering

	ACADEMIC SCIENTIFIC PAPERS	BOOKS	INTERNET ACCREDITED-WEBSITES	BIOGRAPHY
FIRST-HAND DATA COLLECTION	33	2	7	Academic Scientific Citation Criteria

Figure 2

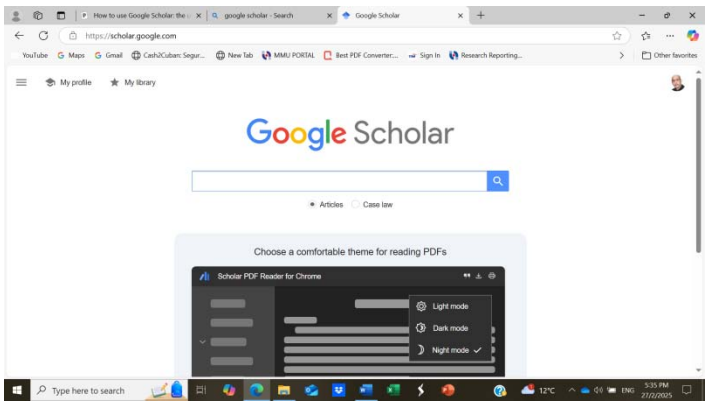

Figure 3

IV. Results

Considering the research methodology used to conduct the study, it has been possible to provide a comprehensive literature framework regarding the subject analysed. Consequently, using this approach to develop and put forward a based subject curriculum setting for the academic research-doing classroom. As described in Table 2:

At the Fingers Click!
Course Name: Advanced Research Skilled-Knowledge Foundation.
Course Details
Course level: Post-Graduate (level 7000)
Course type: PGCHE Elective.
Course credits: 5
Course duration: 10 weeks as necessary.
Total lecturer contact: 6 hours.
Total additional study hours: 144 hours.
Language of instruction: English.

Course Overview

This course is designed to enable participants to engage into a Search for Academia Research Development. It covers a range of human society development trends (terms and concepts) to outclass participants research-doing knowledge and skills up to the levels stated in The European Qualifications Framework for Lifelong Learning (EQF).

Participants are required to look at the human society development trends (terms and concepts) of the themes covered to analyse their research-doing approach, and to apply this to the development of higher education-based research courses. Participants will be asked to research, develop, and submit a literature review. And an academic research paper for double-blind reviewing journal, including paper letter acceptance for publication as well as the discussion of this manuscript-findings during the tutorials given hrs. with the intention to fulfil the class audience Q/A session.

Research Course Educational Theory

The Learning Cycle Theory (ELT). This theory was developed by (Kolb 2015; Kolb and Kolb 2017). Kolb's theory has a holistic perspective which includes experience, perception, cognition and behaviour. It is a method where a person's skills and job requirements can be assessed in the same language that its commensurability can be measured (Sims, 1983).

Course Context: Advanced Research Skilled- Knowledge Foundation – A Taxonomic Approach

Advanced research skilled-knowledge foundation- a taxonomy for academia research development consideration– understanding the significance to consider the human society development trends (terms and concepts) as a Higher Education research-gate in the Era of Technology. The pedagogical impact they have on advancing postgraduates' skilled-knowledge foundation. The educational necessity for linking and propelling this way, these learners' research-doing general knowledge. Addressing, but not to be limited, key-concepts such as Politic, Education, Business, Culture, and Economic.

This Advanced research skilled-knowledge foundation - a taxonomy for academia research development consideration, is in line with one of principles that bests characterize the Education graded-system in terms of teaching, which is considering when doing so, students-foundation-knowledge to enhance it according their new advanced-subject-based-studies-program. Accordingly, testing new concepts gives concrete experience, which can be observed and reflected upon, allowing Kolb 2015; Kolb and Kolb 2017) theory holistic perspectives-based experience, perception, cognition and behaviour cycle to continue (Abdulwahed, Nagy, & Zoltan, 2009). As such, this curriculum setting. Intended to define expectations and responsibilities. A model-designed to develop students professional thinking and writing (Gifford, 2003); (Parks and Harris, 2002).

Course Content: To Include But Not Be Limited To The Following

- The usefulness of doing research by taking onto account the society development advanced terms and concepts to enhance research skilled-knowledge foundation. Can we write a paper/article based on any of the society development advanced terms and concepts by using our research-doing skilled-knowledge foundation? Can we use this approach for writing a literature review?
- Geopolitics: Term and Concept. Related research: Nations' alliance and their political impact on global economic. What is new? The BRICS?
- EdTech: Term and Concept. Related research: Computer as mediator in the process of teaching and learning. What is new? Artificial Intelligence (AI) into Academia Research?
- Business Communication: Term and Concept. Related research: the linguistic business approach of buzzwords. What is new? Ecotourism?
- Internet Culture: Term and Concept. Related research: the role of social media in modern society communication. What is new? The YouTube influencers? The TikTok influencers?
- Digital Economic: term and concept. Related research: the global economic tendency toward the implementation of digital currency. What is new? The Bitcoin?

Methodolgy

This is a 144hrs. course flipped learning approach, with lecturing-feedback (online supervising). A project-based learning program involving individual research analysis of the themes covered. This includes the early submission of 2000 words literature review based on the themes (terms and concepts) covered in the course. Additionally, the writing of an academic paper based on ONE of the themes terms and concepts-Related Research for journal-publication. The findings of this manuscript are to be presented during the 6hrs. leading to engaging the Q/A audience session. All of this, to fulfil the postgraduate's course-aim successfully: A Search for Academia Research Development.

Learning Outcomes

On successful completion of this course, students should be able to:

Knowledge

Demonstrate an understanding of, and be able to discuss advanced society development terms and their academic concept regarding academic research-doing.

Display an understanding of how to present philosophical arguments based on advanced society development terms and their academic concept regarding academic research-doing.

Demonstrate the ability to sustain in-depth analysis of advanced society development terms and their academic concept regarding academic research-doing.

Display appropriate advanced research skilled-knowledge foundation in academic research-doing by developing philosophical arguments, and presentation of ideas (both in writing and orally).

Assessment

Students will be assessed on the time management of the early submission of 2000 words literature review based on the themes (terms and concepts) covered in the course. And the one 3000-words submitted and accepted for publication academic paper (open-access double-blind reviewing journal), which includes their communication ability to present this manuscript-findings in a tutorial class audience. Leading to the Q/A session. The grade awarded is a binary ass/fail.

Version: _2025

Date: _2025

Biography

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Curriculum Experiential Learning Criteria

Learning is an endlessly recurring cycle not a linear process. 2. Experiencing is necessary for learning. 3. The brain is built for experiential learning. 4. The dialectic poles of the cycle are what motivate learning. 5. Learning styles are different ways of going around the learning cycle. 6. Full cycle learning increases learning flexibility and development. 7. Teaching around the learning cycle. 8. The learning cycle can be a rubric for holistic, authentic assessment (Alice and David, 2018).

V. Analysis

Incorporating technology into research-doing curriculums design-and-preparation to teach post-graduate is about skilling these students research-doing knowledge-foundation in terms of teaching. Because this approach copes with the education principle of considering when teaching refers, said degree students prior research knowledge to skill it. In other words, applying the meaning of "advanced" in teaching. This educational approach, however, applies not only to postgraduate, but all university degrees courses as well.

(Zain, 2020) quoted that, a variety of students from all levels must require research. Many research studies have been carried out in different fields of study. Based on Bandele (2004) and Kerlinger (1977) research-works, (Zain, 2020) underlined valuable research-doing references: "research can be used as a hyphenated compound word search again means a new interpretation searching for something or repeated search. It is a process of solving problems and issues. It is an effort to push back the frontiers of ignorance to advance research knowledge. A research process needs to be addressed by standard procedures, which will lead to solutions to the problems". As such, the research-doing curriculum approach this study has put forward: Advanced Research Skilled-Knowledge Foundation.

There is nothing more accuracy than a curriculum designed as advanced research skilled-knowledge foundation. Of course, considering when doing so, human society development trends (terms and concepts) as a Higher Education research gate in the Era of Technology. In other words, At the Fingers Click! The pedagogical impact this approach has on advancing postgraduates' skilled-knowledge foundation is indeed a practical academic research-doing idea. Furthermore, said idea is backed by Kolb 2015; Kolb and Kolb (2017) theory of holistic perspectives-based experience, perception, cognition and behaviour. In this context, said curriculum idea has been conceived to test new concepts because it gives concrete experience, which can be observed and reflected upon, allowing Kolb 2015; Kolb and Kolb 2017) theory of holistic perspectives cycle to continue (Abdulwahed, Nagy, & Zoltan, 2009). Furthermore, the curriculum setting is also intended to define expectations and responsibilities. It is a model-designed to develop students professional thinking and writing (Gifford, 2003); (Parks and Harris, 2002).

The level of difficulties postgraduate, and rest degree students encounter when carrying out research-doing projects does not relate to Google search engines reliance but, the lack of said subject skilled-knowledge-foundation development. Academic research conducted by (Rhoda, 2019) revealed that students had difficulties in formulating their research problem, writing their review of related literature, sampling of their respondents, crafting the research instruments, transcribing interviews, video production delays, among others. (Rhoda, 2019) quoted that, students had also problems in coordination, plagiarism processing, and other difficulties such as time constraints, absence of research partner, personal issues, and other conflicts. This research outcome and many other, speak clearly about the source from which said degree of research-doing difficulties comes from. Sara, Jia & Helen (2018) argued that students increasingly depend on Web search for educational purposes. According to their research analysis, said dependency rises concern among education providers. Some evidence indicates that in higher education the disadvantages of Web search and personalised information are not justified by the benefits. In other words, students search engines reliance familiarity.

Sara, Jia & Helen (2018) used the quantitative method to survey, gather, and examine data collection. The result of the study sated that, firstly, most participating students declared that they use Google search engine as their primary or only information-seeking tool. Second, about 60% of the clicked result links during the study sessions were located in pages 2+ of the search results without personalisation influencing the relevance of the top-ranked search results. In real-life scenarios, pages 2+ of the search results receive only ~10% of the clicks. Students also expressed more satisfaction with the relevance of non-personalised over personalised search results.

Google has become the most popular search engine worldwide and its name has its merit within information search, as such when people are searching for information, they would most often say 'google it' rather than 'look for it' (Presetyawan, Heriyanto, and Arfa, 2024). This academic research concluded that, students' prior knowledge appeared to be the governing factor of how well they can determine which of the compiled information sources are best for their study. Every student has their own best approach and experience to optimize Google. In other words, students showed high degree of familiarity with this computer tools when doing research, yet as (Presetyawan, Heriyanto, and Arfa, 2024) have concluded, they' prior knowledge when doing so appeared to be the governing factor.

A Google search engine is just a computer tool that facilitates research-doing, however, unless postgraduate and rest of degree students are taught to become research-skilled-knowledge, said problematic will persist. Thus, the advanced research skilled-knowledge foundation- a taxonomy for academia research development consideration stated in the present research study given curriculum.

Because a curriculum is the educational prospect that best distinguish the teaching high-performing management at Higher Education, designing it for Digital Era classroom is a must. Pragmatically speaking, one solution for universities to deal with this Edtech academic research-doing ongoing phenomenon is adopting the present research study-based research academic teaching courses-based flipped learning. And Students' Google search engines academic research-doing-reliance. It involves the combined use of computer and educational theory aid, which in practice aims to facilitate learning.

Based on the literature review subject-analysis-outcome, the research hypotheses are herewith reiterated. Indeed, there is significant reliance on Google search engines by postgraduate to carry out academic research-doing projects, which static research works can confirm. On the other hand, there is no significant learning effect on postgraduate students when relying on Google search engines to carry out academic research-doing projects. The difficulties students encounter when doing so, does not come directly from this approach, but from the lack of research-doing knowledge and skills. In other words, producing advanced academic research-doing skilled-knowledge foundation is the crux of matter for universities to consider it.

VI. Conclusion

The reliance of postgraduate on Google search engines to carry out academic research-doing projects is by definition, a today Edtech viable prospect for universities to consider when using computer as mediator in teaching and learning. As such, the design of curriculums for research academic teaching courses-based flipped learning and students' Google search engines academic research-doing-reliance. It leads to real-life experiential learning by doing. It thus copes with Kolb's theory of holistic perspectives: experience, perception, cognition and behaviour. As such, the curriculum was designed to test new concepts. Because this approach gives concrete experience, which can be observed and reflected upon, allowing Kolb 2015; Kolb and Kolb 2017) theory holistic perspectives-cycle to continue (Abdulwahed, Nagy, & Zoltan, 2009).

VII. Recommendation

Considering that, postgraduate reliance on Google search engines to carry out academic research-doing projects has become an Edtech viable prospect, is recommendable to conduct quantitative studies to compute the level of difficulties postgraduate encounter when doing research. Because said degree has much in common with the lack of research-doing skilled-knowledge foundation. And not with Google search engines research-doing reliance. In this context, the present research study is putting forward Table 2 criteria for suggested quantitative studies. These studies can use the main variables stated in the present study hypotheses and the subset of variables given in Table 2 as dependent variables. A based Google Search Statistics by Nicola (2024) is also recommendable.

Table 2: Quantitative Research-Doing Approach

RESEARCH-DOING ACADEMIC SCIENTIFIC CRITERIA	PAPER STRUCTURE	PAPER FORMATTING	PAPER ACADEMIC SCIENTIFIC WRITING	SYSTEM OF MEASUREMENT
	Chapters Organization-Headings and Subheadings Approach	**Writing Style Approach**	**Applied Linguistic Approach**	**Quantitative Approach**

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Junior High School Educators' Strategies for Making Inclusive Education Policy a Working Tool in the Kadjebi District, Ghana

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Abstract- *Background:* Like all children, persons with disability need quality of education to develop their skills and realize their full potential. Yet, they are often overlooked in policymaking limiting their access to education and their ability to participate in social, economic, and political life.

Objective: The study aims at investigating JHS educators' strategies for making inclusive education policy a working tool in the Kadjebi District, Ghana.

Methods: A cross-sectional descriptive design was employed with 191 JHS educators. Data were analysed using frequency distribution and percentages, Kappa statistics and multiple linear regressions.

Results: Educators that build a welcoming school environment was statistically significant at P=0.000, (coeff=1.000, 95%CI [1.000 —1.000]). Educators confident to teach children with special needs was statistically significant at P=0.000, (coeff = -0.250, 95% CI [-0.250 — -0.250]). Being ignorant about pupils with special education needs in classroom was statistically significant at P=0.000, (coeff=0.600, 95%CI [0.600—6.00]). Educators being able to provide adequate learning facilities at home was statistically significant at P=0.000, (coeff=-1.000,95%CI [-1.000— -1.000]).

Keywords: *disability, education, educators, inclusion, inclusive, policy, special education, strategy.*

GJHSS-G Classification: *LCC: LC1200-1203*

Strictly as per the compliance and regulations of:

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Conclusion: The study recommends that educators should be encouraged to adjust their perceptions and attitudes towards children with disability in their schools so that they can own out to nurture them well.

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I. Introduction

There are an estimated 240 million children with disabilities worldwide [1]. Disability is one of the most serious barriers to education across the globe [2]. Disability robs of children's right to learn [3]. Children with disabilities are often denied the chance to take part in their communities, the workforce and the decisions that most affect them [4]. Therefore, getting all children in school and learning, inclusive education is the most effective way to give all children a fair chance to go to school, learn and develop the skills they need to thrive [5]. Inclusive education means all children in the same classrooms and in the same schools [6]. It means real learning opportunities for groups who have traditionally been excluded – not only children with disabilities, but speakers of minority languages too [6]. Inclusive education value the unique contributions students of all backgrounds bring to the classroom and allow diverse groups to grow side by side, to the benefit of all [1].

With each passing year, schools are witnessing an increased number of students from all sectors [7]. Unfortunately, in the past, students have been victims of discrimination based on their disability, but not anymore. Schools are now embracing diversity and inclusion, ensuring every child feels valued and supported [8]. Central to these efforts is creating inclusive classrooms where every student's potential is recognised and nurtured. While teachers play a pivotal role in shaping these environments, the school's overall vision and commitment set the foundation for truly inclusive education [9].

In the case of Ghana, the story is different as basic school educators are less resourced in terms of assistive devices to support their effort in making inclusive education policy a reality [8, 9, 10]. Also, existing school structures are not modified to accommodate persons with disabilities, and educators are not motivated enough in order to give off their best [11]. In the Education Act, 2008 (Act 778) Article 5 captures "Inclusive Education [IE]" and states that "design" and "infrastructure" of schools need to be disability friendly [6]. In response to this, educational frameworks mandate schools to adopt, design, and implement strategies that support inclusive education. Despite inclusive education policy, disability remains a major course of exclusion in learning instructions [12]. An all-embracing education remains a multi-layered and challenging issue as the development of inclusive practices in schools is not well understood [13]. While inclusive education is part of everyday classroom life, educators' strategies for making it a working tool is important.

Our literature search on educators' strategies for making inclusive education policy a working tool identifies numerous studies. For instance: [14] looked at inclusive cultures on schools that support inclusive

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education; [15], [16], [17] also studied teachers' physical environment on schools that support inclusive education; [18] investigated belief systems on schools that support inclusive education while [19], [20] and [21] explored inclusive practices on schools that support inclusive education. From the studies above, it can be realised that none of them has its aim towards educators' strategies for making inclusive education policy a working tool. Hence, the study.

The purpose of the study is to investigate JHS educators' strategies for making inclusive education policy a working tool in the Kadjebi District, Ghana by specifically answering the following research questions:

1. What are the JHS educators' strategies for making inclusive education policy a working tool in the Kadjebi District, Ghana?
2. What perceptions and attitudes do basic school educators have towards making inclusive education policy a working tool in the Kadjebi District, Ghana?
3. What challenges do JHS educators encounter for making inclusive education policy a working tool in the Kadjebi District, Ghana?
4. What is the socio-economic status of the basic school educators who try to make inclusive education policy a working tool in the Kadjebi District, Ghana?

II. Methods

a) Study Area and Participants

Kadjebi district was selected for the study because it has 51 children registered with disabilities and they need to be fully integrated into main stream school. The study enrolled 200 JHS educators.

b) Philosophy of the Study

The study employed positivist philosophical orientation because they purport reality can be observed and viewed in an objective manner [22]. This body of knowledge feels that the data collection can be carried out in the society and is related to people and their ideas [23].

c) Study Design and Data Source

The study employed descriptive cross-sectional survey design. The design was use because it comprises asking participants the same set of questions which are normally organised in the form of a written questionnaire or ability test to a group of people or a large number of individuals either by telephone, by mail, or in person [24]. Further, with this design, a large number of variables can be considered. Based on this, the study found the design to be prudent which was why it was adopted. Furthermore, the design allows researchers to visit the study area once and then go ahead to do the analysis [23].

Data were collected from 200 JHS educators from the field at Kadjebi district. The primary data were preferred because it is data the researcher collects himself from the field and becomes the first person to use it.

d) Sample and Sampling Procedure

A sample of 200 was sampled from a finite population of 379 public Junior High School teachers. The choice of the sample size was based on [25] table of determining sample size which stipulates that a finite population of 380 the ideal sample should be 191. However, due to incomplete answering of questionnaire, a non-response rate of 5% was added which made the actual sample to be $(191 \times 0.05) + 191 = 200.55$. Hence, the sample size for the study was 200. To reach the participants, a systematic sampling technique was used. This technique allows participants to be selected at regular intervals from a sampling frame or without a frame [26]. The intervals are carefully chosen to ensure an adequate sample size [27], [28]. The study enrolled 200 JHS teachers from a finite population of 379. So, to select the first participant, we calculated our sample interval as follows: $379/200 = 1.86$. Therefore, the 1st participant starting from the first school visited was selected follow by the 2nd participant $1 + 1 = 2$. The process continued until the last participant was reached. The rounding was done after the additions.

e) Data Collection Procedures

Data collection took place on 15th of March and ended on 19th of March, 2023 with the help of two research assistants. In all, five days were used to collect the data. The data were collected with questionnaire. The questionnaire was developed based on literature, conceptual base of the study and previous survey instruments.

f) Data Processing and Analysis

At the end of each data collection day, the data were checked for accuracy, validity, completeness and consistency. This was done to check for missing data, correct mistakes, in order to avoid deviations and errors in the data collected. When these together with editing were done, the data were then entered into the computer analysis matrix developed with the computer software Statistical Package for the Social Services (SPSS) version 20. To use a two-by-two table to interpret the results of the study, all variables that had more than two categories were recoded into two categories. Frequency distribution, Kappa statistics and multiple linear regressions were used to analyse the data. The research objective one, two, three and four were analysed and discussed with percentages and Kappa statistics. The multiple linear regression analysis was done to identify estimate of relationship between the explanatory variables and response variable.

g) Ethical Consideration

Participation was made voluntary. Therefore, in the field, before a participant takes part in the study,

verbal informed consent was obtained from the participants before he or she takes part in the study. Aside that, participants were assured of confidentiality of their responses and their identity were kept anonymous. Again, all the possible risks and the benefits participant stand to gain from taking part in the study were explained in clear language to them.

III. Results

a) Socio-Demographic Characteristics of Participants

Table 1 shows the socio-demographic characteristics of participants. The participants comprised 32.5% females and 67.5% males. A little above forty-one per cent (41.4%) of the participants in the sample were within 20-29 age group while 16.2% were in the 30-39age group. Nearly thirty-two per cent (31.9%) of the participants were widowed compared to 16.2% divorce.

In terms of religion, Christianity dominated (81.7%) while the least category was traditionalist (8.9%). In terms of professional qualification, Diploma holders dominated (63.9%). Concerning working experience, about fifty-four per cent (53.9%) of the participants had worked for about 1 to 4 years while a little above three per cent (3.1%) had worked for 15-19 years.

Table 1: Socio-Demographic Characteristics of Participants

Characteristics	F	%
Sex		
Male	129	67.5
Female	62	32.5
Age in groups		
20-29	79	41.4
30-39	31	16.2
40-49	44	23.0
50+	37	19.4
Marital Status		
Never married	49	25.7
Married	50	26.2
Divorced	31	16.2
Widowed	61	31.9
Religion		
Christianity	156	81.7
Islam	18	9.4
Traditional	17	8.9
Professional Qualification		
Diploma	122	63.9
Degree	69	36.1
Teaching Experience		
1-4	103	53.9
5-9	31	16.2
10-14	14	7.3
15-19	6	3.1
20-24	27	14.1
25-29	10	5.2
Total	191	100.0

Source: Fieldwork (2023)

To obtain data on research question thus "JHS educators' strategies for making inclusive education policy a working tool." The respondents were asked series of questions to examine if they have specific strategies for making inclusive education policy a working tool. The results are presented in Table 2.

Table 2: JHS Educators' Strategies for Marking Inclusive Education Policy a Working Tool

Educators Strategies	F	%
Educators Build Welcoming School Environment		
Yes	69	36.1
No	122	63.9
Educators Enrol Children with Disabilities from the Locality		
Enrol	69	36.1
Do not enrol	122	63.9
Teachers are Aware of their Duties Concerning SpED, SHEP etc		
Not yet	160	83.8
Few	31	16.2
Teachers and Parents of Children with Special Education needs Meet and Discuss Child Progress		
Never	98	51.3
Once or twice a year	93	48.7
Educators Create Supportive and Caring Environment		
Yes	125	65.4
No	66	34.6
Schools have Ramps or 'Flat' Access to Reach All Facilities		
Not all	95	49.7
One	96	50.3
Schools have Good Lighting in the Classrooms		
Poor lighting	37	19.4
Reasonable	154	80.6
Organised Learning for Diversity		
Yes	136	71.2
No	55	28.8
Educators Provide CSENs with Disability Learning Materials		
Not yet	48	25.1
Few pupil	112	58.6
Almost all pupils	31	16.2
Total	191	100.0

Source: Fieldwork (2023)

On building a welcoming school environment, the results show that 63.9% of the participants reported that educators do not build welcoming school environment for pupils with disability (see Table 2). Among the 69 educators who reported that they build a welcoming school environment for pupils with disability were further asked to stipulate how they build the welcoming environment and the report revealed that about fifty-one per cent (50.7%) reported they accommodate all pupils while 49.3% indicated every staff has been sensitised to welcome and show love and affection to pupils with SEN.

On whether educators enrol children with disabilities from the locality or not, 63.9% of the participants said educators do not enrol children with disabilities (see Table 2). Regarding educators' awareness of their duties concerning SpED, SHEP, Guidance and Counselling and GirlChild Education, the results revealed that 83.8% of the participants reported that educators are not yet aware of their duties (see Table 2). Concerning whether educators and parents of children with special education needs meet and discuss the progress of these children or not, 51.3% of the participants indicated that educators and parents never

meets to discuss the progress of these children (see Table 2).

Educators were asked to indicate whether they create supportive and caring environment for pupils with disability or not and the results revealed that 65.4% of the participants stated educators create supportive and caring environment for pupil with disabilities (see Table 2). Among the 125 participants who indicated that educators create supportive and caring environment for pupil with disabilities 68.0% said just urinals while 32.0% reported that the schools do not have toilets and urinals. The analysis regarding if schools have ramps (or 'flat' access) to reach all facilities or not showed that a little above fifty per cent (50.3%) of the participants said the schools have but just one (see Table 2). When asked whether schools have good lighting in the classrooms or not, the outcome revealed that 80.6% of the participants reported that the schools have reasonable lighting (see Table 2).

Educators were asked to indicate whether they organised learning for diversity for pupils. The results revealed that 71.2% of the participants indicated that educators organised learning for diversity (See Table 2). Among the 136 participants that indicated that educators organise learning for diversity were further asked to stipulate how they organise learning for diversity and the results revealed that nearly seventy-four per cent (73.5%) said it is child-centred methods while 26.5 per cent reported co-operative learning.

Concerning whether educators provide pupils with disability learning materials or not, the results showed that 58.6% of participants stated that educators provide few disability pupils with learning materials while 16.2 per cent respondents indicated almost all pupils (see Table 2).

In Table 3, Kappa Statistics examining the correlation between educators' strategies for inclusive education and enrolment of children with disability is presented. This analysis was run to identify the correlation between educators' strategies for inclusive education and enrolment of children with disability. The results show a remarkable difference in the eight (8) components studied under educators' strategies for inclusive education and enrolment of children with disability. Statistically significant correlations were found among six (6) of the components namely; build a welcoming school environment [p=0.000], educators being aware of their duty [p=0.000], teacher and parents meet either than P.T.A meeting [p=0.000], school have ramp to reach facilities [p=0.000], school have good lighting [p=0.011] as well as have organised learning for diversity [p=0.000] and enrolment of children with disability. However, there was no statistically significant correlation found between the other components namely; create supportive and caring environment [p=0.064] as well as provide pupils with disability learning materials [p=0.081] and enrolment of children with disability.

Table 3: Correlation between Educators' Strategies for Inclusive Education and Enrolment of Children with Disability

Inclusive Education Strategies	Enrol	Not Enrol	Total n (%)	Kappa	P-Value
Build a Welcoming School Environment				0.297***	0.000
Yes	55.1	44.9	69(100.0)		
No	25.4	74.6	122(100.0)		
Educators being aware of their duty				-0.349***	0.000
Not yet	23.8	76.2	160(100.0)		
Few	100.0	0.0	31(100.0)		
Teacher and Parents meet either than P.T.A Meeting				0.324***	0.000
Never	52.0	48.0	98(100.0)		
Once or twice a year	19.4	80.6	93(100.0)		
Create Supportive and Caring Environment				0.113*	0.064
Yes	40.8	59.2	125(100.0)		
No	27.3	72.7	66(100.0)		
School have Ramp to Reach Facilities				-0.300***	0.000
Not at all	21.1	79.9	95(100.0)		
Just one	51.0	49.0	96(100.0)		
School has good lighting				0.167***	0.011
Poor lighting	54.1	45.9	37(100.0)		
Reasonable lighting	31.8	68.2	154(100.0)		

Table 3: Continued.

Have Organised Learning for Diversity				-0.340***	0.000
Yes	22.8	77.2	136(100.0)		
No	69.1	30.9	55(100.0)		
Provide Pupils with Disability Learning Materials				-0.097*	0.081
Not yet	37.5	62.5	48(100.0)		
Five pupils	45.5	54.5	112(100.0)		
Almost all pupils	0.0	100.0	31(100.0)		

*Note: Row percentages in parenthesis, Kappa significant at (0.01) ***, (0.05) **, (0.10) **
Source: Fieldwork (2023)*

Following the Kappa statistics analysis results on educators' strategies for inclusive education and enrolment of children with disability, further analysis was run using the multiple linear regressions to estimate the relationship between the educators' strategies for inclusive education and enrolment of children with disability. Because the independent variable is more than one and the outcome variable is only one and all variables are quantitative, it became prudent to use multiple linear regression to analyse the relationship between them. The results are presented in Table 4.

Table 4: Multiple Linear Regression Results on Educator' Strategies for Inclusive Education and Enrolment of Children with Disability

Factor	Unstandardized Coefficient	P. Value	95% CI	
Educators Build a Welcoming School Environment	1.000**	0.000	1.000	1.000
Teachers are Aware of their Duties Concerning SpED, SHEP, Guidance & Counselling and Girl-Child Education	-1.000**	0.000	-1.000	-1.000
Teachers Meet with Parents of Children with Special Education Needs and Discuss their Progress	-1.000**	0.000	-0.000	-0.000
Educators Create Supportive and Caring Environment	1.000**	0.000	1.000	1.000
Schools have Ramps or 'Flat' Access to Reach All Facilities	-1.000**	0.000	-0.000	-0.000
Schools have Good Lighting in the Classrooms	1.000**	0.000	1.000	1.000
Constant	1.000	0.000	1.000	1.000

*Significant at (0.05) **
Source: Fieldwork (2023)*

In Table 4, educators "have organised learning for diversity", and "provide pupils with disability learning materials" were excluded from the model because the two independent variables were highly correlated and that, including them in the model would bring hard collinearity and that might pose a problem thereby making it difficult for the researcher to be able to correctly estimate the contribution of each single independent variable to the outcome variable.

It emerged in Table 4 that, educators that build a welcoming school environment was statistically significant variable that seems to have influenced enrolment of children with disability at P=0.000, (coeff=1.000, 95%CI [1.000 —1.000]). This coefficient (1.000) indicates that as the value of the educators that build a welcoming school environment increases, the mean of enrolment of children with disability also tends to increase. Educators are aware of their duties concerning SpED, SHEP, Guidance & Counselling and Girl-Child Education was observed as statistically significant to enrolment of children with disability at p=0.000, (coeff=-1.000, 95%CI [-1.000 — 1.000]). This suggests that as the value (-1.000) of educators are aware of their duties concerning SpED, SHEP, Guidance and Counselling and Girl-Child Education increases, the mean of the enrolment of children with disability tends to decrease (see Table 4).

As teachers meet with parents of children with special education needs and discuss their progress value tends to increase, the mean of enrolment of

children with disability tends to decrease. This was significant at $p=0.000$, (coeff=-1.000, 95% CI [-1.000 — -1.000]) (see Table 4). It appears in the model that educators creating supportive caring environment was statistically significant to enrolment of children with disability at $p=0.000$, (coeff=1.000, 95% CI [1.000 — 1.000]). This suggests that as there is an increase in the value (1.000) of the educators creating supportive caring environment while holding other variables in the model constant leads to an increase in the mean value of the dependent variable (enrolment of children with disability) (see Table 4).

Schools have ramps or 'flat' access to reach all facilities was observed to be statistically significant to inclusive education at $p=0.000$, (coeff=-1.000, 95% CI [-1.000 — -1.000]). The coefficient (-1.000) value signifies that as the value of the independent variable (schools have ramps or 'flat' access to reach all facilities) increases, the mean of enrolment of children with disability (inclusive education) decreases (see Table 4). It emerged that schools having good lighting in the classrooms appears to be statistically significant to enrolment of children with disability at $p=0.000$, (coeff=1.000, 95% CI [1.000—1.000]) suggesting that as the value (1.000) of the independent variable (schools having good lighting in the classrooms) increases, it leads to an increase in the mean value of the response variable (enrolment of children with disability) (see Table 4).

To assess educators' perceptions and attitudes towards inclusive education, several questions were asked to collect data from the participants. The questions covered perceptions, attitudes and professional efficacy and the results are shown in Table 5.

Table 5: JHS Educators' Perceptions and Attitudes Towards Inclusive Education

Perceptions and Attitudes	F	%
I am confident in my ability to teach children with special needs		
Strongly agree	160	83.8
Disagree	31	16.2
I have been adequately trained to meet the needs of children with disabilities		
Strongly agree	31	16.2
Agree	140	73.3
Disagree	20	10.5
I become easily frustrated when teaching students with special needs		
Strongly agree	30	15.7
Agree	31	16.2
Disagree	99	51.8
Strongly disagree	31	16.2
I become anxious when I learn that a student with special needs will be in my classroom		
Strongly agree	92	48.2
Disagree	79	41.4
Strongly agree	20	10.5
Although children differ intellectually, physically, and psychologically, I believe that all children can learn in most environments		
Strongly agree	62	32.5
Agree	48	25.1
Disagree	61	31.9
Strongly disagree	20	10.5
I believe that academic progress is possible in children with special needs		
Strongly agree	47	24.6
Agree	75	39.3
Disagree	38	19.9
Strongly disagree	31	16.2

Table 5: Continued.

Students with special needs have higher academic achievements when included in the regular education classroom		
Strongly agree	48	25.1
Agree	74	38.7
Disagree	31	16.2
Strongly disagree	38	19.9
I believe that children with special needs should be placed in special education classroom		
Agree	110	57.6
Disagree	44	23.0
Strongly disagree	37	19.4
I am comfortable teaching a child that is moderately physically disabled		
Strongly agree	48	25.1
Agree	74	38.7
Disagree	31	16.2
Strongly disagree	38	19.9
I have problems teaching a student with cognitive deficits		
Agree	123	64.4
Disagree	68	35.6
Total	191	100.0

Source: Fieldwork (2023)

Results in Table 5 depicts that majority (83.8%) of the participants were certain in their minds on the statement that they are confident in their ability to teach children with special needs with 16.2% disagreeing to the statement. Whereas 73.3% agreed that they have been adequately trained to meet the needs of children with disabilities, 10.5% disagreed on the statement. This is supported by the extent to which the educators agreed or disagreed with the issue on easily become frustrated when teaching students with special needs. With this 51.8% disagreed while 15.7% strongly agreed on the statement. In respect to the fourth element on the table, the study finding indicates that nearly half (48.2 %) of the participants strongly agreed to the fact that they become anxious when they learn that a student with special needs will be in their classroom while 10.5% strongly disagreed with the statement (see Table 5).

With regard to the statement that although children differ intellectually, physically, and psychologically, do educators believe that all children can learn in most environments, the result shows that about thirty-three per cent (32.5%) of the participants strongly agreed while 10.5% strongly disagreed with the statement. When establishing the extent to which educators agree or disagree to the statement that academic progress is possible in children with special needs, the results showed that nearly forty per cent (39.3%) strongly agreed while 16.2% of the participants strongly disagreed to the statement (see Table 5). Concerning the rate at which respondents agree or disagree to the statement that students with special needs have higher academic achievements when included in the regular education classroom, the results revealed that a little above thirtyeight (38.7%) at least agreed while 16.2% disagreed with the statement. Whereas 57.6% of the participants agreed to the statement that children with special needs should be placed in special education classroom, 19.4% strongly disagreed to the statement (see Table 5).

The study also tried to ascertain from educators if they agree or disagree to the statement that they feel comfortable teaching a child that is moderately physically disabled and the results showed that nearly thirty-nine per cent (38.7%) of the participant agreed with the statement while 16.2% disagreed. Participants were asked to indicate whether they agree or disagree to the statement "have problems teaching a student with cognitive deficits." The result revealed that 64.4 per cent agreed to the statement while 35.6% disagreed (see Table 5).

In Table 6, results on Kappa statistics measuring the correlation between educators' perceptions and attitudes for inclusive education and enrolment of children with disability is presented. This analysis was run to ascertain how the responses on educators' perceptions and attitudes correlate to enrolment of children with disability. In all ten (10) variables were studied under the educators' perceptions

and attitudes. Statistically significant correlation was found among five (5) of the components namely; am confident to teach children with special needs [p=0.000], am adequately trained to meet the needs of children with disabilities [p=0.000], believe that academic progress is possible in children with special needs [p=0.000], believe that children with special needs should be placed in special education classroom [p=0.005] as well as have problems teaching a student with cognitive deficits [p=0.005], students with special needs have higher academic achievements when included in the regular education classroom [p=0.072] as well as am comfortable teaching a child that is moderately physically disabled [p=0.072] and enrolment of children with disability.

However, there was no statistically significant correlation found between the other components namely; am easily frustrated when teaching students with special needs [p=0.923], become anxious when I learn that a student with special needs will be in my classroom [p=0.500] as well as believe that all children can learn in most environments [p=0.113] and enrolment of children with disability.

Table 6: Correlation between Perceptions and Attitudes for Inclusive Education and Enrolment of Children with Disability

Perceptions and Attitudes	Enrol	Not Enrol	Total n (%)	Kappa	P. Value
Am confident to teach children with special needs				-0.149***	0.000
Strongly agree	23.8	76.2	160(100.0)		
Disagree	100.0	0.0	31(100.0)		
Am adequately trained to meet the needs of children with disabilities				0.580***	0.000
Strongly agree	100.0	0.0	31(100.0)		
Agree	12.9	87.1	140(100.0)		
Disagree	100.0	0.0	20(100.0)		
Am easily frustrated when teaching students with special needs				0.002	0.923
Strongly agree	0.0	100.0	30(100.0)		
Agree	0.0	100.0	31(100.0)		
Disagree	38.4	61.6	99(100.0)		
Strongly disagree	100.0	0.0	31(100.0)		
Become anxious when I learn that a student with special needs will be in my classroom				-0.014	0.500
Strongly agree	33.7	66.3	92(100.0)		
Disagree	22.8	77.2	79(100.0)		
Strongly disagree	100.0	0.0	20(100.0)		
Believe that all children can learn in most environments				0.058	0.113
Strongly agree	50.0	50.0	62(100.0)		
Agree	37.5	62.5	48(100.0)		
Disagree	0.0	100.0	61(100.0)		
Strongly disagree	100.0	0.0	20(100.0)		
Believe that academic progress is possible in children with special needs				-0.166***	0.000
Strongly agree	0.0	100.0	47(100.0)		
Agree	41.3	58.7	75(100.0)		
Disagree	100.0	0.0	38(100.0)		
Strongly disagree	0.0	100.0	31(100.0)		

Table 6: Continued

Students with special needs have higher academic achievements when included in the regular education classroom				0.074*	0.072
Strongly agree	0.0	100.0	48(100.0)		
Agree	0.0	100.0	74(100.0)		
Disagree	100.0	0.0	31(100.0)		
Strongly agree	100.0	0.0	38(100.0)		
Believe that children with special needs should be placed in special education classroom				-0.077***	0.005
Agree	44.5	55.5	110(100.0)		
Disagree	0.0	100.0	44(100.0)		
Strongly disagree	54.1	45.9	37(100.0)		
Am comfortable teaching a child that is moderately physically disabled				0.074*	0.072
Strongly agree	0.0	100.0	48(100.0)		
Agree	0.0	100.0	74(100.0)		
Disagree	100.0	0.0	31(100.0)		
Strongly disagree	100.0	0.0	38(100.0)		
Have problems teaching a student with cognitive deficits				-0.103***	0.005
Strongly agree	0.0	100.0	30(100.0)		
Agree	39.2	60.8	79(100.0)		
Disagree	0.0	100.0	44(100.0)		
Strongly disagree	100.0	0.0	38(100.0)		

*Note: Row percentages in parenthesis, Kappa significant at (0.01) ***, (0.05) **, (0.10) **
Source: Fieldwork (2023)*

Table 7 highlights a multiple linear regression analysis on educators' perceptions and attitudes towards inclusive education and enrolment of children with disability. This analysis was done in order to get an insight into the degree of difference between the respondent categories and also to tell which factors among those components studied under educators' perceptions and attitudes those that predict enrolment of children with disability positively and those that predict it negatively in order to make a conclusion. The results are presented in Table 7.

Table 7: Multiple Linear Regression Analysis on Educators' Perceptions and Attitudes for Inclusive Education and Enrolment of Children with disability

Factor	Unstandardized Coefficient	P. Value	95%CI	
Am confident to teach children with special needs	-0.250**	0.000	-0.250	-0.250
Am adequately trained to meet the needs of children with disabilities	-3.500**	0.000	-3.500	-3.500
Am easily frustrated when teaching students with special needs	-1.250**	0.000	-1.250	-1.250
Believe that all children can learn in most environments	1.000**	0.000	1.000	1.000
Believe that academic progress is possible in children with special needs	0.750**	0.000	0.750	0.750
Children with special needs should be placed in special education classroom	0.750**	0.000	0.750	0.750
Constant	6.250	0.000	6.250	6.250

*Significant at (0.05) ***
Source: fieldwork (2023)

It emerged in Table 7 that, educators confident to teach children with special needs was statistically significant variable that seems to have influenced enrolment of children with disability at $P=0.000$, (coeff = -0.250, 95%CI [-0.250 — -0.250]). This indicates that -0.25-unit shift in the value of the educators confident to teach children with special needs, the mean of the enrolment of children with disability also tends to decrease. Educators being adequately trained to meet the needs of children with disabilities was observed as statistically significant to enrolment of children with disability at $p=0.000$, (coeff=-3.500, 95% CI [-3.500 — -3.500]). This suggests that as the value of educators being adequately trained to meet the needs of children with disabilities increases by -3.5 units, the mean of the enrolment of children with disability tends to decrease (see Table 7).

In Table 7, educators being easily frustrated when teaching students with special needs was observed as statistically significant variable influencing enrolment of children with disability at $p=0.000$, (coeff = -1.250, 95% CI [-1.250 — -1.250]). This result suggests that -1.25-units change in the independent variable (educators being easily frustrated when teaching students with special needs) the mean of the response variable (enrolment of children with disability) tends to decrease (see Table 7). It appears in the Table that educators believe that all children can learn in most environments was statistically significant to enrolment of children with disability at $p=0.000$, (coeff = 1.000, 95% CI [1.000 —1.000]). This suggests that as there is one-unit increase in the value (1.000) of the educators believe that all children can learn in most environments while holding other variables in the model constant leads to an increase in the mean value of the dependent variable (enrolment of children with disability) (see Table 7).

Educators believe that academic progress is possible in children with special needs was observed to be statistically significant to enrolment of children with disability at $p=0.000$, (coeff=0.750, 95% CI [0.750—0.750]). The coefficient value signifies that as the value of the independent variable (educators believe that academic progress is possible in children with special needs) increase by 0.75 units, the mean of the dependent variable (enrolment of children with disability) also tends to increase (see Table 7). It emerged that children with special needs should be placed in special education classroom appears to be statistically significant to enrolment of children with disability at $p=0.000$, (coeff = 0.750, 95% CI [0.750—0.750]) suggesting that 0.75 units shift in the value of the independent variable (children with special needs should be placed in special education classroom) leads to an increase in the mean value of the response variable (enrolment of children with disability) (see Table 7).

To ascertain the kind of challenges educators' encounter for implementing inclusive education, several questions were asked to collect data from participants on the challenges they encounter for implementing inclusive education. The questions comprised ignorance, logistics, support by parents and guardians, challenges in curriculum, teacher empowerment and teacher workload. The results are presented in Table 8.

Table 8: Educators' Challenges for Implementing Inclusive Education

IE Implementation Challenges	F	%
Educators being ignorant about pupils with special education needs in their class		
Yes	66	34.6
No	125	65.4
Educators have the appropriate logistics for teaching in the classroom		
Yes	48	25.1
No	143	74.9
Schools have deficiencies in infrastructure		
Yes	191	100.0
Parents/guardians do physically support their wards with their homework		
I think so	17	8.9
I do not think so	143	74.9
Undecided	31	16.2
Parents stay in touch with their wards' teachers		
Some do	110	57.6
Some do not	81	42.4
Continuous changes in the school curriculum add strain to the teachers		
Yes	92	48.2
No	99	51.8
Teachers face challenges of new curriculum		
Yes	91	47.6
No	100	52.4
Educators have been sufficiently empowered to teach CSENs		
Yes	167	87.4
No	24	12.6
Can lack of empowerment make teachers lose confidence in delivering lessons with CSENs		
Yes	144	75.4
No	47	24.6
Teachers workload		
Teaching and assessment	75	39.3
Marking	68	35.6
Counselling	48	25.1
Total	191	100.0

Source: Fieldwork (2023)

Regarding ignorance about pupils with special education needs in class, respondents were asked whether they ignore pupils with special education needs in their class or not and the results indicated that 65.4% reported that they do not ignore them while 34.6% said they do ignore them (see Table 8). Out of the 125 respondents who indicated that they do not ignore pupils with special education needs in their class were further asked to stipulate how they relate to these pupils with special education needs in their class and the results revealed that 71.2% indicated that they ask pupils to help one another while 36.8% said they make them feel welcome in their class.

Concerning appropriate logistics for teaching in the classroom, respondents were asked to indicate if they have the appropriate logistics for teaching in the classroom and the results revealed that 74.9% of the respondents reported that, they do not have appropriate logistics for teaching in the classroom (see Table 8). With respect to if schools have deficiencies in

infrastructure, the results revealed that all the respondents (100%) indicated that the schools have infrastructural deficiencies (see Table 8).

When educators were asked to indicate whether parents/guardians do physically support their wards with their homework or not, the results revealed that nearly seventy-five per cent (74.9%) of the respondents indicated they do not think so while 8.9% reported they think so (see Table 8). On whether parents stay in touch with their wards educators or not, the result showed that 57.6% of the respondents reported that some parents do stay in touch with their wards educators while 42.4% indicated that some parents do not.

Educators were asked to indicate if the continuous changes in the school curriculum add strain to teachers and the responses revealed that 51.8% of the respondents said it does not add strain to teachers while 48.2% indicated that it does add strain to teachers (see Table 8). Educators were asked to indicate whether they face challenges of the new curriculum or not and the results indicated that 52.4% of the respondents stated that they do not face any challenges of the new curriculum while 47.6% reported that they face challenges (see Table 8).

Regarding whether educators have been sufficiently empowered to teach CSENs or not, the results revealed that majority (87.4%) of the respondents reported that educators have been sufficiently empowered to teach while 12.6% said educators have not been sufficiently empowered to teach (See Table 8). Analysis of whether lack of empowerment makes teachers lose confidence in delivering lessons with CSENs revealed that 75.4% of the respondents indicated that lack of empowerment makes teachers lose confidence in delivering lessons with CSENs while 24.6% stated lack of empowerment do not make teachers lose confidence in delivering lessons. The study collected data on the workload of teachers and the results revealed that 39.3% of the respondents reported that it is teaching and assessment while 25.1% indicated counselling (see Table 8).

In Table 9, Kappa statistics analysing the challenges JHS educators encounter for making inclusive education policy a working tool is presented. This analysis was run to ascertain the correlation between responses on educators' challenges for inclusive education and enrolment of children with disability. In all ten (10) components were studied under the challenge's educators encounter for making inclusive education a working tool. Statistically significant correlation was found among six (6) of the components namely; being ignorant about pupils' with special education needs in their class [p=0.000], have the appropriate logistics for teaching in the classroom [p=0.000], parents stay in touch with their wards teachers [p=0.000], teachers face challenges of new curriculum [p=0.000], being sufficiently empowered to teach CSENs [p=0.004] as well as can lack of empowerment make teachers lose confidence in delivering lessons with CSENs [p=0.000], parents/guardians support their wards with do physically their homework [p=0.074] as well as well as workload of teachers and inclusive education [0.097] and enrolment of children with disability. However, there was no statistically significant correlation found between the other components namely; have deficiencies in infrastructure [p=1.000] as well as continuous changes in the school curriculum add strain to the teachers [p=0.500] and enrolment of children with disability.

Table 9: Correlation between Educators' Challenges for Implementing Inclusive Education and Enrolment of Children with Disability

Challenges of IE Implementation	Enrol	Not Enrol	Total n(%)	Kappa	P. Value
Being ignorant about pupils with special education needs in their class				0.576***	0.000
Yes	74.2	25.8	66(100.0)		
No	16.0	84.0	125(100.0)		
Have the appropriate logistics for teaching in the classroom				- 0.421***	0.000
Yes	0.0	100.0	48(100.0)		
No	48.3	51.7	143(100.0)		
Have deficiencies in infrastructure				0.000	1.000
Yes	36.1	63.9	191(100.0)		
Parents/guardians do physically support their wards with their homework				0.080*	0.074
I think so	0.0	100.0	17(100.0)		
I do not think so	26.6	73.4	143(100.0)		

Table 9: Continued

Parents stay in touch with their wards' teachers				- 0.437***	0.000
Some do	16.4	83.6	110(100.0)		
Some do not	63.0	37.0	81(100.0)		
Continuous changes in the school curriculum add strain to the teachers				-0.047	0.500
Yes	33.7	66.3	92(100.0)		
No	38.4	61.6	99(100.0)		
Teachers face challenges of new curriculum				- 0.698***	0.000
Yes	0.0	100.0	91(100.0)		
No	69.0	31.0	100(100.0)		
Being sufficiently empowered to teach CSENs				0.209***	0.004
Yes	50.8	49.2	61(100.0)		
No	29.2	70.8	130(100.0)		
Can lack of empowerment make teachers lose confidence in delivering lessons with CSENs				0.312***	0.000
Yes	47.9	52.1	144(100.0)		
No	0.0	100.0	47(100.0)		
Teachers workload				-0.079*	0.097
Teaching and assessment	41.3	58.7	75(100.0)		
Marking	55.9	44.1	68(100.0)		
Counselling	0.0	100.0	48(100.0)		

*Note: Row percentages in parenthesis, Kappa significant at (0.001) ***, (0.01) **, (0.05) **
Source: Fieldwork (2023)*

Following Kappa statistics result on educators' challenges for inclusive education and enrolment of children with disability, further analysis was run to identify which categories of the various explanatory factors studied under educators' challenges for implementing inclusive education those that strongly predict enrolment of children with disability. The results are presented in Table 10.

Table 10: Multiple Linear Regression Results on Educators' Challenges for Inclusive Education and Enrolment of Children with Disability

Factor	Unstandardized Coefficient	P. Value	95% CI	
Being ignorant about pupils with special education needs in their class	0.600**	0.000	0.600	0.600
Parents stay in touch with their ward's teachers	-0.200**	0.000	-0.200	-0.200
Going through training on the new curriculum	-0.400**	0.000	-0.400	-0.400
Teachers face challenges of new curriculum	-0.600**	0.000	-0.600	-0.600
Workload of teachers	0.400**	0.000	0.400	0.400
Educators teach concepts they do not understand	-0.600**	0.000	-0.600	-0.600
Constant	2.600	0.000	2.600	2.600

*Chi Square Significant at (0.05) **
Source: Fieldwork (2023)*

In Table 10, it emerged that, being ignorant about pupils with special education needs in classroom was statistically significant variable that seems to have influenced enrolment of children with disability at $P=0.000$, (coeff=0.600, 95%CI [0.600—6.00]). This indicates that a 0.60-unit shift in the value of being ignorant about pupils with special education needs in classroom, causes a positive change in the mean of the enrolment of children with disability. Parents stay in touch with their wards teachers was statistically significant to enrolment of children with disability at $p=0.000$, (coeff = -0.200,95%CI [-02000 — -0.200]) suggesting that a -0.20 unit change in the value of parents stay in touch with their ward's teachers, the mean of the enrolment of children with disability tends to decrease (see Table 10).

As going through training on the new curriculum value tends to increase by -0.40 unit, the mean of enrolment of children with disability tends to decrease. This was significant at $p=0.000$, (coeff = -0.400, 95% CI [-0.400 — -4.00]) (see Table 10). It appears in the model that teachers face challenges of new curriculum was statistically significant to enrolment of children with disability at $p=0.000$, (coeff = -0.600, 95% CI [-0.600 — -0.600]). This proposes that as there was -0.60-unit shift in the value of the teachers face challenges of new curriculum, the mean value of enrolment of children with disability decreases (see Table 10).

Educators workload was observed to be statistically significant to enrolment of children with disability at $p=0.000$, (coeff=0.400, 95%CI [0.400 — 0.400]). The coefficient value signifies that as the value of educators' workload increases by 0.40 units, the mean of enrolment of children with disability also tends to increase (see Table 10). It emerged in the model that educators teach concepts they do not understand is statistically significant to enrolment of children with disability at $p=0.000$, (coeff = -0.600, 95% CI [-0.600 — -0.600]) suggesting that a -0.60-unit shift in the value of educators teach concepts they do not understand, it leads to a decrease in the mean value of enrolment of children with disability (see Table 10).

b) Socio-Economic Status of the JHS Educators

To analyse socio-economic status of Educators some questions were generated to request respondents to provide data that will enable the researcher to measure this objective. The questions asked included high economic status and health status. The results obtained are presented in Table 11.

Table 11: Socio-Economic Status of the JHS Educators

Socio-Economic Status	F	%
Educators are able to provide basic needs for the family		
Yes	92	48.2
No	99	51.8
Educators being able to provide adequate learning facilities at home		
Yes	122	63.9
No	69	36.1
Educators' life being figured as a weary-faced person		
Yes	106	55.5
No	85	44.5
Economic status		
High	31	16.2
Low	143	74.9
Undecided	17	8.9
Often absent yourself from school		
Yes	92	48.2
No	99	51.8
Total	191	100.0

Source: Fieldwork (2023)

On whether educators are able to provide family's basic needs or not, the results show that 51.8 per cent of the respondents reported that they are not able to provide basic needs for their families while 48.2 per cent said they can provide for their family's basic needs (see Table 7). Regarding if educators are able to provide adequate learning facilities at home for their wards or not, 63.9 per cent of the respondents said they are able to provide adequate learning facilities at home for their wards while 36.1 per cent indicated that they are

not able to provide adequate learning facilities at home for their wards (see Table 11).

Analysis of whether educators' life is being figured as a weary-faced person or not, revealed that about fifty-six per cent (55.5 %) of the respondents indicated that educators' life is being figured as a weary-faced person while 44.5 per cent of the respondents said their life is not figured as weary-faced person (see Table 11). Educators were asked to indicate their economic status and nearly seventy-five per cent (74.9%) reported that their economic status is low while 8.9 per cent could not decide (see Table 11). Regarding if educators often absent themselves from school or not showed that about fifty-two per cent (51.8%) of the respondents said they do not absent themselves from school regularly while 48.2% said they often (regularly) absent themselves from school (see Table 11).

Table 12 presents Kappa statistics analysing the socio-economic status of educators and enrolment of children with disability. This analysis was run to find out if there is correlation between educators' socioeconomic status and enrolment of children with disability. In all five (6) components were studied under the educators' socioeconomic status. Statistically significant correlation was found among four (4) of the components namely; educators being able to provide adequate learning facilities at home [p=0.000], educators' life being figured as "a weary-faced person [p=0.027], economic status [p=0.000] as well as often absent from school [p=0.000] and inclusive education. However, there was no statistically significant correlation found between educators being able to provide basic needs for the family [0.500] and inclusive education.

Table 12: Correlation between Educators' Socio-Economic Status and Inclusive Education

Socio-Economic Status	Enrol	Not Enrol	Total n(%)	Kappa	P. Value
Educators are able to provide basic needs for the family				0.070	0.500
Yes	33.7	66.3	92(100.0)		
No	38.4	61.6	99(100.0)		
Educators being able to provide adequate learning facilities at home				-.0254***	0.000
Yes	25.4	74.6	122(100.0)		
No	55.1	44.9	69(100.0)		
Educators' life being figured as a weary-faced person				-0.148*	0.027
Yes	29.2	70.8	106(100.0)		
No	44.7	55.3	85(100.0)		
Economic Status				-0.323***	0.000
High	0.0	100.0	31(100.0)		
Low	48.3	51.7	143(100.0)		
Undecided	0.0	100.0	17(100.0)		
Often absent from school				-0.703***	0.000
Yes	0.0	100.0	92(100.0)		
No	69.7	30.3	99(100.0)		

*Note: Row percentages in parenthesis, Kappa significant at (0.01) ***, (0.05) **, (0.10) **
Source: Fieldwork (2023)*

Following the Kappa statistics results on educators' socio-Economic Status (SES) for making inclusive education (IE) a working tool, further analysis was run using the multiple linear regressions to estimate the relationship between the educators' socio-economic status and enrolment of children with disability. The analysis became necessary because the researcher wanted to determine how strong the relationship might be between the educators' socio-economic status and enrolment of children with disability. The results are presented in Table 13.

Table 13: Multiple Linear Regression Results on Socio-Economic Status and Enrolment of Children with Disability

Factor	Unstandardized Coefficient	P. Value	95% CI	
Educators being able to provide adequate learning facilities at home	-1.000**	0.000	-1.000	-1.000
Educators' life being figured as a weary-faced person	1.000**	0.000	1.000	1.000
Economic Status	-1.000**	0.000	-1.000	-1.000
Often absent from school	-1.000**	0.000	-1.000	-1.000
Constant	5.000	0.000	5.000	5.000

*Significant at (0.05) ***
Source: Fieldwork (2023)

It emerged in Table 13 that, educators being able to provide adequate learning facilities at home was statistically significant variable influencing enrolment of children with disability at P=0.000, (coeff=-1.000,95% CI [-1.000— -1.000]). This unstandardized coefficient (-1.000) indicates that as the value of the educators being able to provide adequate learning facilities at home increases, the mean of the enrolment of children with disability also tends to decrease.

Educators' life being figured as a weary-faced person was emerged statistically significant to enrolment of children with disability at p=0.000, (coeff=1.000, 95%CI [1.000—1.000]). This suggests that as the value (1.000) of educators' life being figured as a weary-faced person increases; the mean of the enrolment of children with disability also tends to increase (See Table 13).

As educators' economic status value tends to increase, the mean of enrolment of children with disability tends to decrease. This was significant at p=0.000, (coeff=-1.000, 95%CI [-1.000 — -1.000]) (see Table 9). It appears in the model that educators often (regularly) absent themselves from school was statistically significant to enrolment of children with disability at p=0.000, (coeff = -1.000, 95% CI [-1.000 — -1.000]). This suggests that as there is an increase in the value (0.1000) of the educators often (regularly) absent themselves from school while holding other variables in the model constant leads to a decrease in the mean value of enrolment of children with disability (see Table 13). However, educators are able to provide basic needs for the family was excluded from the model due to the fact that its inclusion brought hard collinearity which could not make the researcher to observe the contribution of each independent variable to the response variable.

IV. Discussion

The study focused on investigating educators' strategies for inclusive education, educators' perceptions and attitudes towards inclusive education, challenges educators' encounter and socioeconomic status of these educators. Educators report on building a welcoming school environment, surprisingly, revealed that small proportion of the respondents responded in affirmative. The few respondents outlined that they built a welcoming school environment by accommodating all pupils irrespective of their status and also sensitised every staff to welcome and show love and affection to pupils with special education needs. This finding confirmed that inclusive education strategies can only be recognised when all relevant variables that regulate the implementation process are in control on one hand.

On the other hand, it could be that educators that refute building a welcoming school environment for inclusive education reason might be that relevant variables that regulate the implementation of inclusive education process are not in control and that they do not want to perpetuate suffering for the school as a whole. It could also be that the schools that do not build a welcoming environment reason might probably be that the educators lack the capacity to ensure reform of the cultures, practices and strategies within the schools so that they can respond to learners' diversity which might lead to enrolment of children with disability. This confirms a submission made by [29], [30] in their study that like many reforms, inclusive education involves reforming the cultures, practices and strategies within the schools so that they respond to learners' diversity.

The study revealed that overwhelmingly majority of the respondents confirmed that in terms of inclusive education, they are not yet aware of their duties. It is not surprising that the study discovered that educators and parents never met to discuss the progress of children with disability in the school. This finding has revealed that because most educators are not aware of their duties in terms of inclusive education, they do not see why they should build a welcoming school community to accommodate children with disability which would pose problem on them. Parents and teachers never met to discuss progress of children with disability in school could mean they do not welcome or enrol children with disability in their school and that they are not held responsible to meet with parents to discuss learners'

progress. This finding confirmed a study by [31] that creating and sustaining inclusive learning environments is difficult, particularly in a system dominated by curriculum coverage, compliance, performativity and measurable outcomes.

The study identified a statistically significant correlation between educators' strategies for inclusive education and enrolment of children with disability therefore, the null hypothesis was rejected. This implies that when educators have in place strategies for implementing inclusive education, it goes a long way to assist educators to enrol children with disability. Ideally, the assumption is that, the more and more educators have in place credible strategies for implementing inclusive education, it is the more and more they can enrol children with disability. It emerged that six (6) components of the educators' strategies for inclusive education have their *p*-value not greater than the standard 0.05 cut-off which indicates that the variables were not independent of each other and that there was a statistically significant correlation between the categorical variables. However, the other two variables which have their *p*-value greater than the cut-off indicates that the variables were independent of each other and that there was no statistically significant correlation between the categorical variables.

The multiple linear regression analysis on educator' strategies for inclusive education and enrolment of children with disability revealed correlation between build a welcoming school environment and enrolment of children with disability. This correlation had revealed that when educators have commendable strategies for inclusive education, it helps to increase the enrolment of children with disability in the mainstream schools. The coefficient (1.000) of build a welcoming school environment curtails that the more and more educators build a welcoming school environment, it is the more and more it increases the enrolment of children with disability in a mainstream school.

Moreover, the correlation found between educators are aware of their duties concerning SpED, SHEP, Guidance & Counselling and Girl-Child Education and enrolment of children with disability revealed that when the value of educators are aware of their duties concerning SpED, SHEP, Guidance & Counselling and Girl-Child Education increases, the mean of enrolment of children with disability also tends to decrease. The coefficient (-1.000) of the educators is aware of their duties concerning SpED, SHEP, Guidance & Counselling and Girl-Child Education signifies that the more and more educators are aware of their duties, it is the more and more it reduces the enrolment of children with disability into the mainstream schools.

As teachers meet with parents of children with special education needs and discuss their progress value (-1.000) tends to increase, the mean of enrolment of children with disability tends to decrease. It appears the more and more educators meet with parents of children with special education needs to discuss their progress it is the more that it decreases the intake of these disabled children into the mainstream schools. A one-unit (1.000) shift in the value of educators creating supportive caring environment causes a positive change in the mean of enrolment of children with disability in the mainstream schools. This advances that the intake of children with disability are being more in the mainstream schools. The implication of this finding could be that educators understand that in inclusive classrooms there should not be discrimination between the learners with disabilities, and those without disabilities. Hence, educators might beware that each learner contributes to the rich variety of ideas and actions in the classroom. This finding corroborates to a study by [32] that inclusive education is an opportunity to work with each pupil regardless of their disability, race, ethnicity, sexuality, and ability.

Though association was found between schools have ramps or 'flat' access to reach all facilities and enrolment of children with disability but did not demonstrate an increase in the mean of the dependent variable (DV). This finding has revealed that as the value of the independent variable (IV) increases by one-unit (-1.000), it negatively affects the mean of the enrolment of children with disability in the mainstream school by decreasing the intake of children with disability. This is because the one-unit shift in the (IV) brought a reduction in the (DV).

Per the study, it appears the more and more schools have good lighting in the classrooms positively affected the enrolment of children with disability into the mainstream schools. The coefficient (1.000) has revealed that as schools continue to have good lighting in the classrooms then it is the more, they will increase the enrolment of children with disability in the mainstream schools.

a) Educators' Perceptions and Attitudes towards Inclusive Education

As the study tries to analyse educators' perceptions and attitudes towards inclusive education, it was revealed that overwhelming majority of the respondents were certain in their minds on the statement that they are confident in their ability to teach children with special needs. An educator can be confident in a duty when such a person has passion about such duty on one hand. On the other hand, it could be that these educators admit that such children also have different skills that they can bring to the fore when permitted in a mainstream school. Probably it might be that, teachers might willingly show a high level of commitment to their beliefs and values about these disabled students in a classroom due to the fact that these teachers might have observed that their views and attitudes relating to inclusion are just as important as

material and policy support in implementing inclusion which might have motivated them to be confident in teaching children with disability. This finding corroborates to a submission made in a study by [33] that the voices and opinions of teachers are critical on issues regarding inclusion because teachers are vital to the implementation in their classrooms. The successful implementation of inclusion depends on teachers' beliefs and attitudes.

The study brought to bear that majority of the respondents confirmed that they have been adequately trained to meet the needs of children with disabilities. This was supported by the extent to which the educators agreed or disagreed with the issue on easily become frustrated when teaching students with special needs. With this an encouraging number of respondents disagree to the statement that they easily become frustrated. This finding is in line with a submission made in a study by [34] that, teachers who have had multiple special education trainings have been shown to demonstrate mainly positive attitudes towards inclusion. Educators being able to believe that all children can learn in most environments irrespective of their intellectual, physical and psychological differences could probably mean that these educators have developed positive perceptions and attitudes towards inclusive education.it could also mean that these educators are aware that each and every child has a unique skill so when put together in a classroom would encourage peer to peer learning and in the end would help all of the students benefit from one another in terms of skills and knowledge. This finding is in accordance with the framework of [35] planned behaviour theory that it is possible that teachers could exhibit positive behaviours in the classroom when they are already predisposed to positive perceptions towards children with disabilities.

The study has revealed that academic progress is possible in children with special needs. This was supported by few of the respondents who established that students with special needs have higher academic achievements when included in the regular education classroom. The reason for this finding could be that these educators have positive perceptions and attitudes about these children with special education needs and that endeavour to guide them very well during classroom delivery. This finding is in line with [33] that a teacher will show a high level of commitment to his or her beliefs and values about students in a classroom hence, in any country, educators are the driving force behind inclusive education.

The study unveiled that children with special needs should be placed in special education classroom. This was made clear when more than sixty per cent (60%) of the respondents acknowledged that they have problems teaching a student with cognitive deficits. The reason for this finding could be that educators do not believe that students with special education needs will do well and that might not put in much effort into teaching these children hence, poor performance of these students.

Statistically significant correlation was found between educators' perceptions and attitudes for inclusive education and enrolment of children with disability, therefore, the null hypothesis was rejected. This implies that when educators have a positive perception and attitude towards inclusive education, it goes a long way to assimilate students with disabilities in regular classrooms. This finding corroborates to [36] study that positive teachers' attitudes foster an easier integration of students with disabilities in the mainstream education.

It emerged that five (5) components of the educators' perceptions and attitudes have their *p*-value not greater than the standard 0.05 cut-off which indicates that the variables were not independent of each other and that there was a statistically significant correlation between the categorical variables. However, the remaining five variables which have their *p*-value greater than the cut-off indicates that the variables were independent of each other and that there was no statistically significant correlation between the categorical variables.

The multiple linear regression analysis on educator' perceptions and attitudes and enrolment of children with disability revealed correlation between being confident to teach children with special education needs and enrolment of children with disability. This correlation had revealed that when educators have admirable confident to teach children with special education needs can make educators to develop positive attitudes for inclusive education, however, the coefficient (-0.250) of being confident to teach children with special education needs rather reduces the mean of enrolment of children with disability in a mainstream school. The implication is that having confident to teach children with disability does not correspond to the enrolment of children with disability into the mainstream school but rather reduces the intake of these children into mainstream schools.

Also, the correlation found between being adequately trained to meet the needs of children with disabilities and enrolment of children with disability revealed that when the value of independent variable (IV) that is "being adequately trained to meet the needs of children with disabilities" increases the mean of enrolment of children with disability also tends to decrease. The coefficient (-3.500) of the (IV) signifies that the more and more being adequately trained to meet the needs of children with disabilities, it is the more and more it reduces the enrolment of children with disability into the mainstream schools.

As being easily frustrated when teaching students with special needs value (-1.250) tends to

increase, the mean of enrolment of children with disability tends to decrease. It appears the more and more educators are easily frustrated when teaching students with special education needs it is the more that it decreases the intake of these disabled children into the mainstream schools. A positive shift in the value (-1.250) of educators are easily frustrated when teaching students with special education needs causes a negative change in the mean of enrolment of children with disability in the mainstream schools. This finding has revealed that the intake of children with disability is limited even though there is a positive shift in the value of the IV but does not correspond to intake of disability children into the mainstream schools.

The study identifies association between being believe that all children can learn in most environments and enrolment of children with disability which corresponded to an increase in the mean of the dependent variable (DV). This finding has revealed that as the value of the independent variable (IV) increases by (1.000), it positively affects the mean of the enrolment of children with disability in the mainstream school by increasing the intake of children with disability into the mainstream schools.

Per the study, it appears the more and more educators believe that academic progress is possible in children with special education needs positively affected the enrolment of children with disability into the mainstream schools. The coefficient (0.750) has revealed that as educators continue to believe that academic progress is possible in children with special education needs then it is the more, they will increase the enrolment of children with disability in the mainstream schools.

In the study, children with special education needs should be placed in special education classroom was found to be statistically significant related to enrolment of children with disability. This revealed that the more and more children with special education needs are made to be placed in special education classroom, it is the more and more it corresponds to the increase in the mean of enrolment of children with disability into the mainstream schools.

b) Educators' Challenges for Implementing Inclusive Education

The study revealed that majority of the educators' does not ignore children with special education needs in their class. This was supported by the fact that educators ask pupils to help one another and also make children with disability to feel welcome in their class. The reason for this finding could stem from the fact that educators have been able to identify and assess learners that have learning disabilities and found that they have exceptional skills that when nurtured will immensely bring forth the best in them. This finding corroborates to [37] study that if the teacher is ignorant of the underlying problem, it will be difficult for them to give appropriate support to the learners with disability.

Respondents asserted that they do not have appropriate logistics for teaching in the classroom. This was confirmed when all the respondents graciously confirmed that the schools have deficiencies in infrastructure. The implication of this lack of appropriate teaching materials might make a classroom atmosphere unfriendly for all the learners. The scarcity of logistics to use in the classroom when dealing with all the learners including those with special needs such as dyslexia might become a challenge to the class teacher. This finding is in line with [38] study that teachers face a lack of resources and materials to use in the teaching and support of children with disabilities such as dyslexic learners.

It appeared some parents do stay in touch with their ward's educators. However, majority of the educators are not certain parents/guardians do physically support their wards with their homework. The implication of this finding is that if parents/guardians do not physically support learners with their homework, it can go a long way to affect the children psychologically and emotionally. Parents staying in touch with their ward's educators could mean they want to know the behaviour of the child in school and how well the child is coping with his or her new environment. It could also mean that parents want to see the success of their wards hence endeavour to stay in touch with their wards' educators. This finding agrees to [39] study that success of children with disability depends on the effort that the teacher, parents and everyone else that is involved in these children's learning put.

The continuous changes in the school curriculum were revealed not adding strain to teachers' performance in classroom delivery. This was confirmed when educators voice out that they do not face any challenges of the new curriculum. With this, overwhelmingly majority subscribed that they have been sufficiently empowered to teach children with special education needs. This finding agrees to [40] study that for teachers to effectively teach and support learners with dyslexia, they need to have the relevant skills.

It was confirmed in the study that lack of empowerment makes teachers lose confidence in delivering lessons with children with special education needs. The implication of this finding could be that educators have noticed that if they are not adequately empowered, challenges can arise during their classroom delivery. In view of this, there is a need for the educators to be trained on how to deal with learners with learning disabilities so that educators can willingly own out to deliver their best to these children.

The study revealed a correlation between educators' challenges for inclusive education and enrolment of children with disability, therefore, the null hypothesis was rejected. This implies that even though

educators have challenges towards inclusive education but it does not negatively affect the enrolment of children with disability into the mainstream schools. It emerged that six (6) of the components of educators' challenges for inclusive education have their *p*-value not greater than the standard 0.05 cut-off which indicates that the variables were not independent of each other and that there was a statistically significant correlation between the categorical variables. However, the remaining four variables which have their *p*-value greater than the cut-off indicates that the variables were independent of each other and that there was no statistically significant correlation between the categorical variables.

The multiple linear regression analysis on educator' challenges for inclusive education and enrolment of children with disability revealed association between being ignorant about pupils with special education needs in their class and enrolment of children with disability. This association had revealed that even when educators are being ignorant about pupils with special education needs in their class rather makes it possible for children with disability to be enrolled more in the mainstream schools. The coefficient (0.600) of being ignorant about pupils with special education needs in their class rather signifies a positive shift in the mean of enrolment of children with disability in a mainstream school.

Also, the association found between parents stay in touch with their wards teachers and enrolment of children with disability into mainstream schools revealed that when the value of independent variable (IV) that is "parents stay in touch with their wards teachers" increases the mean of enrolment of children with disability also tends to decrease. The coefficient (-0.200) of the (IV) signifies that the more and more parents stay in touch with their ward's teachers, it is the more and more it reduces the enrolment of children with disability into the mainstream schools.

As going through training on the new curriculum value (-0.400) tends to increase, the mean of enrolment of children with disability tends to decrease. It appears the more and more educators go through training on the new curriculum it is the more that it decreases the intake of these disabled children into the mainstream schools.

The study identifies association between teachers face challenges of new curriculum and enrolment of children with disability which corresponded to a decrease in the mean of the dependent variable (DV). This finding has revealed that as the value of the independent variable (IV) increases by (-0.400), its negatively affects the mean of the enrolment of children with disability in the mainstream school by decreasing the intake of children with disability into the mainstream schools.

Per the study, it appears the more and more educators have more workload on their shoulders, it is the more and more that it increases the enrolment of children with disability into the mainstream schools. The coefficient (0.400) has revealed that as educators continue to have more workload, it is the more that it influences the intake of children with disability into the mainstream schools.

In the study, educators teach concepts they do not understand was found to be statistically significant related to enrolment of children with disability in to the mainstream schools. This revealed that the more and more educators teach concepts they do not understand, it is the more and more it decreases the mean of enrolment of children with disability into the mainstream schools.

c) Socio-Economic Status of Educators

The study revealed that educators cannot provide basic needs for their families. Several of the educators attested to the fact that their life is being figured as a weary-faced person. Educators' life being figured as weary-faced person was confirmed when they were certain that they have low economic status. The implication of this finding is that educators might not own out to give their best in terms of delivery and this can affect the academic progress of the students. Even though, it was confirmed in the study that educators are able to provide adequate learning facilities at home for their wards. This might mean that educators are aware that learning facilities could help their children to do well academically and that they endeavour to provide them for their children.

The study revealed a correlation between educators' socio-economic status for inclusive education and enrolment of children with disability into the mainstream schools therefore, the null hypothesis was rejected. Even though educators confirmed they have low socio-economic status but it does not negatively affect the enrolment of children with disability into the mainstream schools. It emerged that four (4) of the components of educators' socio-economic status have their *p*-value not greater than the standard 0.05 cut-off which indicates that the variables were not independent of each other and that there was a statistically significant correlation between the categorical variables. However, only one variable has its *p*-value greater than the cut-off indicating that the variable was independent of each other and that there was no statistically significant correlation between the categorical variables.

The multiple linear regression analysis on educator' socio-economic status for inclusive education and enrolment of children with disability into the mainstream school revealed association between educators being able to provide adequate learning facilities at home for their children and enrolment of children with disability. This association had revealed that even though educators are being able to provide

adequate learning facilities at home for their children it does not correspond to the more intakes of children with disabilities into the mainstream schools. The coefficient (-1.000) of being able to provide adequate learning facilities at home for their children signifies a negative shift in the mean of enrolment of children with disability in a mainstream school.

Furthermore, the association found between educators' life being figured as a weary-faced person and enrolment of children with disability into mainstream schools revealed that when the value of the independent variable (IV) that is "educators' life being figured as a weary-faced person" increases the mean of enrolment of children with disability also tends to decrease. The coefficient (1.000) of the (IV) signifies that the more and more educators' life is being figured as a weary-faced person, it is the more and more it increases the enrolment of children with disability into the mainstream schools.

As educators' economic status value (-1.000) tends to increase, the mean of enrolment of children with disability tends to decrease. It appears the more and more educators' economic status value tends to increase it is the more that it decreases the intake of these disabled children into the mainstream schools.

The study identifies association between educators often absent from school and enrolment of children with disability which corresponded to a decrease in the mean of the dependent variable (DV). This finding has revealed that as the value of the independent variable (IV) increases by (1.000), its negatively affects the mean of the enrolment of children with disability in the mainstream school by decreasing the intake of children with disability into the mainstream schools.

V. Conclusions

In this study, quantitative and cross-sectional survey plan were used to investigate educators' strategies for inclusive education, educators' perceptions and attitudes for inclusive education, challenges educators encounter for implementing inclusive education and educators' socio-economic status for implementing inclusive education in the Kadjebi District, Ghana.

Overwhelmingly majority of the educators confirm that they do not build a welcoming school environment for pupils with disability let alone to enrol them in the mainstream school. The study recommends that effort should be made by all stakeholders, including the Government of Ghana, the Kadjebi District Education Directorate, the family and organisations in the district to make adequate support to provide the appropriate logistics for teaching and learning to help educators to be able to deliver in the classroom.

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Declaration

Ethical Approval

Ethical approval (with ID number UHAS-RCE A./10/111/21-22) to conduct the study was taken from the Research Ethics Committee of the University of Health and Allied Sciences, Ho, Ghana.

Consent to Participate in the Study

In the field, verbal consent was taken before a participant could take part in the study.

Consent to Publish

Participants were told that the study was strictly academic and that the results would be published for the purposes of contributing to building academic literature.

Competing Interests

No competing interest existed.

Funding

The study was self-funded

Availability of Data and Materials

The data is only available to the author hence it was a primary data.

Author(s) Contribution: Conceptualise the study, data curation, formal analysis, writing – review & editing, and methodology.

Author Contribution: Writing – original draft, Software and proof reading.

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Artificial Intelligence in Early Childhood Education: Opportunities and Challenges

By Changmeng Dong

Abstract- With the continuous advancement of artificial intelligence (AI), its application within the field of education is becoming increasingly widespread, particularly in early childhood education. This article first explores the various applications of AI in this domain. AI enhances early childhood education by providing a richer and more adaptive learning experience through tools such as intelligent toys and smart learning platforms, which offer personalized learning paths, interactive educational resources, and data analytics. The integration of AI not only fosters children's cognitive development, language skills, and social abilities but also equips educators with powerful tools to enhance their teaching effectiveness and classroom management.

However, incorporating AI into early childhood education presents several challenges. Data privacy and security concerns are paramount, underscoring the critical importance of safeguarding children's information. Furthermore, effectively integrating technology into educational practices necessitates interdisciplinary expertise along with ongoing professional development for teachers. Additionally, there is a risk that children may become overly reliant on technology; thus it is essential to strike a balance between technological use and real-world interactions.

Keywords: *artificial intelligence, early childhood education, opportunity, challenge.*

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However, incorporating AI into early childhood education presents several challenges. Data privacy and security concerns are paramount, underscoring the critical importance of safeguarding children's information. Furthermore, effectively integrating technology into educational practices necessitates interdisciplinary expertise along with ongoing professional development for teachers. Additionally, there is a risk that children may become overly reliant on technology; thus it is essential to strike a balance between technological use and real-world interactions. The paper concludes by proposing a series of strategies aimed at promoting the constructive use of AI in early childhood education. These strategies include implementing stringent data protection measures, enhancing AI literacy among educators, and ensuring equitable access to AI-supported educational opportunities for all young children.

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I. Introduction

The rise of artificial intelligence (AI) marks a significant paradigm shift in various industries, with its impact on education being particularly profound. In the realm of education, AI is hailed as a revolutionary tool with the potential to reshape teaching and learning experiences (Su et al., 2023). As AI continues to evolve, it brings innovative ways to enhance teaching methods and learning experiences (Burgsteiner et al., 2016; Kandlhofer et al., 2016). In the context of early childhood education (ECE), AI serves as a crucial tool with the potential to shape the foundation of children's learning and development (Ng et al., 2021 a, b).

The importance of AI in ECE is undeniable. During the critical period of early development, children's brains are highly sensitive to new experiences and stimuli. AI can provide diverse opportunities to promote cognitive growth, enhance language acquisition, and develop necessary social skills through interactive and engaging digital platforms (Druga et al., 2021). Furthermore, AI-driven personalized learning systems can cater to young learners' diverse needs and provide customized educational content that aligns with their individual learning pace and style (Su et al., 2022). AI-driven tools can also foster interactive and engaging learning environments by using games and simulations to promote cognitive development and spark curiosity (Kewalramani et al., 2021).

However, integrating AI into ECE is not without challenges. The digital divide may exacerbate existing inequalities in educational opportunities and outcomes, and concerns about data privacy and ethical issues related to children's use of AI are paramount (Kong et al., 2021). A lack of comprehensive AI literacy among educators is a major obstacle, as it may limit their ability to fully leverage the potential of AI in the classroom (Druga et al., 2019). Teachers need to adapt to new technologies and develop AI literacy, which is another major challenge that requires comprehensive training and support (Long & Magerko, 2020).

This paper aims to provide a comprehensive overview of the opportunities and challenges presented by the integration of AI in ECE. By examining current literature and empirical evidence, we will explore the role of AI in enhancing children's educational practices and outcomes. In addition, we will discuss strategies to address challenges and ensure that the benefits of AI are realized fairly.

II. The Application of AI in Early Childhood Education

a) Smart Toys and Games

In the field of early Childhood Education (ECE), intelligent toys and games powered by artificial intelligence (AI) are becoming increasingly popular, providing children with new ways to learn through play. These toys can use AI technology to adapt to a child's skill level and knowledge base to provide a highly interactive and personalized experience (Kewalramani et al., 2021). For example, smart toys such as Cognitoys Dino and Fisher-Price's Think & Learn Code-a-Pillar introduce children to the basic concepts of programming and logical thinking in an edutainment

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way (Ng et al., 2021b). These AI toys often incorporate natural language processing (NLP) and machine learning (ML) algorithms to provide personalized feedback based on a child's behavior, thus adapting to their needs (Williams, 2018). Ai-powered toys like Cozmo and PopBots enable children to learn basic skills of programming and problem solving through play (Druga et al., 2019). Integrating AI technology into toys not only enhances the educational value of play, but also encourages the development of children's problem-solving and critical thinking skills.

b) Learning Platform

Adaptive Learning platforms create dynamic educational environments by leveraging AI technology to meet the unique learning needs of each child. These platforms adjust educational content and teaching pace by collecting data on student interaction and performance (Su et al., 2022). For example, AI-driven learning systems such as Khan Academy Kids and ABC mouse are able to adjust the difficulty of tasks based on children's right and wrong answers, ensuring that the learning process is both challenging and accessible (Druga et al., 2019). These platforms use data analytics to track children's learning progress, identify learning patterns, and adapt content to their learning pace and style (Ng et al., 2021a). Platforms like Zhorai provide conversational interfaces that allow children to interact with AI agents to learn machine learning concepts during play (Lin et al., 2020). This personalized approach to teaching has been shown to increase engagement and learning outcomes in early education.

c) Interactive Teaching Assistant

Ai-powered interactive teaching assistants are designed to assist teachers in their teaching in the classroom by providing students with additional teaching support and feedback. For example, AI assistants such as Carnegie Learning's MATHia and Squirrel AI Learning provide hints, solutions, and personalized practice questions by analyzing student responses (Mousavinasab et al., 2021). Tools like Teachable Machine enable children to create their own AI models, teaching basic machine learning concepts in a practical and engaging way (Dwivedi et al., 2021). This not only enhances the learning experience, but also encourages children to take a more active role in their education. These tools can help teachers identify areas where students may need additional help, enabling more targeted teaching and tutoring.

d) Parent Engagement and Monitoring Tools

The application of AI in ECE is not limited to the classroom, but also includes tools to facilitate parent involvement and monitoring. Platforms like ClassDojo and Bloomz provide parents with insight into their child's progress, enabling them to be more actively involved in their child's education (Su & Zhong, 2022). These tools provide features such as real-time updates, progress reports, and channels to communicate with teachers, facilitating collaborative relationships between families and schools.

III. AI in Early Childhood Education: Opportunities

In the context of globalization, the application of AI technology in the field of education is increasing, especially in early childhood education, AI provides unprecedented opportunities. AI technology enables educational content to be tailored to the unique needs of each young child, thereby increasing learning efficiency and engagement. This article will explore how AI can effectively promote the ability development of young children and the teaching management of teachers, and how these opportunities can be realized on a global scale.

a) Promote the Development of Children's Cognitive, Language, Social and Other Abilities

The application of AI technology in early childhood education provides children with a personalized learning experience, which helps to promote the development of their cognitive, language and social skills (Su et al., 2023). AI systems are capable of adapting educational content to children's interactions and performance to suit their learning pace and style (Ng et al., 2021a). For example, AI-powered interactive toys and games can introduce children to basic concepts of programming and logical thinking in an edutainment way (Ng et al., 2021b). These tools promote children's cognitive development by providing interactive and engaging content that stimulates their curiosity and desire to explore (Druga et al., 2021).

In terms of language acquisition, AI technology, through natural language processing (NLP) and speech recognition technology, can provide children with real-time feedback and personalized exercises to enhance their language skills (Kewalramani et al., 2021). In addition, AI technology is able to track children's learning progress through data analysis, identify learning patterns, and adjust content to match their learning needs (Su et al., 2022). This personalized approach has been shown to improve engagement and learning outcomes in early education (Druga et al., 2021). The development of social skills is also an important aspect in early childhood education, and AI can help children learn social rules and skills by simulating social interactions and providing feedback (Ng et al., 2021a).

AI technology is also able to provide a safe environment for children to express themselves and try out new roles and ways of interacting, which is essential for their social skills development. Through interactions with AI agents, children can practice social interactions without stress, which helps them build confidence and

social skills (Kewalramani et al., 2021). Worldwide research has shown that the application of AI in early childhood education can cross cultural and linguistic boundaries to provide equal learning opportunities for children from different backgrounds (Su et al., 2023).

b) Improve the Efficiency of Preschool Teachers' Teaching and Management

AI technology can not only promote children's learning, but also improve the efficiency of preschool teachers' teaching and management (Su et al., 2022). Ai-driven teaching assistants are able to provide prompts, solutions, and personalized practice questions by analyzing student responses (Mousavinasab et al., 2021). This real-time feedback mechanism enables teachers to quickly identify students' learning difficulties and provide targeted support, thereby improving the quality of teaching (Ng et al., 2021b). In addition, AI systems are able to automatically record student progress and performance, reducing teachers' administrative workload and enabling them to devote more time and energy to teaching and student interaction (Druga et al., 2021).

AI tools are also able to facilitate communication between teachers and parents, providing real-time updates and progress reports, thereby strengthening collaboration between families and schools (Su & Zhong, 2022). This cooperation is essential for children's learning and development, as it ensures continuity and consistency in education. Parental involvement not only improves their understanding of their child's learning progress, but also enables them to become active participants in their child's learning process (Kewalramani et al., 2021). AI platforms can also provide professional development programs and resources to help teachers upgrade their teaching skills and AI literacy, which is critical to their teaching in the digital age (Mousavinasab et al., 2021).

Across the globe, the application of AI technology is changing the role of teachers, transforming them from knowledge providers to learning facilitators and facilitators. AI technology provides teachers with powerful tools that enable them to better understand the learning needs of each student, enabling truly personalized teaching (Su et al., 2023). In addition, AI technology can support teachers in educational research and innovation by analyzing large amounts of educational data to explore best educational practices and strategies (Ng et al., 2021a). This data-driven approach helps improve the quality of education and provides equal learning opportunities for all children.

IV. AI in Early Childhood Education: Challenges

a) Data Privacy and Security Challenges for Young Children

The rapid development of artificial intelligence (AI) technology has revolutionized early childhood education (ECE). The application of AI technology not only enables educational content to be tailored to each child's unique needs and abilities, increasing learning efficiency and engagement, but also provides educators with powerful tools to enable personalized learning, enhance student interaction, and provide real-time feedback (Kim et al., 2023). However, with the introduction of AI technology, data privacy and security issues have become a challenge that cannot be ignored.

The application of AI technology in early childhood education often relies on a large amount of data, including young children's personal information, behavioral habits, learning preferences and even biometric data. The collection, storage and processing of this data requires strict compliance with data privacy and security laws and regulations (Anshari et al., 2023). Transparency and privacy are linked, and the public often knows little about how AI systems use their data and the potential privacy implications, which is an unethical situation. Therefore, the critical importance of protecting young children's information cannot be overlooked and requires a multifaceted strategy, including data protection, secure storage, and anonymization or deletion of data after use.

The Organisation for Economic Co-operation and Development (OECD) report highlights the importance of protecting privacy and other fundamental rights in an AI-powered world (Anshari et al., 2023). This requires educational institutions, technology developers and policymakers to work together to develop strict data management policies and regulations to protect children from the risk of data breaches and misuse. Educational institutions need to ensure that the data collection and processing of AI applications follow the principle of minimization, collecting only the necessary data, and ensuring the safe storage and rational use of data. In addition, data privacy education for teachers and parents is also needed to raise their awareness and protection of data privacy.

Around the world, different countries and regions have different laws and regulations for the protection of young children's data. Therefore, cross-border AI applications need to pay special attention to compliance issues, ensuring that applications on a global scale are in compliance with local laws and regulations (Kong et al., 2021). This may require in-depth legal advice from educational institutions and businesses, as well as collaboration with international organizations to develop globally common privacy

protection standards and best practices (Kong et al., 2021). Through these measures, we can lay a solid foundation for the safe application of AI in early childhood education, while providing a safe and healthy digital environment for children to grow up in.

b) Challenges in the Integration of AI Technology and Early Childhood Education

Effective integration of AI technologies requires interdisciplinary expertise and ongoing teacher training (Duhaylungsod & Chavez, 2023). Teachers need to understand how to use AI tools effectively and integrate them into their teaching practices. Some teachers may be resistant to new technology, so ongoing support is crucial. In addition, the implementation of AI technology can be costly, and schools need to invest in the technology and secure the necessary infrastructure. This includes hardware updates, software licensing fees, and professional development training for teachers.

To overcome these difficulties, schools can seek government funding, private donations, or partnerships with technology companies. At the same time, education policymakers need to recognize the potential of AI technology in education and provide the necessary resources and support for its integration. This involves not only funding for technology, but also investing in future-skills training for teachers to ensure they can effectively use these tools to improve the quality of teaching.

Globally, the uneven distribution of educational resources in different countries and regions has led to differences in the integration of AI technology in education. Developed countries may have more resources to invest in AI technology, while developing countries may face more challenges. International cooperation and technical support are therefore critical to bridging this gap. Through international cooperation, best practices, resources and technologies can be shared to help developing countries improve their education levels and ensure the fair and effective integration of AI technologies.

In addition, the integration of AI technology also needs to take into account the issue of educational equity. AI technology should provide equal learning opportunities for all children, not exacerbate existing educational inequalities. Therefore, policymakers and educators need to ensure that the application of AI technologies does not neglect vulnerable populations, such as children with disabilities, children from ethnic minorities, and children from low-income families. By providing additional support and resources, we can ensure that these children can also benefit from AI technology.

c) Challenges of Children's Over-Reliance on AI Technology

Over-reliance on AI technology may reduce human interaction during activities and affect young children's social skill development (Wach et al., 2023). AI technology may reduce face-to-face time between teachers and students, thereby affecting human interaction during the learning process. For example, if children interact too much with AI systems rather than with peers and teachers, they may miss out on learning social etiquette and communication skills. Therefore, educators need to balance the use of AI to ensure that it does not replace traditional teaching methods, but rather complements them.

This means that when designing lessons and activities, make sure there is enough time for group discussions, role playing, and other learning activities that require human interaction. At the same time, teachers should be trained on how to navigate these interactions to ensure that children can develop the necessary social skills in a technology-assisted learning environment. This includes teaching children how to work with others, resolve conflicts, and build friendships, all skills necessary to succeed in the real world.

Across the globe, different cultures and societies have different views and practices on the use of technology. Therefore, educators need to take these differences into account and design teaching activities that are appropriate to the local cultural and social environment. This may include incorporating local traditions and customs, as well as taking into account family and community involvement. In this way, it is possible to ensure that the use of AI technology does not conflict with local cultural and social values, but complements them.

d) The Challenge of Balancing the use of AI Technology with Real-World Interaction

The use of AI technology needs to be balanced with real-world interactions to promote the full development of children (Gao et al., 2022). AI tools should be combined with traditional teaching methods to get the best results. Educators need to regularly examine the impact of AI on learning and make improvements as needed. This includes assessing whether AI tools improve student learning outcomes and whether they help children apply what they have learned in the real world.

This can be achieved through project-based learning activities, where students use AI tools to solve real problems and then present those solutions to fellow students and community members. This approach will not only improve students' understanding of AI technology, but also enhance their critical thinking and creativity. Educators also need to ensure that the use of AI tools does not limit students' imagination and creativity, but serves as a tool to stimulate and expand those abilities.

Globally, there are differences in education systems and teaching methods in different countries and regions. Therefore, the application of AI technology

needs to take these differences into account and adapt to local education systems and teaching methods. This may include working with local educators to understand their needs and challenges, and designing AI tools and resources that are appropriate for the local context. In this way, it is possible to ensure that the application of AI technologies supports and enhances local educational practices, rather than replacing or weakening them.

V. Implementation Strategies and Suggestions for the Integration of AI and Early Childhood Education

a) *Attach Importance to AI Ethics and Develop Comprehensive Privacy and Security Policies*

In the context of the widespread use of AI technology in early childhood education, it is particularly important to pay attention to AI ethics and develop comprehensive privacy and security policies. AI technologies must adhere to strict ethical standards and privacy regulations when collecting, processing, and analyzing children's data (Kong et al., 2021). This requires educational institutions, technology developers, and policymakers to work together to ensure that AI applications respect children's other fundamental rights while protecting their privacy (Kong et al., 2021). For example, the European Union's General Data Protection Regulation (GDPR) provides strict guidelines for the processing of children's data (European Parliament, 2016). Educational institutions and businesses around the world must follow similar high standards when developing and deploying AI applications to ensure the security and privacy of children's data is protected (Kong et al., 2021). In addition, educational institutions need to develop clear policies to guide teachers and parents on how to use AI technology safely, and to educate children about privacy and security in the digital age (Kong et al., 2021). This involves not only technical safeguards such as encryption and anonymization, but also privacy awareness education for children on the importance of personal information and how to protect their online identities (Kong et al., 2021).

Different countries and regions have different laws and regulations on the protection of children's data. Therefore, cross-border AI applications need to pay special attention to compliance issues, ensuring that applications on a global scale are in compliance with local laws and regulations (Kong et al., 2021). This may require in-depth legal advice from educational institutions and businesses, as well as collaboration with international organizations to develop globally common privacy protection standards and best practices (Kong et al., 2021). Through these measures, we can lay a solid foundation for the safe application of AI in early childhood education, while providing a safe and healthy digital environment for children to grow up in.

b) *Build a "Kindergarten - Enterprise - University" Cooperation Model to Strengthen the Integration of Early Childhood Education Knowledge and AI Technology*

Building a "kindergarten - enterprise - university" cooperation model is an effective way to promote the integration of AI technology and early childhood education. This mode of cooperation can promote resource sharing, knowledge exchange and technological innovation, thus promoting the application of AI technology in early childhood education (Su et al., 2022). Companies can provide technical support and financial input to help kindergartens develop and deploy AI educational tools; Colleges and universities can provide theoretical research and personnel training, scientific educational guidance and professional teacher resources for kindergartens (Su et al., 2022). For example, some kindergartens in the United States have partnered with technology companies and universities to jointly develop AI education programs that not only improve the quality of education, but also bring valuable experience and knowledge to all parties involved (Su et al., 2022). Through this collaborative model, innovation and application of AI technology in early childhood education can be accelerated, while also providing children with a richer and more personalized learning experience.

In practice, this mode of cooperation can be achieved in a number of ways. For example, companies can fund research projects at universities to develop AI tools and curricula suitable for early childhood education; Universities can translate research results into teaching practice and provide training and consultation for kindergartens. Kindergartens can provide a practical teaching environment in which research results can be validated and refined (Su et al., 2022). This mode of cooperation can not only promote the development of AI technology, but also promote the innovation of educational practice and bring new ideas and methods to early childhood education (Su et al., 2022). On a global scale, this mode of cooperation can cross cultural and linguistic boundaries to provide equal learning opportunities for children from different backgrounds and promote the balanced development of global education (Su et al., 2022).

c) *Strengthen the Training and Resource Support of Preschool Teachers to Improve their Artificial Intelligence Literacy*

To strengthen the training and resource support of preschool teachers and improve their AI literacy is crucial for the application of AI technology in early childhood education. Teachers are the direct implemutors of the application of AI technology, and their AI literacy directly affects the educational effect of AI technology (Druga et al., 2019). Therefore,

educational institutions and government departments need to invest resources to provide teachers with systematic AI training, including the fundamentals, teaching applications, and ethical issues of AI technology (Druga et al., 2019). In addition, teachers need to master how to use AI tools to support teaching, how to evaluate the educational effectiveness of AI tools, and how to adjust teaching strategies according to students' learning progress and style (Druga et al., 2019). For example, the Singapore government has launched the AI Literacy for Teachers Programme, which aims to enhance the AI literacy of teachers so that they can better utilize AI technology to improve the quality of teaching (Singapore Ministry of Education, 2020). By strengthening teacher training and resource support, we can ensure that teachers can effectively use AI technology to improve teaching quality and efficiency.

In practice, teacher training can take many forms, including online courses, workshops, seminars and field training. These trainings should cover the basics of AI technologies, such as machine learning, natural language processing, and data science, as well as their use in education, such as personalized learning, assessment, and feedback (Druga et al., 2019). At the same time, training should also cover the ethical issues of AI technology, such as data privacy, bias and fairness, to ensure that teachers are able to follow ethical principles when using AI technology (Druga et al., 2019). In addition, teachers need to master how to evaluate the effectiveness of AI tools, including how to collect and analyze data, and how to adjust teaching strategies based on data (Druga et al., 2019). Through these trainings, teachers can better understand the advantages and limitations of AI technology and more effectively integrate AI technology into teaching practice.

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Bible Education that Transforms Lives in a Literacy Approach

By Claudia Tavares

Abstract- Due to the pandemic, people began to have different needs and interests than they were used to and felt a need for guidance on what to think and what to do both individually and collectively. They began to question pre-established concepts in various social sectors, seeking satisfactory answers that would lead them to a stable and significant quality of life in both the short and long term. Is it possible to promote this type of guidance today? What can work to achieve this goal? This article shows that Jehovah's Witnesses use a literacy approach - Critical Literacy (CL) in their teaching of the Bible with the aim of leading students to constant reassessment and building themselves anew, paving a path for action, transformation and protagonism. This process of protagonism involves forming a critical consciousness in the student and moving them towards positive changes in both the short and long term. Inserted with this approach, Jehovah's Witnesses have used rhetorical questions and opinions in one of their study publications, called Enjoy Life Forever!. In this material, in addition the questions, there are videos and illustrations that help students empathize with other contexts and similar situations, giving them the opportunity to learn answers and solutions to their questions and problems. However, the use of the Critical Literacy approach does not, in itself, guarantee the achievement of educational objectives.

Keywords: *education, critical literacy, bible, jehovah's witnesses, protagonism.*

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Bible Education that Transforms Lives in a Literacy Approach

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Keywords: education, critical literacy, bible, jehovah's witnesses, protagonism.

I. Introduction

Na fase pós-pandêmica, as pessoas passaram a sentir uma necessidade maior de orientação do que fazer e do que pensar em suas vidas tanto na individualidade quanto na coletividade. Passaram a questionar conceitos preestabelecidos em vários setores sociais, buscando respostas satisfatórias que as conduzam para uma qualidade de vida estável e significativa tanto a curto quanto a longo prazo.

É possível promover este tipo de orientação na atualidade? O que pode funcionar para se alcançar este objetivo?

Pensando nisso, a organização mundial das Testemunhas de Jeová mostra que é possível conseguir a orientação necessária na atualidade. Através de um projeto educacional simples e prático, que tem como base a Bíblia, as Testemunhas de Jeová empenham-se em desenvolver nos indivíduos que contatam, a partir de uma abordagem de letramento, um repensar e um refazer constante de si memos por meio de perguntas de opinião e retóricas, buscando direcioná-los a um conjunto de ações para uma transformação real.

Desta forma, a abordagem de letramento utilizada na educação bíblica, promovida por este grupo religioso, envolve questionamentos sobre o que vem 'pronto', a formação de uma consciência criticamente treinada e o protagonismo do estudante.

Portanto, na próxima seção, abordaremos o conceito básico de letramento utilizado no ensino da Bíblia, a estrutura do processo de ensino aprendizagem da mesma, e os resultados deste trabalho de ensino bíblico promovido por esta organização mundial.

II. The Approach

A abordagem de letramento a ser considerada neste artigo é a do Letramento Crítico (LC). Em que consiste basicamente esta abordagem? Segundo os autores Menezes de Souza (2011), Monte-Mór (2013) e Pennycook (2001), tanto o instrutor quanto o aprendiz são convidados a rever o que já é consagrado socialmente e aceito comumente. Ao se auto-questionarem e questionarem a relação entre si mesmos, o instrutor e o aprendiz permitem a formação ou a transformação de suas próprias consciências.

Tais questionamentos conscientes precisam ser feitos com base em suas necessidades, interesses e contexto, promovendo um constante refazer de ambos.

Nesta perspectiva de autocrítica e de problematização, a postura do instrutor precisa ser de instigador e de mediador destas instigações, ao ponto de conduzir o aprendiz a "se predispor a relacionar (diferenciando e integrando) interativamente os novos conhecimentos" ao seu conhecimento prévio.

Ao fazer assim, o próximo passo será exercitar seu pensamento (memória e raciocínio) e a prepará-lo para uma tomada de decisões presente e futuramente (protagonista de sua história).

Como mediador neste processo de ensino aprendizagem da Bíblia, o instrutor não deve concentrar-se somente no aspecto cognitivo do estudo, sendo indiferente às necessidades, limitações, e

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dificuldades que o estudante enfrenta no decorrer de seu aprendizado.

Afinal, "por sermos humanos, somos diferentes, visto que somos seres historicamente distintos, com vivências diversas e posicionamentos singulares" (Bacich & Moran, 2018)

Pelo contrário, o instrutor deve ser um observador perspicaz e um bom ouvinte a fim de identificar pontos fortes no estudante e o potencial a ser desenvolvido nele. Para isso, há qualidades essenciais que devem existir no perfil do instrutor para um progresso considerável do estudante em suaaprendizagem, a saber, a paciência, a bondade e a empatia. Funcionam como um lubrificante na roda de uma educação de qualidade.

No decorrer de mais de um século, a organização das Testemunhas de Jeová empenham-se em divulgar um conhecimento bíblico estruturalmente organizado em vários suportes textuais, a fim alcançar pessoas de todas as rodas sociais e culturais. E, inserido nesta abordagem de letramento crítico, faz-se o uso de perguntas com o intuito de alcançar, não uma simples memorização de informação, mas, principalmente, uma chamada para tomada de decisões.

Desde a pandemia, a organização das Testemunhas de Jeová, por meio de Comissões, como de Ensino, de Redação, de Edição e de Publicação, vêm cooperando na elaboração de uma publicação de estudo da Bíblia que apela ao pensamento lógico e prático do estudante no modo interativo.

Quanto ao *pensamento lógico e prático,* a publicação traz perguntas de opinião e retóricas com o intuito de conduzir o indivíduo a se expressar em suas próprias palavras e, a refletir sobre como o que está aprendendo pode ser aplicado em vários aspectos de sua vida. Para isso, o estudo conduz o indivíduo a ver ou a entender os benefícios que se derivam desta aplicação, com base em exemplos do passado e atuais.

No *quesito interativo,* o seu formato mescla-se entre o físico e o digital, proporcionando uma relação ativa entre o leitor e o texto. O uso de vídeos, fotos e ilustrações vívidas são recursos apelativos e auxiliam o estudante a visualizar o assunto com mais interesse.

A aprendizagem é mais significativa para o estudante quando é motivado intimamente e engajado em projetos de estudo permeados de diálogo, de orientação e de realização. (BACICH; TANZI-NETO; TREVISANI, 2015)

Por isso, a Comissão de Ensino, junto a outras comissões, fornecem treinamento para seus membros de todas as idades e culturas nas reuniões realizadas no mais diversos Salões do Reino das Testemunhas de Jeová, assim denominado o lugar delas para o estudo da Bíblia, treinamento e aconselhamento para ensinar outras pessoas, independente da etnia ou religião destas.

A publicação que reúne a abordagem de letramento crítico aos recursos metodológicos denomina-se Seja Feliz Para Sempre – *um curso bíblico interativo.* O próprio título de capa já chama a atenção sobre um assunto que afeta a todos nós – ser feliz!

No início da apresentação da publicação, há uma seção que orienta Qual é a melhor forma de fazer este curso da Bíblia? Ela dá uma visão geral deste curso. Como recurso adicional, a seção apresenta um video convidativo (2:45), intitulado de Bem-vindo ao seu curso da Bíblia no qual dá uma prévia sobre o modo em que o estudo bíblico é realizado.

Na sequência, a seção inicial da publicação cita passo a passo o modo de conduzir a primeira parte de cada lição, que envolve (A) ler os parágrafos e as perguntas de cor diferente; (B) ler os textos bíblicos indicados pela palavra no imperativo 'leia'; (C) Sob o tópico "Aprenda Mais", há um resumo do que foi consideradona seção inicial; (D) inserido nele, há pontos numerados que detalham o ponto principal. Em adição, junto ao instrutor, incentiva o estudante à leitura dos textos bíblicos, responder às perguntas retóricas e de opinião, e assistir os vídeos que trazem histórias reais ou situações simuladas do cotidiano; (E) analisar cuidadosamente as imagens e as legendas; e, (F) pensar criticamente, com base nelas, a fim de responder o tópico "Algumas Pessoas Dizem", relacionando o que já aprenderam com o seu conhecimento prévio.

Ao final de cada lição, (G) há um "Resumo" e uma "Revisão" como uma retomada do que foi considerado e sanar quaisquer dúvidas adicionais. Como incentivo para se automonitorar quanto à regularidade do estudo, há um espaço para anotar a o dia em que o estudante conclui uma lição. Também, (H) sob o tópico "Tente o seguinte", há sugestões de metas que o estudante pode estabelecer para a próxima lição e, aos poucos, determinando e avaliando seu próprio ritmo e tempo a cada lição. Por fim, (I) sob o tópico "Quer Pesquisar Mais?" traz um arcabouço de informações adicionais derivados de outras fontes, relacionados com a lição concluída, à disposição do estudante caso queira aprender mais sobre o assunto.

Todas as lições estão distribuídas em quatro partes definidas com cores: Parte 1- amarelo; Parte 2- laranja; Parte 3 – azul; e, Parte 4 – rosa. Ao final de cada parte, há uma revisão do que foi considerado. Isso permite ao instrutor avaliar o progresso do estudante até aquele momento, e dar sugestões ou aconselhamentos em pontos a serem melhorados.

Como suporte adicional ao estudo da Bíblia, há uma prévia de como este compêndio está organizado. Ou seja, a Bíblia é uma coletção de 66 livros, dividida em duas partes (Escituras Hebraico-Aramaicas e

Gregas Cristãs), sendo cada livro seccionado em capítulos (numerais grandes) e em versículos (numerais pequenos).

A publicação que favorece o estudo da Bíblia faz uso de ilustrações bem vívidas que faz o estudante inserir-se nela e, assim, motivá-lo a buscar ou conferir sentido ao que está sendo apresentado a sua frente. O instrutor pode se valer disso e instigar o estudante a pensar sobre o que cada parte desta ilustração representa. Perguntas retóricas e/ou de opinião são excelentes para dar ênfase ao assunto geral.

Por exemplo, a ilustração abaixo encontra-se na capa principal da publicação. As cores utilizadas na ilustração da capa transpiram suavidade, refrescância, tranquilidade e esperança. Nela, ainda, indica uma pessoa que segue um caminho. Por exemplo*: "O que pode representar o caminho? O que podem representar as curvas neste caminho? Decisões, pequenas ou grandes, podem representar caminhos. E, quem hoje não toma decisões todos os dias? Algumas são mais fáceis; outras, desafiadoras. E, como as curvas, precisamos ser flexíveis e nos adaptar às decisões de tempos em tempos, não é mesmo?"*

Também, o estudante pode ser instigado a se perguntar: *"Esta pessoa poderia ser eu? Já que um caminho pode representar uma decisão, qual decisão pessoal importante em minha vida devo tomar?"* Após isso, o instrutor pode trazer a atenção do estudante ao modo como esta pessoa na capa caminha: com dúvidas ou está confiante?

O instrutor pode acrescentar logo depois, com base nesta pergunta, o que faz alguém tomar decisões sem receio. A partir disso, ele pode concluir o pensamento com a seguinte questão: *"A confiança está relacionada a ter estima, que por sua vez está ligada a ser feliz! Gostaria de ter esta confiança em sua vida? "*

Neste ponto do pensamento lógico, o instrutor pode enfatizar a importância de estabelecer metas a curto e longo prazo. E, como resultado, auxiliar e mediar com estas perguntas o estudante a alcançar o maior alvo de sua vida: ser genuinamente feliz agora e para sempre.

Visto que a abordagem do letramento crítico possibilita uma aprendizagem ativa até certo ponto. Por outro lado, "a curiosidade" do estudante "[…]desperta a emoção. E, com a emoção, se abrem as janelas da atenção, foco necessário para a construção do conhecimento" (MORA, 2013)

Em outras palavras, temos duas partes essenciais para se construir um conhecimento sólido e resulte em transformações significativas. De um lado o instrutor, como mediador hábil e gentil; de outro, o desejo sincero do estudante de permitir sua transformação.

Para concretizar a ideia apresentada até o momento, serão descritos na subseção (A), um exemplo de questionamentos, com base em uma lição específica da publicação, em que a abordagem de letramento crítico é aplicada; e, na subseção (B), alguns resultados consideráveis advindos desta abordagem de letramento no estudo bíblico.

Fig. 1: Reassessing prior laid down concepts from the perspective of Critical Literacy (CL)

Fig. 2: Publication cover designed for an interactive Bible study is published by Watch Tower Bible and Tract Society of New York, Inc. Walkill, NY, U.S.A.

a) *Sample Questions from the Critical Literacy Perspective*

Por exemplo, ao se tratar de tomar boas decisões, a Lição 35 da publicação de estudo, intitulada *Como Podemos tomar boas decisões?,* no Ponto 3 com o tópico *Deixe a Bíblia guiar você,* traz questionamentos sobre como os princípios bíblicos podem guiar a cada pessoa ao tomar decisões. Até este ponto, o estudante já tem como parte do seu conhecimento prévio a clareza e a certeza da Bíblia como a Palavra de Deus com base em evidências históricas, científicas e da atualidade, conforme considerados na Lição 3 da Parte 1. E, um conhecimento de Deus como pessoa spiritual; seu nome, JEOVÁ; e, suas qualidades, conforme as lições 4 e 7. Como um suporte adicional, há um video a ser assistido de antemão, que se intitula: *"Deixe que os princípios bíblicos guiem sua vida"*(5:54). A partir daí, ele se sentirá capaz em responder às perguntas na lição 35, tais como, *"O que é livre-arbítrio?; Por que Jeová nos deu o livre arbítrio?; O que Jeová nos deu para nos ajudar a tomar as melhores decisões?"* Um princípio bíblico é destacado e há um diálogo reflexivo entre o instrutor e o estudante com o intuito de que este venha a aplicar em sua vida. Mas, há resultados significativos comprovados de que os princípios bíblicos podem conduzir um estudante a se transformar de dentro para fora e, ainda, ser protagonista de sua história?

A próxima subseção irá considerar um caso real dentre muitos, de vários contextos culturais e sociais, registrados no arquivo do JW.ORG que comprovam tal transformação e um protagonismo satisfatório.

b) *Considerable Results from this Literacy Perspective*

No arquivo do JW.ORG, ao acessar BIBLIOTECA>VÍDEOS>ENTREVISTAS E CASOS REAIS> A VERDADE TRANSFORMA VIDAS, encontramos o caso real de Jim Brown, um homem de 53 anos, com o tema *"Jeová viu algo de bom em mim".* Consegue imaginar alguém temido em sua cidade como espancador, brigão, com jargões e palavrões que chegavam envergonhar até os homens que estavam por perto? Embora fosse casado e tivesse filhos, ele era um 'bom exemplo de um mau exemplo', como mencionado por sua filha. Jim teve contato com a Bíblia através de sua esposa, que já havia estudado e aplicado os princípios bíblicos em sua vida, tornando-se em uma esposa paciente, amorosa e

exemplar. Porém, Jim não conseguia manter a regularidade em seus estudos bíblicos em 10 anos. Ele teve vários instrutores habilidosos no decorrer deste tempo. Jim é um caso de estudante que não correspondeu prontamente à proposta de transformação à luz de princípios bíblicos. Depois de uma década, ele começou a pensar no rumo que sua vida estava tomando. Uma vontade nele de mudar para melhor crescia cada vez mais!

Recomeçou seus estudos bíblicos, mas com uma motivação maior e decisiva ao ponto de eliminar as características desagradáveis de sua personalidade e se revestir de qualidades socialmente desejáveis. A partir deste momento, 'tornou-se um pai, um marido e um avô melhor', declara sua filha novamente. Jim Brown deduz que ele não era um caso perdido para Jeová Deus e que por aderir aos princípios bíblicos, ajudaram - no a tomar a melhor decisão para alcançar um bem maior: ser feliz agora e por muito mais tempo! Como resultado, atualmente, ele é um instrutor da Bíblia e busca ajudar outros, que como ele, querem mudar! O caso de Brown dá evidências de transformação e de protagonismo com base em questionamentos e criticidade de si mesmo em relação a outros. O que pode se concluir destas considerações?

III. Conclusion

A abordagem de Letramento Crítico (LC) traz possibilidades incríveis para uma educação de qualidade, transformadora e protagonista. Dois fatores são essenciais para que essa abordagem de letramento tenha os objetivos alcançados: por um lado, um instrutor hábil e paciente; e, por outro lado, um estudante curioso, emocionado e atencioso. Pode levar tempo até o estudante criar sentido no que aprende, ou ter 'curiosidade que leva à emoção, e da emoção, à atenção'. E foi exatamente o que aconteceu com Jim Brown! Como as Testemunhas de Jeová, outras organizações educativas podem adaptar as abordagens de letramento crítico em seus currículos, nos recursos metodológicos e no perfis de instrutor e de estudante que querem ter. Como resultado, a educação será inovadora!

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Fellows may join as a member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. Additionally, Fellows get a chance to nominate other members for Editorial Board.

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ASSOCIATE OF SOCIAL SCIENCE RESEARCH COUNCIL is the membership of Global Journals awarded to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Associate membership can later be promoted to Fellow Membership. Associates are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Associate Members.

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Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.

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A ASSRC member gets access to a closed network of Tier 2 researchers and scientists with direct communication channel through our website. Associates can reach out to other members or researchers directly. They should also be open to reaching out by other.

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Associates receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

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Organize seminar/conference

Associates are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent. Additionally, they get free research conferences (and others) alerts.

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Associate members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

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Associate	Fellow	Research Group	Basic
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Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

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- Writings
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- Graphic representations
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- Any other original work

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2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

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The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

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Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Social Science Research Paper

Techniques for writing a good quality homan social science research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of homan social science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.
Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

19. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

20. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

21. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

22. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

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Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
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Approach:

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Put figures and tables, appropriately numbered, in order at the end of the report.

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If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

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Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

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- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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