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Are they tools? Anglophone West African countries' students' misconception of media literacy and critical thinking for combating misinformation

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ABSTRACT

This study examines the media literacy and critical thinking levels of students of West African higher educational institutions as tools for combating misinformation in the sub-region. Data analysis using the mediation approach revealed differences in students' understanding of media literacy and critical thinking and partially predicted their efficacy in combating misinformation. This stems largely from a misunderstanding of media literacy and critical thinking concepts as tools, as well as a lack of adequate provision for teaching the concepts and considering them as strategic tools for combating misinformation in the region. The study recommends concrete policy and managerial solutions to the stakeholders involved.

Keywords: *critical thinking, media literacy, misinformation, students, West Africa*.

INTRODUCTION

Studies have confirmed that the media do have an effect on society. 80% of participants in some studies agree that media has an effect on society as a whole, while 12% of the respondents believe that media has a personal impact on them. This highlights the importance Media Literacy, of ML, which has been around for a while and studied by educationists, media scholars and sociologists over the years (Lin et al., 2013; Jolls & Wilson, 2014; Silverblatt & Belanger, 1996; Šuminas & Jastramskis, 2020). Carlsson (2019) notes that the term 'media literacy' was coined in 1955 by Professor Louis Forsdale to help students gain necessary multimedia literacy. However, the term did not gain much attention until the 20th century. A search for the term Media Literacy on Google Ngram (a search engine graphing tool that charts word frequencies from a large corpus of books that were printed since 1500 (Roth, 2016; Younes & Reips, 2019) from 1500-2019, showed that the term first appeared in 1956 which confirmed the period when UNESCO's global research on media literacy was launched around the 1970s (Bulger & Davison, 2018). The term became more popular in the corpus of books from this period towards 1999. It declined until 2002 and has risen again from 2003. According to Huguet, Kavanagh, Baker & Blumenthal (2019), ML is made up of several specific competencies such as the ability to access, analyse, evaluate, and communicate media messages in a variety of forms. UNESCO (2021) defines ML as the ability to identify, understand, interpret, create, communicate and compute, using written, printed (and visual) materials associated with varying contexts. Chen, Wu & Wang (2011) proposed a new theoretical framework of new media literacy as they conceptualised it on two continuums: (a) from media consumption to media producers and actors, and (b) from functional media literacy to critical media literacy in respect to emerging technologies, as argued subsequently, which has been the main conduit of misinformation creation and dissemination in the last three decades.

However, as the world changes due to technological advancement, which shapes the media ecosystem and almost produces and sustains false information, scholars have continued to investigate its potential for reducing misinformation. Nevertheless, evidence suggests that their impact is less effective in this respect than they were in the years of their emergence (Geraee et al., 2015; Guess et al., 2020; Jones-Jang, Mortensen & Liu, 2021). Could this be because of weak curriculum or a failure to consider the context in which they are taught? Could it be because stakeholders do not have an interest in it or do not understand its importance? These are some of the key questions this study addresses. While many of the previous studies have largely focused on students in high schools and not in higher institutions, there is also little study of their capability and channels from which beneficiaries got their skills, and the readiness of beneficiaries to advance their skills for those who have passed through the course. Little has also been studied about the interest of those who are yet to experience a course in Media Literacy (Carlsson, 2019; Cunliffe-Jones, et al., 2021).

A series of assumptions have emerged on the reasonss for the ineffectiveness of ML in solving issues facing the information ecosystem today. Issues such as fake news, misinformation, disinformation, deep fake, post-truth and the like. These assumptions cut across different sets of people, from teenagers to adults, novices to professionals (Bulger & Davison, 2018; Silverblatt & Belanger, 1996). Among these assumptions is a statement like 'I am not a media practitioner, why do I need media literacy training.' This is the personal experience of the first author during his recent facilitation of a ML course for a group of undergraduate students from 7 sub-Saharan African countries. When they were asked about interest in ML, many of them thought that the course is mainly for those in the field of journalism, which shows their little knowledge of what media literacy can really do and how it can be useful in their various areas of specialisation and later in life.

Governments across the Western world have been promoting media literacy education in schools for decades. Carlsson (2019) notes that up to the 1980s ML was conceived in a few countries, such as Canada, the USA, the UK, France and Australia. However, studies show that there are deficiencies in the reach and effectiveness of ML. In Finland and Norway. Media Literacy teaching was updated following the rise of misinformation as a result of the 2016 US presidential election. It now includes a focus on identifying misinformation, with course modules designed in partnership with experts from fact-checking organisations (Charlton, 2019; Cunliffe-Jones, et al., 2021; UNESCO, 2021; Xiao, Su & Lee, 2021).

While several countries across the developed world are working on means to combat the menace of misinformation through the use of ML, countries in developing and underdeveloped countries are also trying their best. However, there are very few implementations

and actions in most of the countries in sub-Saharan Africa. Cunliffe-Jones et al. (2021) found that few aspects of ML are taught in only one of the seven countries studied and none in the other six. Xiao et al. (2021) revealed that increasing new media literacy can help reduce misperceptions induced by misinformation. Kahne and Bowyer (2017) found that media literacy education is more effective than political knowledge, as people with media literacy education are more likely to rely more on evidence-based posts than those without the skill. Jones-Jang, Mortensen and Liu (2021) revealed that information literacy – but not other literacies – significantly increases the likelihood of identifying fake news stories. Since some of the existing studies have revealed that media literacy has the potential to curb misinformation, in this study, the authors further explored the possibility of having critical thinking taught predominantly as part of media literacy courses in sub-Saharan African higher educational institutions for adequate curbing or reduction of misinformation among the studied population. This is imperative since critical thinking involves both cognitive skills and dispositions, which include the component skills of analysing arguments, making inferences using inductive or deductive reasoning, judging or evaluating, making decisions or solving problems, having background knowledge of information or subject, being open and fair-minded, and being flexible (Bailin & Siegel, 2003; Hitchcock, 2018; Huitt, 1998; Lai, 2011; Lipman, 1987).

In linking media literacy with critical thinking, Bulger and Davison (2018) note that contemporary media literacy tends to organise around five themes that have demonstrated positive outcomes, particularly in the case of rapid responses to breaking news events, connecting critical thinking with behaviour change, and evaluating partisan content. These five themes are youth participation, teacher training and curricular resources, parental support, policy initiatives, and evidence-based construction. The planned education programmes on ML are efficient in improving knowledge among adolescents and behavioural intentions in dealing with mass media messages (Geraee et al. 2015). Another key area to take note of is which strategy could be best used to teach media literacy to the younger ones and spot misinformation. In Chang et al.'s (2020) study, the authors learned that games were effective in shaping student learning in three key ways: they help students apply news literacy skills to real-life situations, they were engaging as an instructional approach, and the fictional narrative of the game facilitated a depoliticised and fun learning experience, though sometimes it complicated the contextual understanding of concepts of real or fake. These studies report many means of entrenching and teaching media literacy as well as critical thinking skills like those measured in any sub-Saharan African higher educational institution.

Theoretical basis and research propositions

Since misinformation is an unexpected product of the media, which is created consciously or unconsciously by the stakeholders of media (be it professional or non-professionals) and also consumed through reading or listening as well as redistributed by the audience, the authors consider hypodermic needle, critical thinking, and uses and gratifications theories relevant for investigating the place of media literacy and critical thinking in the partial or total elimination of misinformation. With the hypodermic needle theory, any medium, just like a medical practitioner who injects a patient based on the intent of healing him of a specific illness, injects socially and professionally constructed messages into the audience's mind with the aim of causing intended and unintended changes in his behaviour (Nwabueze & Okonkwo, 2018).

Based on this dominant proposition, one can say that theory prioritises producer(s) and content as strategic elements for shaping audience behaviour towards a particular cause, directly or indirectly. However, it is the responsibility of members of the audience to deploy their cognitive capacities and pedagogical acquisitions to detect messages that are false or separate opinions from facts to avert the further spread of information capable of causing chaos in the environment (Campos, 2009). This position is primarily the focus of the uses and gratification theory when it says that audiences are active users of media channels who consciously choose which medium should be used for seeking information that would be consumed to be an informed person, not misinformed (Korhan & Ersoy, 2016). If being conscious is a necessary condition for deriving benefits from any medium or message, as the uses and gratification theory suggests, then it could be argued that the theory is intertwined with the critical thinking theory that also expects individuals to be selective while consuming, analysing, and interpreting any information towards improved quality of judgement in a specific context (Campos, 2009; Facione et al., 1995).

Holistically, the first theory indicates that producer(s) and content are the most powerful in a mediated communicative context, whereas Uses and

Gratifications and Critical Thinking theories afford the audience the opportunity to question any socially and professionally constructed messages with specific aims by the media. However, the deployment of this power would largely depend on the existence of formal and informal education systems where the audience has been taught the fundamentals and rudiments of media literacy as well as critical thinking (Campos, 2009; Facione et al., 1995; Korhan & Ersoy, 2016; Nwabueze & Okonkwo, 2018). From these perspectives, the following propositions were developed to guide the study:

- *H1*: The relationship between media literacy and misinformation will be highly mediated by the teaching of media literacy course and students' participation.
- *H2*: The relationship between critical thinking and misinformation will be highly mediated by students' possession of critical thinking skills for verifying information they consume.
- *H3*: Media literacy and critical thinking relationship with misinformation will be highly mediated by students' country of origin and gender.

We chose to use propositions instead of hypotheses due to the absence of empirical studies from sub-Saharan Africa. These studies could have aided us in formulating new hypotheses to augment the existing empirical evidence. Consequently, working with propositions offers us the chance to create fresh insights into the causal relationships and effects concerning media literacy and critical thinking in combatting the creation and dissemination of misinformation among students in sub-Saharan Africa (Cornelissen, 2017). To fulfil this, we first developed our arguments using empirical studies and views, as well as the propositions of the theories that guided the study (Cornelissen, 2017). Additionally, the use of propositions is premised on the view that, as Russell (1919) pointed out, we must distinguish the beliefs held by one of the authors after interacting with some students in the sub-region and those in the literature from those that will evolve from analyzing the views of the majority of students in the sub-region.

METHOD AND MEASURES

A survey research method with a questionnaire as the research instrument was used for data collection from 245 students who voluntarily participated in the study between October 2021 and December 2022 through an online questionnaire distribution platform (Google Form). The majority of the students were from Nigerian universities, colleges of education, and polytechnics. In total, students from 33 Nigerian higher educational institutions participated in the study, while students from 7 Ghanaian universities also participated. Students from one university in Benin Republic and one in Sierra Leone were also involved in the study, and students from 4 Gambian universities also participated.

Nigerian higher educational institutions were the Federal University of Dutsinma, Katsina; the University of Abuja, Bayero University, Kano; Kebbi State University of Science and Technology; Federal University of Technology, Minna; Al-hikmah University, Ilorin; Atiba University, Oyo; Ahmadu Bello University, Zaria; Kaduna State University; Ladoke Akintola University of Technology, Ogbomoso: Baze University, Abuja: University of Ilorin; University of Calabar; University of Lagos; Lagos State University; Obafemi Awolowo University, Ile-Ife; Federal University Lokoja: Ekiti State University; University of Benin; Taraba State University; University of Uyo; National Open University of Nigeria; Olabisi Onabanjo University; Tai Solarin University of Education; Bells University; Federal Polytechnic Bida; Lagos State Polytechnic; Muyideen College of Education, Ilorin; Abdu Gusau Polytechnic, Osun State University; Federal Polytechnic Offa; and Usman Danfodio University Sokoto. From Ghana, the students were recruited from the University of Education; Kwame Nkrumah University of Science and Technology; Mixed Martial Arts University of Ghana; University of Professional Studies; African University College of Communications; and the State University of Management (SUM); while Njala University and Université d'Abomey-Calavi were the universities from Sierra Leone and Benin Republic respectively. We recruited the participants using our social capital, which involved the use of social media and personal networks in the form of relationships we have with some students from higher institutions. Specifically, the link to the research instrument was shared on social media, particularly Facebook and WhatsApp groups, with the assistance of students with whom the authors have a personal relationship.

Media literacy, critical thinking, and misinformation were the key constructs and variables of the study. Media literacy, critical thinking, and critical thinking skills were the independent variables, while misinformation was the dependent variable. These variables were measured using the delineation approach

of scholars (Bulgar & Davidson, 2018; Chen et al, 2011; Guess et al, 2020; Jones-Jang et al, 2021; Huguet et al, 2019) which were reviewed earlier and the assumptions of the three theories that underpinned the study. It should be noted that some of the existing studies (Bulgar & Davidson, 2018; Geraee et al, 2015; Jones-Jang et al, 2021; Korhan & Ersoy, 2016; Nwabueze & Okonkwo, 2018) also influenced the items that constituted measures for the variables that were used for eliciting the required data from the participants.

Three items that entailed *I believe the news and current affairs information that I see* (Alpha Cronbach's r = .721), I am sceptical about the news and current affairs information I see (Alpha Cronbach's r = .796), and *I always do further research on news and current affairs information before believing it* (Alpha Cronbach's r = .877) were used for measuring media literacy. Critical thinking was measured using what information is true and what is false (Alpha Cronbach's r = .757), what information is fact and what is opinion (Alpha Cronbach's r = .692), what content is intended to be taken literally and what is satire or humour used to criticise or make fun of something or someone (Alpha Cronbach's r = .724), what content is independent and what is advertising (Alpha Cronbach's r = .719), and what is independent and what has a political motive or agenda (Alpha Cronbach's r = .702) as scale items. Meanwhile, for measurement of the critical thinking skills variable, the authors employed a multidimensional approach to eliciting relevant responses from the participants by reintroducing what information is true and what is false and what information is fact and what is opinion as the key measurement scale for the critical thinking skills variable. This was done considering the existing literature and theoretical knowledge that suggest that individuals' ability and capacity to separate facts from opinions and distinguish truthful information from false ones are largely premised on their cognitive abilities and pedagogical activities based on argumentation (Campos, 2009). Misinformation was measured with the adoption of deepfake (Alpha Cronbach's r = .731), hate speech (Alpha Cronbach's r = .807), confirmation bias (Alpha Cronbach's r = .629), and post-truth (Alpha Cronbach's r = .669). The authors had the teaching of a media literacy course and students' participation as the first mediator. The second and third mediators included students' country of origin and gender critical thinking skills, respectively.

The authors introduced the items to the participants using the Likert scale approach to question development. For the media literacy construct, they were asked: To what extent do you agree or disagree with each of the following statements? and expect them to choose from strongly agree, agree, strongly disagree, and disagree provided as choices. The same approach was used for the critical thinking construct, where the authors asked: Thinking about various news and current affairs that you see online, how easy or difficult is it for you to know whether they are true or false? (Very easy, easy, somewhat easy, very difficult, somewhat difficult, neither easy nor difficult). Extremely familiar, somewhat familiar, not very familiar, familiar, and unfamiliar were choice categories for misinformation detection when asked: To what extent do you feel familiar or unfamiliar with the following terms?

Apart from the specific reliability test carried out on each item, the authors also conducted Pearson correlation analysis with the aim of revealing inter-construct relationships. The study found that critical thinking and misinformation ($r = .336$, $p < .000$), media and critical thinking ($r = .318$, $p < .000$) had a higher percentage of connectivity than media literacy and misinformation ($r = .261$, $p < .000$. Overall, the three constructs were moderately reliable (Alpha Cronbach's r = .507). Simple frequency counts and percentages of the descriptive statistics were used for the analysis of the demographics of the participants, while simple regression analysis was used for constructs and mediating factors.

RESULTS

This section encompasses the presentation of the demographic results and views of the respondents. Of the 245 respondents, the majority (54.70%) were male students, while 45.30% were female students. The minimum age is 16, while the maximum is 49. The average age is 25.7 years. In terms of geographical spread, 86.10% of the participants were Nigerian students. With 7.30%, the Ghanaian students followed Nigeria, while 4.90% and 1.20% were students from The Gambia and Sierra Leone, respectively. Less than 1% of the participants were from the Benin Republic.

Table 1 shows the total effects of the relationship that exists between media literacy and misinformation. It also contains the outcomes of the mediator's efforts to shape the relationship. According to the data, though not substantial when the authors considered the adjusted R-square outcome of less than 50% that could be used to substantiate an appreciable level of variance of media literacy in misinformation, there is a causal positive linkage between media literacy and misinformation

(Adjusted R^2 =.064, df = 243, p<.001). This connection is better appreciated with the mediator (Adjusted R^2 =.030, df =243, p<.004) and suggests that when media literacy is taught and students participate, there is a likelihood of understanding its fundamentals and applying them when confronted with false or misleading information. We further conducted significance analysis of mediation using the Sobel test and presented in Table 2. According to the Sobel test, our mediator had a positive and significant indirect effect on media literacy before its relationship with misinformation. This further justifies our earlier position on the existence of a causal relationship between the two variables.

Table 1. *Total effects between media literacy and misinformation*

	Model 1 (Direct Effect)			**Model 2 (Mediation Effect)**		
	Beta	***Std. Error***	***Sig***	***Beta***	***Std. Error***	***Sig***
(Constant)	9.035	(1.491)	.000	2.366	(1.042)	.024
Media literacy and misinformation	.677	(.161)	.001			
Teaching of media literacy course and students' participation				.326	(.112)	.004
F-Change	17.788			8.456		
Adjusted R^2	.064			.030		
df	243			243		
Sig.	.001			.004		

Note: In the test, each measure encompasses three to five aggregated categorical data variables (or items)

Table 2. *Test indirect effect for statistical significance*

Teaching of media literacy course and students' participation	**Test statistic**	**Std. Error**	**p-value**
Sobel test	2.393	0.092	0.017
Aroian test	2.349	0.094	0.019
Goodman test	2.440	0.090	0.015

Table 3. *Total effects between critical thinking and misinformation*

	Model 1 (Direct Effect)			**Model 2 (Mediation Effect)**		
	Beta	***Std. Error***	***Sig***	***Beta***	***Std. Error***	***Sig***
(Constant)	6.768	(1.544)	.001	8.192	(.507)	.001
Critical thinking and misinformation	.298	(.054)	.001			
Critical thinking skills				.185	(.032)	.001
F-Change	30.836			32.944		
Adjusted R^2	.109			.116		
df	243			243		
Sig.	.001			.001		

Note: In the test each measure encompasses three to five aggregated categorical data variables (or items)

Table 3 contains data that signify direct and media effects of critical thinking and misinformation. The examination of the causal relationship between critical thinking and misinformation establishes a positive and significant connection (*Adjusted* R^2 = .109, *df* = 243, *p* < .001). The authors also found the mediator to be significant (*Adjusted* R^2 =.116, *df* = 243, *p* <.001) in mediating the relationship at a higher variance (11.6%) than what was discovered for the direct effect (10.9%).

Table 5. *Test indirect effect for statistical significance*

Critical thinking skills	Test statistic	Std. Error	p-value
Sobel test	1.165	0.014	0.244
Aroian test	1.071	0.015	0.284
Goodman test	1.290	0.012	0.197

Table 6. *Total effects between media literacy and critical thinking relationship with misinformation*

	Model 1 (Direct Effect)			Model 2 (Mediation Effect)		
	Beta	Std. Error	Sig	Beta	Std. Error	Sig
(Constant)	12.711	(.492)	.001	7.533	(1.612)	.001
Media literacy and critical thinking relationship with misinformation	.276	(.053)	.001			
Students' country of origin and gender				-.131	(.105)	.215
F-Change	27.258			1.547		
Adjusted R^2	.097			.002		
df	243			243		
Sig.	.001			.215		

Note: In the test, each measure encompasses three to five aggregated categorical data variables (or items)

Table 7. *Test indirect effect for statistical significance*

Students' country of origin and gender	Test statistic	Std. Error	p-value
Sobel test	0.491	0.029	0.624
Aroian test	0.446	0.033	0.656
Goodman test	0.553	0.027	0.580

Our Sobel test analysis reveals a significant indirect relationship between the mediator and the two variables. This suggests that the critical thinking skills the students learned from participating in the media literacy course helped them identify false or misleading information.

Table 6 entails our further exploration of media literacy and critical thinking as significant factors in reducing or eliminating misinformation, with the consideration of the unstandardized predicted value of the critical thinking relationship with media literacy as a new dependent variable for us to understand how strongly critical thinking could reduce or eliminate misinformation when it is embedded in a media literacy course. Our result indicates a positive direct relationship between media literacy and critical thinking and misinformation (*Adjusted* $R^2 = .097$, $df = 243$, $p < .001$). As the data in Tale 7 reveals, the mediator was not significant in shaping the relationship.

DISCUSSION

Our first proposition, which states that the *relationship between media literacy and misinformation will be highly mediated by the teaching of media literacy course and students' participation*, is partially supported because of the adjusted R-square's outcome, which is less than 50%. These findings reinforce the existing mixed outcomes of the potential of media literacy in curbing misinformation. For instance, it could be that some aspects of media literacy are not taught in the participants' institutions, as exemplified in the result of Cunliffe-Jones, et al.'s (2021) study. On the other hand, the partial outcome could be situated within the evidence that teaching students new media literacy skills in a well-planned environment and adopting a coordinated approach could reduce misinformation spread (Bowyer, 2017; Geraee et al., 2015; Xiao, et al., 2021). It is also important to state that the outcomes reflect the experience some college students shared with Bak (2022), detailing how the fragmented media environment and their previous understanding made information evaluation entangled when reading news online.

However, considering the low level of variance of critical thinking and our selected critical thinking skills in misinformation, it is concluded that our second

proposition, which states that the *relationship between critical thinking and misinformation will be highly mediated by students' possession of critical thinking skills for verifying the information they consume*, is partially realised. This partiality could be explained by previous studies that discovered implicit and explicit efficacy and the effectiveness of teaching critical thinking skills in the Finnish and United States of America contexts (Horn & Veermans, 2019) and a positive correlation of critical thinking with college students' ability to separate fact from opinion (Bak, 2022).

Meanwhile, the finding from 833 Malaysians, who were within the age threshold of our participants, casts more doubt on the potential of critical thinking skills such as people's ability to identify misinformation for the total elimination of misinformation in our society because the deployment of the skill significantly predicted misinformation sharing (Balakrishnan, 2022). However, the frequency of sharing news and the importance of reading real news predicted authentication behaviour (Balakrishnan, 2022). This suggests that teaching media literacy alongside critical thinking might require that educators and administrators consider teaching news analytics in terms of paying attention to specific features of news-sharing platforms that facilitate information-sharing or news-sharing behaviour among readers.

Collectively, the authors could not realise the expected within 50% or above of adjusted R-square and positive indirect effect of students' country of origin and gender, which should have aided our total acceptance of the third proposition: *media literacy and critical thinking relationship with misinformation will be highly mediated by students' country of origin and gender.* Therefore, our finding suggests that the participants are capable of identifying misinformation elements in the news without their countries and gender being key determinants. However, as Puig, Blanco-Anaya and Pérez-Maceira (2021) found, they might need to practice some basic epistemic levels of assessment and scientific procedure when assessing headlines and news.

CONCLUSION AND RECOMMENDATIONS

This study has demonstrated that through the teaching of media literacy with the inclusion of critical thinking skills, students in sub-Saharan Africa could detect misinformation elements and deal with them partially in their quest to make an informed judgement over an issue at hand. This could be mainly traced to the two audience-driven theories of uses and gratifications and critical thinking, which collectively helped them to deploy their cognitive abilities and pedagogical capacities. The study has further established that the country of origin and gender are not determining factors in students' ability to detect misinformation. Instead, the teaching of media literacy, critical thinking principles, and personality traits related to their level of understanding of the principles and strategies for detecting misinformation are more crucial than demographic factors. In light of this, we conclude that having the majority of the students from Nigeria and Ghana did not pose any significant barrier to understanding how media literacy and critical thinking can be applied to address misinformation among sub-Saharan African students.

However, there is a need for more campaigns on the importance of ML with deep insights into how it affects every aspect of life. Similarly, policymakers in the education sector need to update the curriculum and work on an interdisciplinary approach that gives room for the inclusion of critical thinking as an embedded as well as a separate course. In addition, other actors such as Non-Governmental Organisations, religious groups, community leaders, and associations should join forces and work together to reach every segment of society towards the implementation of the policies.

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