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Discerning (Dis)information: Teacher perceptions of critical media literacy

Jennifer K. Allen

University of West Georgia, USA

Robert A. Griffin

University of West Georgia, USA

Diana Mindrila

University of West Georgia, USA

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Corresponding Author:
Jennifer K. Allen
jkallen@westga.edu

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ABSTRACT

Critical media literacy (CML) is vital for students to navigate the current proliferation of misinformation and disinformation. Despite what is known about the influence of teacher beliefs on classroom practice, little research to date has looked at what teachers perceive about the importance of CML. The researchers administered a survey to teachers throughout the U.S. (N = 362) on their perceptions of the importance of teaching CML as part of their instruction. Using quantitative methods, the researchers found CML as the primary factor underlying the survey data and a strong awareness of the importance of teaching CML to students. While years of teaching experience, subject areas, being a primary, elementary, or middle school teacher, geographic area, and being politically conservative or progressive were not significant predictors of CML factor scores, three covariates showed significant differences – gender, educational level, and being a high school teacher. Implications for teacher education programs and professional learning initiatives and other suggestions for improvement are included in the discussion.

Keywords: *critical media literacy, teacher perceptions, teacher beliefs, disinformation, misinformation*.

INTRODUCTION

Discerning (dis)information: Teacher perceptions of critical media literacy

Not long ago, my friend and I (first author) were in the middle of a text exchange about our worries related to the COVID-19 pandemic. She must have sensed my high level of anxiety because she sent me an adorable video clip followed by a message that said, "Did you know that watching a beaver eat lettuce can lower your stress level by 17%?" And for the next minute or so, I found myself mesmerized by the most delightful scene of a beaver munching on lettuce leaves. Feeling slightly incredulous about my friend's wellness tip, I replied, "Where'd you get that fact?" While I certainly doubted the validity of her statement, the 17% seemed so precise and specific that I admittedly found myself wondering if maybe there was some truth to her statement. The usual skeptic, I surprised myself by being even the slightest bit gullible. Imagine my embarrassment when my friend replied, "I made it up. LOL."

This dialogue exchange got me thinking about discerning fact from fiction and how easy it is to be fooled by the misinformation that pervades the Internet and social media. I began pondering the fact that I, an associate professor with a Ph.D. in literacy education, had questioned for at least two seconds if I could reduce my stress level by simply watching a video of an adorable beaver eating lettuce. The experience made me chuckle a little – and admittedly terrified me a bit – and in the days and weeks that followed, I began to ponder just how easy it is in this age of information overload to be duped by disinformation. If I, an adult with two advanced degrees in education, could almost be fooled by a simple and well-intended text message from a friend, then how easy would it be for others to be fooled as well? My musings eventually led to a conversation with my colleague (second author), and we began digging deeper into the Common Core State Standards (CCSS) to determine how much priority is placed on critical media literacy (CML) and how much attention teachers might be devoting to helping students decipher fact from fiction in the (dis)information era.

We discovered that concepts relating to critical literacy, and by extension CML, are present in the CCSS even as early as kindergarten, where the seeds for CML should be planted and continue to expand and deepen as students progress through the grade levels. One standard, for example, requires young kindergarten learners to "identify the reasons an author gives to support points in a text" (Common Core State Standards [CCSS], 2010, p. 13) and becomes more refined in the upper elementary grades where the focus deepens asking fifth-grade learners to "explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s)" (CCSS, 2010, p. 14).

In the middle grades, students are asked to "trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not" (CCSS, 2010, p. 39) and "delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced" (CCSS, 2010, p. 39), while high school students are asked to "delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning" (CCSS, 2010, p. 40). This example standard highlights an important shift in thinking about authors and their reasoning that occurs at the middle grades level, where the focus turns from simply identifying and explaining reasons that support the stance an author takes to being aware that arguments and claims presented by authors are not always well supported and in fact at times might be false.

This unfolding emphasis on CML across grade levels in the CCSS is well placed, particularly as technology continues to pervade all aspects of our lives. Educational technology has also boomed over the past decade, with schools relying more and more heavily on digital tools and the Internet to enhance learning (Hol & Aydin, 2020). As a result of our increasing reliance on digital technology over the years, K–12 students spend more time engaged with digital texts than with print texts, and this has become even more true due to the COVID-19 pandemic (Flores-Koulish & Deal, 2008; Sparks, 2021). Because students are inundated with online media both inside and outside of school, they are more likely to frequently encounter misinformation or "fake news," which serves to "ignore, twist/misrepresent, or invent facts" (Ireland, 2018, p. 123). The old-fashioned fake news, which used to be confined to the printed tabloid magazines sold mostly in stores, has morphed over time and is now more accessible and believable than ever, making it hard to discern the lines between information, entertainment, and intentional deception (Goering & Thomas, 2018; Ireland, 2018). Due to advances in communication

technologies that allow us to send, receive, and process information more efficiently, false information now has a greater reach and can travel faster than ever before (Nyhan, 2021). Because misinformation is so readily woven into the same online spaces where accurate information exists, any engagement with online media makes students susceptible to blindly trusting online (mis)information and readily accepting a potentially biased agenda (Korona, 2020).

For students to thoughtfully consume and create media, teachers must create classroom spaces where students learn how to critically evaluate online texts (Flores-Koulish & Deal, 2008; Korona, 2020). Teaching students to read, write, question, and understand multiple forms of media must have a place in classroom instruction (Gainer et al., 2009). Yet, CML is an area that has historically lacked official guidance (Scharrer, 2003) and remains largely overlooked in the curricula despite its importance (Torres & Mercado, 2006). Moreover, teachers report not having detailed knowledge of CML (Akar-Vural, 2010; Robertson & Hughes, 2011), while others have highlighted the absence of CML in teacher education programs (Marlatt, 2020; Share et al., 2019; Torres & Mercado, 2006). Decades of research suggest that teacher beliefs and perceptions influence their instruction and thus impact student learning and performance (Bandura, 1993; Gilakjani & Sabouri, 2017; Goddard et al., 2000; Kagan, 1992; Matlock, 2016).

Critical Media Literacy

Grounded in the work of problematizing uncritically accepted truths and established knowledge structures, CML focuses on how media perpetuate dominant realities and considers the hidden agenda or backstory of the creation of this media (Bhatia, 2018). In other words, CML is concerned with teaching students to critically examine the messages they receive from media in all forms (i.e., television, websites, social media, texts, etc.) rather than simply accept at face value the messages gleaned from the media.

CML is also concerned with "the ability to search, to support, and to develop alternative nonprofit media" (Torres & Mercado, 2006, p. 277) because these alternative media forms are more likely to present high-quality, accurate, and culturally relevant information. In essence, CML aims to promote both critical consumers and creators of media (Thevenin, 2020).

CML as a theoretical and pedagogical framework evolves largely from cultural studies and critical pedagogy. As far back as the 1930s, researchers analyzed how media and the tools of communication technology influence ideology and societal views (Share et al., 2019). In the time since, cultural studies scholars have conceptualized media as a dynamic transactional system that promotes dominant worldviews, entertains, educates, and offers possibilities for counter messaging (Hammer & Kellner, 2009). Applying a CML framework allows students across grade levels to critically analyze the messages presented to them through media outlets.

Kellner and Share (2019) outlined a conceptual framework for CML that includes six conceptual understandings: (a) social constructivism, (b) languages/semiotics, (c) audience/personality, (d) politics of representation, (e) production/institutions, and (f) social and environmental justice (Table 1).

Deweyan and Frerian ideologies underpin their framework, such that Kellner and Share designed it to give teachers and students a springboard for questioning the sources, assumptions, power structures, and ideologies underlying media messages. This framework is practitioner friendly, helping teachers and students understand the core concepts of CML by delineating specific questions teachers can ask students – and students themselves can ask – to help them critically analyze media messages from multiple vantage points.

Taking a critical inquiry stance, Kellner and Share's (2007) framework helps educators guide students as they wrestle with the ever-evolving web of information, media, and technology and learn to discern bias and how it influences both the producer and consumer of media messages. Moreover, the framework supports "explorations of racism, sexism, classism, homophobia, overconsumption, environmental exploitation, and other problematic representations in media" (Share et al., 2019, p. 7). Exploring these complex and often polarizing issues using this explicit and straightforward framework helps students understand that most issues are intricate and multifaceted even though media may not present them as such at times.

Table 1. *Critical Media Literacy framework*

Conceptual understandings	Questions
1. *Social constructivism*: All information is co-constructed by individuals and groups of people who make choices within social contexts.	WHO are all the possible people who made choices that helped create this text?
2. *Languages/semiotics*: Each medium has its own language with specific grammar and semantics.	HOW was this text constructed and delivered or accessed?
3. *Audience/positionality*: Individuals and groups understand media messages similarly and differently, depending on multiple contextual factors.	HOW could this text be understood differently?
4. *Politics of representation*: Media messages and the medium through which they travel always have a bias and support and challenge dominant hierarchies of power, privilege, and pleasure.	WHAT values, points of view, and ideologies are represented or missing from this text or are influenced by the medium?
5. *Production/institutions*: All media texts have a purpose (often commercial or governmental) that is shaped by the creators and systems within which they operate.	WHY was this text created and shared?
6. *Social and environmental justice*: Media culture is a terrain of struggle that perpetuates or challenges positive and negative ideas about people, groups, and issues; it is never neutral.	WHOM does this text advantage and disadvantage?

Note. Adapted from *The Critical Media Literacy Guide: Engaging Media and Transforming Education* by D. Kellner and J. Share, 2019, Brill/Sense Publishers. Copyright 2019 by Koninklijke Brill NV, Leiden, The Netherlands.

Evolving definitions of media literacy instruction

Media can be used to disseminate information, ideas, and values to society at large. Print and digital media in all forms (i.e., newspapers, magazines, television, websites, social media, text messages, etc.) have always been tools for persuasion. Luke (1994) used the term *public pedagogy* to describe the profound influence media can have on popular culture, emphasizing the influence of media on children and their understanding of the world in particular. Silverblatt et al. (2014) reiterated the need for building an awareness that students constantly receive media messages that impact behavior, attitudes, and values.

The exponential growth of digital media in the first quarter of the 21st-century continues to underscore the need for teaching CML to school-aged children to prepare them for the challenges of being informed citizens of a participatory democracy (Kellner & Share, 2007). Mass-mediated messages wield great power when it comes to "framing, informing, and influencing the audience's perceptions and understanding of the world" (Thevenin, 2020, p. 102). This is true now more than ever as digital communication has become the norm, driving a marked shift in the ways people stay connected and in the ways ideas spread (Burnett & Merchant, 2019).

To respond to this shift, Burnett and Merchant (2019) argue for rethinking literacy instruction in school and redefining critical literacy for the digital age. CML is even more important in recent years in which divisive rhetoric and disinformation have infected public discourse and democracy appears to hang in the balance (Higdon & Huff, 2022). Thus, one of the most common goals of CML is the development of "critical viewers" (Singer & Singer, 1994, as cited in Singer & Singer, 1998, p. 169), which involves questioning media messages that are read, seen, or heard, analyzing how they are constructed, and considering what may have been left out (Thoman, 1999). In essence, media literacy education becomes effective when students are able to "break down the components of and closely analyze media messages, practices, processes, institutions, or influence" (Scharrer, 2003, p. 357).

The current study

For students to become productive citizens in a democratic society, they must be taught to discern truth from falsehood and to be prudent consumers of media in all forms. Despite the vital importance of CML, many

teachers are not prepared to teach students how to be critical consumers of media and technology (Robertson & Hughes, 2011; Share et al., 2019). As such, this study explores how teachers broadly perceive and value the teaching of CML. Because teacher perceptions of CML have not been explored widely, this study is well positioned to inform policy recommendations for teacher education programs and professional learning initiatives. Three research questions informed this study:

1. What level of importance do teachers place on students learning CML skills?
2. What factors of CML underlie the data?
3. To what extent does the level of importance teachers place on students learning CML skills differ across teacher demographic factors (i.e., political affiliation, gender, grade level taught, subject area taught, educational level, and years of experience)?

METHOD

Data collection

In-service teachers across the U.S. were asked to complete the Critical Media Literacy Survey via the distribution feature in Qualtrics using publicly available school email addresses. In addition, in-service educators in graduate education courses at the researchers' university were also recruited to participate via email. An informed consent statement was included in the distribution email and again at the beginning of the electronic survey. Potential participants had to agree to the informed consent statement and indicate they were current in-service teachers in a U.S. PK-12 school to gain access to the survey. The survey and data collection procedures were reviewed and approved by the Institutional Review Board of the university affiliated with the researchers.

Measure

The Critical Media Literacy Survey consisted of an agreement scale comprising 15 items using a 6-point Likert scale (1 – *Not Important at All*, 2 – *Of Little Importance*, 3 – *Moderately Important*, 4 – *Important*, 5 – *Very Important*, and 6 – *Extremely Important*). The Likert-scale items were preceded by a demographics section that included eight items for gender identity, grade level and content area taught, years of teaching experience, educational level, U.S. state where employed, and political ideology. The Likert-scale items were written to correspond to the six conceptual understandings of Kellner and Share's (2019) CML framework: (a) social constructivism, (b) languages/semiotics, (c) audience/personality, (d) politics of representation, (e) production/institutions, and (f) social and environmental justice.

Participants

The sample consisted of 362 U.S. teachers. Approximately half of the respondents were from the South region (58.3%), whereas the other half were from the West (15.2%), Midwest (12.4%), and Northeast (12.4%) regions, as defined by the U.S. Census Bureau (2013). The majority of participants were females (82.9%) and had a master's (51.7%) or a bachelor's degree (32.9%). The sample included teachers from all grade levels, with more high school (37.8%) and elementary school (29.3%) teachers. Participants' teaching experience ranged from 1 to 46 years and had a symmetrical distribution (M = 16.03, Mdn = 15). We asked respondents to select the subject area(s) they were currently teaching. The majority indicated teaching English Language Arts (44.2%) and other subject areas (40.3%). Approximately a third of the participants taught mathematics (30.9%), social studies (30.1%), or science (29.0%). We intentionally did not collect information on participants' racial or ethnic backgrounds because we were less interested in racial/ethnic differences than professional and ideological differences. Table 2 provides more information on the demographic distribution of the sample.

The Critical Media Literacy Survey included two questions asking participants to indicate the extent to which they are politically conservative or traditional (0 = not conservative at all; 10 = extremely conservative) and progressive or liberal (0 = not liberal at all; 10 = extremely liberal). On both questions, responses had a relatively normal distribution. The mean conservative rating was M = 4.93 (Mdn = 5, SD = 2.87), and the mean progressive rating was M = 4.68 (Mdn = 5, SD = 2.99).

Table 2. *Sample demographic distribution*

Variable	*N*	Percentage
Gender		
Female	300	82.9%
Male	59	16.3%
Transgender female	1	0.3%
Other	1	0.3%
Educational level		
Bachelor's degree	119	32.9%
Master's degree	187	51.7%
Specialist degree	25	6.9%
Professional degree	4	1.1%
Doctoral degree	12	3.3%
Grade level(s)*		
Primary schools (PK–2)	99	27.3%
Elementary schools	106	29.3%
Middle schools	88	24.3%
High school	137	37.8%
Subject area(s)*		
English Language Arts	160	44.2%
Mathematics	112	30.9%
Social Studies	109	30.1%
Science	105	29.0%
Other	146	40.3%
U.S. region**		
South	211	58.3%
West	55	15.2%
Midwest	45	12.4%
Northeast	45	12.4%

Note. *Percentages do not add up to 100% because categories are not mutually exclusive. **Percentages do not add up to 100% due to missing values.

Data analysis

The first step in analyzing the data was the examination of missing values. Critical Media Literacy Survey items measuring CML had between 0% and 12% missing values per variable and a total of 90 missing values. These values had a completely random distribution ($\chi^2_{(18)} = 26.499$, $p = .089$) and we replaced them using the expectation-maximization algorithm. We used descriptive statistics and indices of univariate skewness and kurtosis to examine the distribution of the survey variables and identify the survey items with the highest and lowest ratings. Further, we used one-sample *t*-tests to determine whether Critical Media Literacy Survey ratings on CML items were significantly higher than the minimum rating of 1 (*Not Important at All*).

We used the exploratory structural equation modeling framework (ESEM) to identify the factor(s) underlying the data and estimate the relationship between CML factor(s) and a series of covariates. ESEM includes exploratory factor analysis (EFA) and permits factor rotations and the estimation of cross-loadings. In addition to exploratory procedures, ESEM allows the computation of goodness of fit indices (Asparouhov & Muthén, 2009; Marsh et al., 2014; Morin & Maiano, 2011; Morin et al., 2013) and the estimation of structural path coefficients between factors and covariates (Asparouhov & Muthén, 2009; Marsh et al., 2014; Morin & Maiano, 2011; Morin et al., 2013). We conducted ESEM using the M*plus* 8.7 statistical software.

We used the 15 CML survey items (v1–v15) as observed indicators and treated them as ordinal

variables. Specifically, we used the mean- and variance-adjusted weighted least squared (WLSMV) estimation procedure. Research shows the WLSMV method provides accurate results with ordered categorical data, data that may not meet the assumption of a multivariate normal distribution, and smaller sample sizes (Finney & DiStefano, 2013).

We estimated models with one and two factors and selected the optimal model based on the interpretability of the solution and the quality of numerical results. Specifically, we examined factor loadings and a series of goodness of fit indices. The final factor structure included items with loadings that were statistically significant and above the recommended value of .320 (Costello & Osborne, 2005). Indices of model fit were (a) the chi-square statistic (χ^2) and its *p*-value, (b) χ^2 divided by the degrees of freedom (χ^2/df), (c) the root mean square error of approximation index (RMSEA) and its 90% confidence interval (CI), (d) the comparative fit index (CFI), (e) the Tucker-Lewis index (TLI), (f) the standardized root mean square residual index (SRMR), and (g) the weighted root mean residual index (WRMR).

The χ^2 statistic measures overall model fit; non-significant χ^2 values show very good fit to the data (Barrett, 2007). However, this index may be sensitive to model and sample size; therefore, we also used χ^2/df as an index of model fit; values of 3 or lower indicate an excellent fit to the data (Finney & DiStefano, 2013). Lower RMSEA and SRMR indices indicate better model fit. Specifically, RMSEA and SRMR values of .05 or lower show excellent model fit, values between .05 and .08 show good model fit, values between .08 and .10 interval signify acceptable model fit, and values larger than .10 show poor model fit (Hu & Bentler, 1999). Conversely, higher CFI and TLI values indicate better model fit. CFI and TLI values larger than .95 show excellent model fit, values between .90 and .95 show good model fit, whereas values below .90 show poor model fit (Hu & Bentler, 1999). Lower WRMR values indicate better model fit. Values close to 1 or lower than 1 indicate a good model fit (DiStefano et al., 2018; Yu & Muthén, 2002).

We examined the relationship between demographic variables and CML factor(s) by including a series of covariates in the ESEM model. Some covariates were binary variables (0 – No, 1 – Yes) indicating the grade level(s) and subject area(s) that participants taught when completing the survey, and we labeled them *primary*, *elementary*, *middle*, *high*, *ELA*, *math*, *social studies*, *science*, and *other_subjects*. Other covariates were *gender* (1 – female, 2 – male), *edlevel* (1 – bachelor's degree, 2 – master's degree, 3 – doctoral degree), *tchexp* (years of teaching experience), *conservative* (0 = not conservative at all, 10 = extremely conservative) and *liberal* (0 = not liberal at all, 10 = extremely liberal).

Further, we used the Mann-Whitney *U* and the Wilcoxon *W* tests to examine differences in factor score distributions across binary variables (*primary*, *elementary*, *middle*, *high*, *ELA*, *math*, *social studies*, *science*, *other_subjects*, and *gender*). Similarly, we employed the Kruskal-Wallis test to examine factor score differences by educational level and geographic region.

RESULTS

Items measuring CML had high average ratings. Respondents believed that it was most important for students to learn to "distinguish fact from opinion in media messages" ($M = 5.42$, $SD = 0.93$) and "determine trustworthiness of evidence in media messages" ($M = 5.31$, $SD = 0.94$). The items with the lowest average ratings were "locate and evaluate organizational institutions affiliated with media messages" ($M = 4.36$, $SD = 1.37$) and "identify and evaluate the impact of format (i.e., word choice, color scheme, use of visuals) as informational techniques in media messages" ($M = 4.39$, $SD = 1.24$). All CML items had mean ratings significantly higher than 1 (*Not Important at All*; Table 3).

Exploratory factor analytic procedures yielded two eigenvalues larger than one, and the scree plot indicated that one or two factors might underlie the data. When estimating a two-factor solution, one of the factors included only two items, and both were cross-loading. The one-factor solution had very good model fit ($\chi^2 = 854.391$, $df = 286$, $p < .001$; $\chi^2/df = 2.98$; RMSEA [90%CI] = .040 [0.035 – 0.046]; CFI = 0.971; TLI = 0.967; WRMR = 0.860). All items in the one-factor solution had statistically significant factor loadings ranging between 0.749 and 0.907 (Table 4). Therefore, we selected the one-factor solution as our sample's optimal factor structure and labeled the factor CML. The item with the highest loading was "Identify and evaluate motives for media messages," whereas the item with the lowest loading was "Distinguish fact from opinion in media messages." The items included in the CML factor had a Cronbach's alpha coefficient of internal consistency of .951.

Table 3. *CML item ratings*

CML Concepts	M	SD	Skewness	Kurtosis	t	p
Please indicate how important the following concepts are for students to learn:						
Locate and evaluate the background of the author of media messages	4.40	1.34	-0.60	-0.37	48.23	.000
Locate and evaluate organizational institutions affiliated with media messages	4.36	1.37	-0.56	-0.48	46.72	.000
Distinguish the intended audience of media messages	4.47	1.17	-0.57	0.12	56.42	.000
Recognize and interpret author(s)' point of view (i.e. Whose voices are presented? Whose voices are omitted?)	4.90	1.06	-1.11	1.68	70.06	.000
Identify and evaluate motives for media messages	4.99	1.12	-1.31	1.94	67.53	.000
Identify and evaluate potential bias in media messages	5.15	1.14	-1.69	2.99	69.20	.000
Identify and evaluate the intended purpose of media messages.	4.84	1.15	-1.10	1.24	62.60	.000
Distinguish fact from opinion in media messages	5.42	0.93	-2.03	4.78	89.42	.000
Identify and evaluate the impact of format (i.e. word choice, color scheme, use of visuals) as informational techniques in media messages	4.39	1.24	-0.44	-0.24	51.44	.000
Identify and evaluate persuasive techniques used in media messages	4.76	1.12	-0.92	0.90	63.36	.000
Determine the quality of reasoning present in media messages	4.82	1.09	-0.88	0.75	65.59	.000
Assess the relationship of personal bias and message bias	4.90	1.17	-1.09	1.01	62.44	.000
Determine trustworthiness of evidence in media messages	5.31	0.94	-1.42	1.83	85.71	.000
Identify and evaluate how public opinion trends shape media messages	4.81	1.08	-0.93	0.79	66.25	.000
Identify and evaluate how visual images convey author's or organization's viewpoint	4.72	1.15	-0.77	0.25	60.53	.000

As indicated in Table 4, three covariates had statistically significant relationships with the CML factor. Specifically, being a high school teacher (estimate = 0.579, t = 4.072, $p < .001$) and having a higher degree (estimate = 0.235, t = 2.616, p = .009) predicted significantly higher CML factor scores. In contrast, being a male predicted significantly lower CML factor scores than being a female (estimate = -0.417, t = -2.744, p = .006). Figure 1 illustrates the final ESEM model with statistically significant standardized path coefficients. Table 5 reports the mean CML factor scores for the statistically significant covariates.

Table 4. *ESEM Standardized Model Results*

	Estimate	**S.E.**	**Est./S.E.**	**p**
Identify and evaluate motives for media messages	0.907	0.012	78.160	0.000
Identify and evaluate potential bias in media messages	0.894	0.014	63.214	0.000
Identify and evaluate persuasive techniques used in media messages	0.858	0.015	56.532	0.000
Identify and evaluate the intended purpose of media messages.	0.852	0.018	47.934	0.000
Assess the relationship of personal bias and message bias	0.844	0.017	49.003	0.000
Locate and evaluate organizational institutions affiliated with media messages	0.828	0.018	46.456	0.000
Determine the quality of reasoning present in media messages	0.825	0.018	46.879	0.000
Distinguish the intended audience of media messages	0.819	0.018	46.438	0.000
Determine trustworthiness of evidence in media messages	0.819	0.021	39.673	0.000
Recognize and interpret author(s)' point of view (i.e. Whose voices are presented? Whose voices are omitted?)	0.815	0.019	41.921	0.000
Identify and evaluate how visual images convey author's or organization's viewpoint	0.800	0.022	36.447	0.000
Identify and evaluate how public opinion trends shape media messages	0.792	0.020	40.123	0.000
Locate and evaluate the background of the author of media messages	0.776	0.020	38.216	0.000
Identify and evaluate the impact of format (i.e. word choice, color scheme, use of visuals) as informational techniques in media messages	0.776	0.021	37.344	0.000
Distinguish fact from opinion in media messages	0.749	0.028	26.381	0.000
CML on				
gender	-0.417	0.152	-2.744	0.006
tchexp	-0.001	0.005	-0.203	0.839
edlevel	0.235	0.090	2.616	0.009
Primary	0.091	0.144	0.635	0.525
Elementary	0.135	0.132	1.021	0.307
Middle	0.159	0.138	1.153	0.249
High	0.579	0.142	4.072	0.000
ELA	-0.149	0.128	-1.160	0.246
Math	0.069	0.144	0.478	0.632
Socst	0.042	0.139	0.302	0.763
Science	-0.222	0.140	-1.585	0.113
other_subjects	-0.218	0.126	-1.726	0.084
conservative	0.019	0.026	0.734	0.463
liberal	0.034	0.025	1.339	0.181

Figure 1. *Final ESEM model*

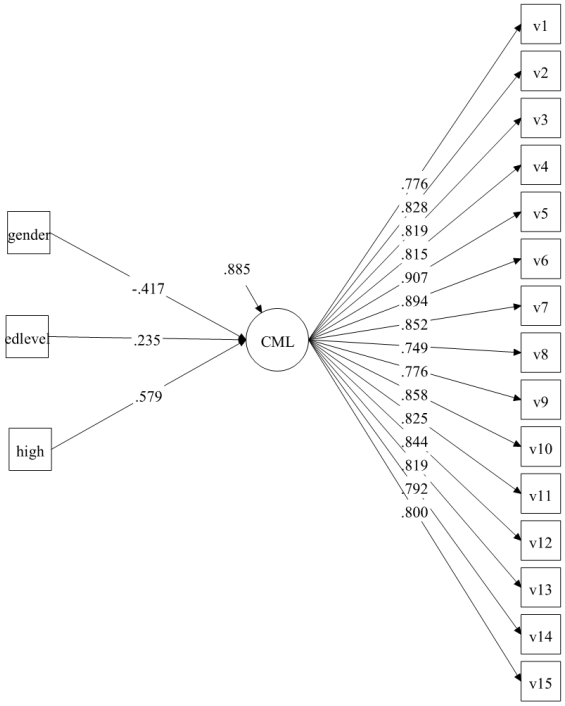

Table 5. *Mean CML factor scores by gender, educational level, and grade level*

Covariate	***M***	***SD***
Gender		
Females	.018	.843
Males	-.123	.763
Educational Level		
Bachelor's	-.257	.841
Master's	.126	.815
Doctoral	.081	.718
Grade Level		
High school	.226	.809
Other schools	-.145	.817

Table 6. *Non-parametric comparisons of factor scores by grade levels and subject areas*

	Mann-Whitney *U*	**Wilcoxon *W***	***S.E.***	**Std. Test Statistic**	**Asymptotic *p***
Grade levels					
Primary	11768.5	16718.5	887.477	-1.408	0.159
Elementary	12318	17989	906.014	-1.38	0.168
Middle	11955.5	15871.5	854.04	-0.118	0.906
High	19135	28588	965.636	3.855	0.000
Subject areas					
ELA	15236	28116	988.775	-0.934	0.350
Math	12512	18840	920.324	-1.617	0.106
Social studies	12952	18947	913.346	-0.916	0.360
Science	11460.5	17025.5	903.489	-2.249	0.025
Other	15263	25994	976.709	-0.517	0.605
Gender	15263	25994	976.709	-0.517	0.605

Non-parametric tests of significance yielded significant differences in CML factor scores for high school teachers and science teachers (Table 6). Specifically, high school teachers had significantly higher CML factor scores than teachers who do not work in high schools. In contrast, science teachers (M = -0.176, SD = 0.759) had significantly lower CML factor scores than those not teaching science (M = .065, SD = 0.849). Table 6 reports all non-parametric tests of significance by grade level, subject area, and gender.

The independent samples Kruskal-Wallis test showed that CML factor scores differed significantly by educational level ($H_{(2)} = 15.794$, $p < .001$). Specifically, there was a statistically significant difference (std. test statistic = -3.942, $p < .001$) between teachers with a bachelor's degree and teachers with a master's degree. The independent samples Kruskal-Wallis test did not yield statistically significant differences ($H_{(3)} = 4.750$, $df = 3$, $p = .191$) across individuals from the Southern (M = -0.025, SD = 0.780), Western, (M = -0.127, SD = 0.869), Midwestern (M = 0.064, SD = 0.948), and Northeastern (M = 0.207, SD = 0.897) regions of the U.S.

DISCUSSION AND IMPLICATIONS

Level of importance

The first research question was: What level of importance do teachers place on students learning CML skills? Descriptive analyses and *t*-test results showed the teachers surveyed placed a high level of importance on students learning CML skills. All items ratings were high with means significantly higher than the minimum rating of 1 (*Not Important at All*). These results imply teachers are aware of the importance of CML and may contradict previous findings (Akar-Vural, 2010; Marlatt, 2020; Share et al., 2019; Torres & Mercado, 2006). This overall finding may be hopeful in that it indicates more teachers understand the importance of CML; however, it does not imply they are consistently teaching their students CML skills. Further study of teacher practice is warranted to examine the relationship between teacher beliefs and teacher practice regarding CML.

The two items on the survey with the highest mean scores indicated survey respondents found distinguishing fact from opinion and determining the trustworthiness of media messages very important. Conversely, the two items with the lowest means indicated participants perceived determining institutions affiliated with media messages and evaluating the impact of format (i.e., word choice, color scheme, use of visuals) in media messages less important. Determining fact from opinion and trustworthiness of sources are concepts that are clearly included in curricular standards and that teachers may perceive as easier to teach. Professional learning for teachers regarding CML should focus, therefore, on more abstruse concepts, such as researching the funding and background organizations responsible for media messages as well as how to analyze a media message's format and content to determine its intended audience and hidden biases. Explicitly teaching students how and when to use these skills as critical viewers is vital (Flores-Koulish & Deal, 2008; Korona, 2020; Thevenin, 2020).

There are resources available educators can use to learn more about CML and become better equipped to teach CML skills in the classroom. Educators can consult the following resources as part of a professional learning community or when they are working with students in their classrooms to develop their CML skills: National Writing Project (NWP, 2022), National Council of Teachers of English (NCTE, 2022), News Literacy Project (2022), Media Literacy Now (2022), and I AM not the MEdia (2017). These resources and organizations help teachers and students learn to be thoughtful consumers and creators of media and information. For example, on the I AM not the MEdia (2017) website, teachers and students can access curriculum resources, workshops, conferences, book speakers, etc. to enhance their CML instruction.

In addition to these resources, we recommend that educators consider professional learning in the area of CML as professional learning can serve as a promising catalyst for transforming instruction and is therefore an effective avenue for improving student learning. We suggest professional learning initiatives that help educators first see the elements of CML and learn how to unpack them in their state standards. These initiatives will serve to establish the need for additional professional learning in the area of CML. With an emphasis on the Kellner and Share (2019) framework, educators can see CML as an extension of reading and content comprehension and support their students in internalizing the key questions they should ask as they approach any kind of text, but media texts especially. Just as teachers guide students in understanding author messages and intent in traditional prose or informational texts, teachers also need to be equipped to teach students these same skills using digital sources and media.

Underlying factor

The second research question was: What factors of CML underlie the data? We identified one overarching factor, which we labeled simply CML; this factor had a very good fit to the data and high reliability. The marker item for this factor was "Identify and evaluate motives for media messages." This item had a very high loading (.907) and represents the defining feature of the CML factor as perceived by the teachers surveyed. As such, participants indicated that identifying the motives for media messages is the underlying reason why CML skills are important for students. Their perception is in consonance with the theoretical and pedagogical foundations of CML, in that CML skills prepare students to recognize hidden agendas (Bhatia, 2018) as critical consumers of media (Thevenin, 2020). Identifying and evaluating motives, as the essential element of CML, is also supported by Kellner and Share's (2019) conceptual framework for CML with an emphasis on questioning assumptions, ideologies, power structures, and sources underlying media messages.

Findings from the current study also support the validity and internal consistency of the CML construct, which indicates the Critical Media Literacy Survey used in this study is supported by evidence of reliability and validity for measuring teacher perceptions of CML and would be a useful data collection tool for further investigations of teacher perceptions of the importance of CML. Other researchers are encouraged to both replicate and build on the current study with more diverse subgroups of teachers or other educators.

Demographic differences

The third research question was: To what extent does the level of importance teachers place on students learning CML skills differ across teacher demographic factors (i.e., political affiliation, gender, grade level taught, subject area taught, educational level, and years of experience)? This question was the central focus of the study and yielded significant results that may have implications for teacher education programs and professional learning initiatives. Here we offer suggestions for improvement as part of our discussion.

While years of teaching experience; subject areas; being a primary, elementary, or middle school teacher; geographic area; and being politically conservative or progressive were not significant predictors of CML factor scores, three covariates showed significant differences – gender, educational level, and being a high school teacher. Being a male predicted lower CML scores, whereas teaching at the high school level and possessing a graduate degree predicted higher CML scores. There are far fewer male teachers nationwide (Whitley, 2021), so this finding may simply be an outlier with less import, though it is interesting in light of Xiao et al.'s (2021) recent finding that female young adults were more likely to be critical viewers of social media messages than their male counterparts. These findings are consistent with previous studies showing that females used social media and were more critical media literate than males in online media contexts (e.g., Kahne et al., 2012; Nadkarni & Hofmann, 2011, as cited in Xiao et al., 2021). All of this may suggest male educators should be targeted for professional learning regarding CML. However, because the present study does not have a large enough representative sample and most respondents were female, professional learning targeting all genders would likely yield the best outcomes.

The greatest difference for educational level was between participants with a bachelor's degree and those who had earned a master's degree. Earning a graduate degree may lead to a greater appreciation of the importance of CML. Moreover, this difference suggests graduate programs are doing a better job teaching the value of CML and that more focus on CML is needed at the undergraduate level in teacher preparation programs (Butler, 2019, 2020; Marlatt, 2020). Furthermore, high school teachers who completed the survey demonstrated greater awareness of the importance of CML compared to their elementary and middle school counterparts, a finding which is not surprising because CML is typically included in curricular standards at the high school level but plays a less prominent role in elementary standards. Butler (2019, 2020) and others have argued for CML to be included in literacy standards from grades K through 12, a conclusion the current study may support. In addition, elementary and middle school teachers should be selected for professional learning regarding CML.

While differences in factor scores were not statistically significant in other subject areas, CML factor scores were significantly lower for science teachers than for teachers who did not teach science. This finding is consistent with Share et al.'s (2019) finding that English Language Arts (ELA) teachers reported the highest levels of media analysis skills, almost double that of science teachers. Literacy – including media literacy – is the primary goal of ELA instruction (Share & Mamikonyan, 2020). Fang (2014) and others posit all teachers should be literacy teachers,

to which we would include all teachers should be CML teachers as well. The significantly lower CML factor scores among science teachers in the current study suggest CML should play a more prominent role in teacher education programs for non-ELA teachers, and CML professional learning initiatives should target non-ELA teachers as well.

Limitations and further research

The current study relies on a moderate size, majority female sample. Approximately half of the participants were from the southern U.S. region. Additionally, the current sample is self-selected and may, therefore, have an increased interest in the topic. Replicating the study with a larger, randomly selected sample that reflects the demographic distribution of the population of U.S. teachers would increase the representativeness of the results. Furthermore, conducting the ESEM procedures with another sample would provide evidence of external validity for the CML model and the current findings.

Our results rely on a self-report measure and indicate teachers' beliefs about the importance of CML. This measure does not show the extent to which teachers provide CML instruction to their students. Further, the current study did not examine teacher CML beliefs in relation to student CML skills. Future research should examine the extent to which teachers' CML beliefs translate into practice and relates to students' CML skills.

CONCLUSION

Sonnet Ireland (2018), a librarian, summarized the problem succinctly: "As long as there has been information, misinformation has existed too" (p. 127). This is due in large part to the fact that a text cannot be neutral because all texts are socially constructed from a specific perspective with the intent of communicating a specific message. Further, the ways we read texts are also not neutral because our past experiences and worldviews inform our understanding of what is being communicated (Vasquez et al., 2019). This study highlights the need for educators to create spaces that promote critical and engaged explorations of media so that students can be aware of and counter "manipulative media forces" (Marlatt, 2020, p. 94).

Teacher education programs can play a key role in ensuring that students, both higher education and public-school students, develop "intellectual self-defense" and know how to access independent, not-for-profit media (Marlatt, 2020, p. 96). Teachers should help students read beyond the surface of the media messages they encounter by questioning the interests and biases behind them and help students learn to seek out alternative ways to be informed (Torres & Mercado, 2006). When educators and students read media messages with a more critical lens and support alternative media whose mission is to truly inform with accurate and unbiased information, they become less vulnerable to misinformation and better able to discern – and defend themselves from – (dis)information when they encounter it.

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