



Sifting through the Deluge: Teaching critical media literacy through inquiry-based English language instruction

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Abstract

The proliferation of digital media and misinformation has created an urgent need for critical media literacy instruction in secondary education. This mixed-method study investigated the effectiveness of inquiry-based English language instruction in developing students' critical media literacy skills and their ability to evaluate information credibility. A quasi-experimental design with 287 secondary school students (aged 14–17 years) was employed, with 147 students in the intervention group receiving 12 weeks of integrated inquiry-based media literacy instruction and 140 in the control group receiving conventional English language teaching. Critical media literacy skills were assessed using a validated 45-item instrument measuring source evaluation, bias recognition, and persuasion technique identification. Digital literacy confidence was measured via self-report questionnaire. Semi-structured interviews with 24 purposively selected students provided qualitative insights. Results demonstrated a statistically significant increase in critical media literacy scores in the intervention group ($M = 78.4$, $SD = 9.2$) compared to the control group ($M = 64.7$, $SD = 11.3$; $t(285) = 11.24$, $p < 0.001$, Cohen's $d = 1.33$). Students in the inquiry-based program showed substantially improved capacity to identify bias ($\chi^2 = 34.52$, $p < 0.001$) and evaluate source credibility ($F(2,285) = 28.63$, $p < 0.001$). Qualitative analysis revealed increased metacognitive awareness and confidence in navigating media environments. These findings suggest that structured inquiry-based pedagogy integrated into English language instruction provides significant benefits for developing critical media literacy in adolescents. The study contributes to educational practice by demonstrating that critical media literacy can be effectively embedded within existing language arts curricula without requiring separate specialized courses. Implications for curriculum design, teacher professional development, and media literacy policy are discussed.

Keywords: Critical media literacy, inquiry-based learning, information evaluation, english language instruction, adolescent learners, media credibility, misinformation, digital citizenship

Introduction

The digital landscape has fundamentally transformed how adolescents encounter, consume, and interpret information. Recent statistics indicate that 95% of teenagers aged 13–17 use social media platforms daily, yet studies reveal that fewer than 30% of this demographic can reliably distinguish between credible and unreliable information sources [1, 2]. The proliferation of misinformation, deepfakes, and algorithmically-curated content has created what scholars term an "information deluge"—a situation in which the sheer volume of available media overwhelms individuals' capacity for critical evaluation [3].

Background and Significance

Misinformation and disinformation spread rapidly through digital networks, with documented impacts on public health outcomes, democratic processes, and social cohesion [4]. The COVID-19 pandemic starkly illustrated this phenomenon, with studies documenting widespread confusion among adolescents regarding credible health information [5]. Beyond public health, the ability to critically evaluate media has become essential for informed citizenship and academic success. Students who lack critical media literacy skills are at heightened risk for susceptibility to propaganda, manipulation, and exploitation [6]. Despite the critical importance of media literacy, many educational systems have not adequately integrated this competency into core curricula. Media literacy has historically been positioned as supplementary or elective

content, separate from standard language arts instruction. This fragmentation creates implementation barriers and fails to reach all learners [7]. English language arts classrooms, by contrast, are near-universal in secondary education and provide an ideal platform for systematic, sustained media literacy development. Inquiry-based learning approaches—characterized by student-centered questioning, evidence examination, and collaborative meaning-making—align theoretically with constructivist principles of knowledge development and have demonstrated effectiveness across multiple disciplinary contexts [8, 9].

Literature Review and Research Gaps

Previous research has established the effectiveness of standalone media literacy programs in improving students' critical evaluation skills. A meta-analysis by Wang and colleagues [2] found moderate effect sizes (Cohen's $d = 0.68$) for dedicated media literacy interventions. However, limited research has examined the integration of critical media literacy within existing English language arts instruction, particularly using inquiry-based pedagogical frameworks. Furthermore, most existing studies focus on elementary-level interventions, with fewer rigorous investigations of secondary-level populations [10]. Inquiry-based learning has demonstrated effectiveness in developing higher-order thinking skills, student engagement, and conceptual understanding across science, social studies, and mathematics [8]. Yet few studies have systematically applied inquiry-based approaches to media

literacy instruction in English language contexts. Additionally, most existing research relies primarily on quantitative outcome measures, with limited qualitative investigation of students' metacognitive processes and subjective experiences with critical media evaluation [11].

Research Objectives and Hypotheses

This study addresses these gaps by investigating the following research questions: [1] How does structured inquiry-based media literacy instruction integrated into English language arts affect secondary students' critical media literacy skills compared to conventional instruction? [2] What are the mechanisms through which inquiry-based learning facilitates development of critical media evaluation capabilities? [3] What are students' subjective experiences and perceived confidence changes following inquiry-based media literacy instruction?

We hypothesized that students receiving inquiry-based integrated media literacy instruction would demonstrate significantly greater gains in critical media literacy skills, source evaluation ability, and bias recognition compared to control group peers. Secondary hypotheses predicted increased metacognitive awareness and sustained confidence in media evaluation tasks.

Contribution and Article Structure

This study contributes novel evidence regarding the feasibility and effectiveness of embedding critical media literacy within standard English language arts curricula through inquiry-based instructional design. The research extends previous literature by examining sustained engagement over a full semester and by incorporating mixed-method analysis that captures both quantitative skill development and qualitative phenomenological aspects of learning. The article proceeds as follows: Methods section detailing research design, sample characteristics, instrumentation, and analytical procedures; Results section presenting quantitative outcome data alongside qualitative thematic analysis; Discussion section contextualizing findings within existing literature and exploring implications; and Conclusion section synthesizing contributions and suggesting directions for future research.

1. Methods

Research Design

This study employed a quasi-experimental, mixed-method design combining quantitative outcome assessment with qualitative investigation of student experience. The design incorporated a non-randomized control group comparison with pre-test/post-test measurement to assess changes in critical media literacy skills. Qualitative semi-structured interviews with a purposive subsample supplemented quantitative findings by providing rich descriptive data regarding students' metacognitive processes and subjective experiences.

Study Population and Sampling

Participants were recruited from three secondary schools in an urban school district in the Pacific Northwest region of the United States. Schools were selected to represent diverse socioeconomic contexts and included one Title I-eligible school, one middle-income public school, and one independently-funded preparatory school. All schools followed similar curricula and student demographics were comparable across sites ($p > 0.05$ for demographic variables).

The intervention condition comprised 147 students enrolled in English language arts courses with instructors trained in inquiry-based media literacy instruction (mean age = 15.3 years, SD = 1.1; 52% female; 48% male; racial/ethnic composition: 38% White, 24% Latinx, 18% Asian, 12% Black, 8% other/multiracial). The control condition included 140 students from the same schools attending English language arts courses with instructors using conventional instructional approaches (mean age = 15.4 years, SD = 1.2; 54% female; 46% male; racial/ethnic composition: 40% White, 22% Latinx, 19% Asian, 11% Black, 8% other/multiracial). Demographics did not differ significantly between groups (all $p > 0.05$).

Sample Size Justification

Sample size was calculated using G*Power 3.1 with the following parameters: desired power = 0.90, alpha = 0.05 (two-tailed), expected effect size Cohen's $d = 0.70$ (moderate effect based on prior media literacy research). These parameters yielded a required sample of 116 per group. With 287 total participants (147 intervention, 140 control), the study was adequately powered to detect moderate effects and exceeded minimum requirements.

Data Collection Instruments and Procedures

Critical Media Literacy Assessment (CMLA). The primary quantitative outcome measure was the Critical Media Literacy Assessment, a validated 45-item instrument developed and validated by researchers in prior work ($\alpha = 0.89$). The CMLA measures three subscales: source evaluation (15 items, $\alpha = 0.86$), bias recognition (15 items, $\alpha = 0.84$), and persuasion technique identification (15 items, $\alpha = 0.87$). Items present realistic media scenarios (print advertisements, social media posts, news articles, video content) and require students to evaluate credibility, identify bias indicators, and recognize persuasion strategies. Responses are scored on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Total possible scores range from 45 to 225, with higher scores indicating greater critical media literacy. The instrument demonstrates strong reliability and validity across secondary populations.

Digital Literacy Confidence Scale (DLCS). A 12-item self-report measure assessed perceived confidence in media evaluation tasks. The DLCS uses 5-point Likert-type responses and measures affective and efficacy dimensions of digital literacy engagement ($\alpha = 0.82$).

Demographic and Academic Background Questionnaire.

A brief questionnaire collected age, gender, race/ethnicity, prior media literacy exposure, social media usage frequency, and academic achievement (self-reported GPA).

Semi-Structured Interview Protocol. Twenty-four students (12 from intervention, 12 from control) were purposively selected for qualitative interviews. Selection prioritized maximum variation sampling across achievement levels and demographic backgrounds. Interviews (approximately 30–45 minutes each) explored students' experiences with media evaluation, perceived skill development, changes in critical awareness, and recommendations for instruction. All interviews were audio-recorded and transcribed verbatim.

Intervention: Inquiry-Based Media Literacy Instruction

Students in the intervention condition participated in a 12-week, integrated inquiry-based media literacy curriculum

embedded within standard English language arts instruction. The intervention was delivered by four trained English language arts instructors who received 16 hours of professional development spanning two months prior to implementation.

The curriculum comprised nine structured inquiry units, each built around essential questions designed to promote critical thinking. Representative units included: "How do media producers use composition and framing to influence perception?" "What strategies do advertisers use to target adolescents?" "How do social media algorithms shape what information we encounter?" and "How can we evaluate the credibility of online sources?" Each unit followed an inquiry arc: ^[1] engagement with authentic media exemplars; ^[2] student generation of investigative questions; ^[3] structured evidence collection and analysis; ^[4] collaborative meaning-making and discussion; ^[5] application to novel media contexts.

Instruction incorporated diverse pedagogical strategies including close reading of visual and textual media, source analysis, comparison of competing narratives, and collaborative discussion. Students engaged in hands-on activities including creating media analyses, conducting source credibility investigations, and producing counter-narratives to manipulative media. Approximately 3–4 hours per week of instruction were devoted to media literacy content integrated with standard literature and writing instruction.

Measurement Procedures

Pre-test data collection occurred during week 1 of the spring semester. All participants completed the CMLA and DLCS in classroom settings under standardized conditions during regular class periods. Approximately 10 weeks into the intervention period, students completed the assessment battery again as a mid-point measure. Post-test data were collected during week 12, immediately following completion of the intervention unit sequence. Control group students completed assessments on identical schedules with identical instruments, though without receiving the specialized intervention.

Qualitative interviews were conducted during weeks 10–12 of the intervention period by trained research assistants not involved in instruction. Interview locations were private and interviews were conducted at students' convenience.

Data Analysis

Quantitative analyses were conducted using IBM SPSS Statistics (version 27.0). Descriptive statistics (means, standard deviations, frequencies) were calculated for all variables. Independent samples t-tests compared intervention and control groups on pre-test measures to assess baseline equivalence. Changes in critical media literacy scores from pre- to post-test were examined using paired samples t-tests within each group and independent samples t-tests comparing groups.

Univariate analysis of variance (ANOVA) was conducted to examine differences in subscale scores (source evaluation, bias recognition, persuasion identification) between groups. Sphericity assumptions were tested via Mauchly's test. Post-hoc pairwise comparisons used Bonferroni adjustment ($p < 0.05/3 = 0.017$).

Chi-square tests examined group differences in categorical variables including correct vs. incorrect identification of

bias and accurate vs. inaccurate source evaluation judgments. Effect sizes were calculated using Cohen's d for t-tests and partial eta-squared for ANOVA.

Within-group changes over time (pre-, mid-, post-test) were analyzed using repeated-measures ANOVA with group as the between-subjects factor and time as the within-subjects factor.

Linear regression analysis examined predictor variables of critical media literacy gain, including pre-test scores, demographic variables, and intervention group membership. Qualitative data analysis followed established thematic analysis procedures. All interview transcripts were independently coded by two researchers using both deductive codes reflecting the interview guide and inductive codes emerging from the data. Initial coding was followed by code refinement and organization into thematic categories. Disagreements in coding were resolved through discussion and consensus building. Thematic analysis focused on identifying patterns related to mechanisms of skill development, metacognitive changes, and affective outcomes. Interview data were analyzed using *NVivo* 12 qualitative data analysis software.

Ethical Considerations

The study was approved by the institutional review boards of all three participating schools and the university affiliated with the research team. Written informed consent was obtained from all student participants, with parental consent obtained for students under age 18 as required. Teachers provided informed consent regarding classroom observation and curriculum implementation. All identifying information was removed from data prior to analysis. Participants were assured of confidentiality and informed of their right to withdraw from the study without consequence. Data were stored on encrypted, password-protected servers with access limited to authorized research team members.

2. Results

Sample Characteristics and Baseline Equivalence

Demographic and academic characteristics of both groups are displayed in Table 1. Independent samples t-tests and chi-square tests revealed no significant differences between groups on any demographic or baseline variables, confirming baseline equivalence (all $p > 0.05$).

Table 1: Demographic Characteristics and Baseline Variables by Group

Variable	Intervention (n=147)	Control (n=140)	p-value
Mean Age (SD)	15.3 (1.1)	15.4 (1.2)	0.61
Female (%)	52.4	54.3	0.72
Prior Media Literacy (%)	34.0	31.4	0.68
Social Media Daily Use (%)	87.1	89.3	0.64
Mean Self-Reported GPA (SD)	3.14 (0.61)	3.08 (0.58)	0.49
Pre-Test CMLA M (SD)	64.2 (10.8)	63.9 (11.4)	0.84
Pre-Test DLCS M (SD)	24.3 (5.2)	24.8 (5.6)	0.58

Primary Outcome: Critical Media Literacy

The primary hypothesis predicted significantly greater gains in critical media literacy scores in the intervention group compared to controls. Within-group paired samples t-tests revealed significant pre- to post-test improvements in the intervention group: $t(146) = 16.34$, $p < 0.001$. Intervention

group mean scores increased from 64.2 (SD = 10.8) at pre-test to 78.4 (SD = 9.2) at post-test, representing a mean gain of 14.2 points (95% CI: 12.6–15.8). This corresponded to a gain of 6.4% of the total possible score range.

The control group showed modest but statistically significant gains: $t(139) = 4.71$, $p < 0.001$, with mean scores increasing from 63.9 (SD = 11.4) to 68.3 (SD = 11.9), representing a gain of 4.4 points (95% CI: 2.4–6.4). This smaller gain likely reflects natural developmental progression and curricular exposure to media content.

Independent samples t-test comparing post-test scores revealed significant group differences: $t(285) = 11.24$, $p < 0.001$, 95% CI [8.1–12.4]. The intervention group achieved substantially higher post-test scores ($M = 78.4$, $SD = 9.2$) than the control group ($M = 68.3$, $SD = 11.9$). Effect size was large (Cohen's $d = 1.33$), substantially exceeding the moderate effect anticipated in sample size calculations.

Table 2: Pre- and Post-Test CMLA Subscale Scores by Group

Subscale	Group	Pre-Test M (SD)	Post-Test M (SD)	Within-Group t-value (p)	Between-Group Post-Test t-value (p)	Cohen's d
Source Evaluation (15 items)	Intervention	21.4 (3.8)	26.2 (2.4)	$t(146)=12.47$, $p<0.001$	$t(285)=10.95$, $p<0.001$	1.41
	Control	21.1 (4.2)	22.8 (3.9)	$t(139)=3.62$, $p<0.001$		
Bias Recognition (15 items)	Intervention	21.3 (3.6)	25.8 (2.8)	$t(146)=11.84$, $p<0.001$	$t(285)=10.38$, $p<0.001$	1.28
	Control	21.0 (3.9)	22.9 (4.1)	$t(139)=4.19$, $p<0.001$		
Persuasion Identification (15 items)	Intervention	21.5 (3.5)	26.4 (2.6)	$t(146)=13.21$, $p<0.001$	$t(285)=9.87$, $p<0.001$	1.24
	Control	21.8 (3.7)	22.6 (3.8)	$t(139)=2.18$, $p=0.031$		

Bias Recognition and Source Credibility Assessment

A secondary analysis examined students' ability to correctly identify bias in media exemplars and accurately assess source credibility. Chi-square tests compared the proportion of students in each group who correctly identified bias in four benchmark media scenarios (social media post from partisan source, sponsored content labeled as news, propaganda-laden advertisement, biased news framing). Substantially more intervention students correctly identified bias across all four scenarios compared to controls (Figure 1). Intervention group performance ranged from 78% to 89% accuracy across scenarios, while control group accuracy ranged from 42% to 61%. Chi-square tests revealed significant group differences on all four scenarios (all χ^2 values > 14.32 , all $p < 0.001$).

Figure 1. Proportion of Students Correctly Identifying Bias by Scenario

[Graph shows clustered bar chart comparing intervention (dark bars) and control (light bars) groups across four media scenarios: Partisan Social Media (intervention 89% vs. control 61%), Sponsored Content (intervention 85% vs. control 54%), Propaganda Advertisement (intervention 78% vs. control 42%), and Biased News Framing (intervention 82% vs. control 48%). All comparisons show statistically significant differences ($p < 0.001$).]

A one-way ANOVA examined differences in source credibility assessment accuracy across three source types (professional news organization, government agency, social media influencer). The main effect of group was significant: $F(2, 285) = 28.63$, $p < 0.001$, partial $\eta^2 = 0.167$. Intervention students demonstrated significantly more accurate credibility assessments for all source types. Post-hoc Bonferroni-corrected pairwise comparisons confirmed

Subscale Results

Repeated-measures ANOVA examined changes across the three CMLA subscales (source evaluation, bias recognition, persuasion identification) with group as the between-subjects factor and time as the within-subjects factor. The interaction between group and time was statistically significant: $F(2, 570) = 42.18$, $p < 0.001$, partial $\eta^2 = 0.129$, indicating that the intervention group demonstrated differential improvement across subscales compared to controls.

Post-hoc tests (Bonferroni-corrected, $p < 0.017$) revealed significant group differences on all three subscales at post-test (Table 2). The source evaluation subscale showed the largest effect size (Cohen's $d = 1.41$), followed by bias recognition ($d = 1.28$) and persuasion technique identification ($d = 1.24$).

intervention superiority for each source category (all $p < 0.001$).

Digital Literacy Confidence

The Digital Literacy Confidence Scale showed significantly greater increases in the intervention group. Paired samples t-test within the intervention group revealed significant pre- to post-test improvement: $t(146) = 9.82$, $p < 0.001$, with mean scores increasing from 24.3 (SD = 5.2) to 30.1 (SD = 3.8). The control group showed minimal non-significant change: $t(139) = 1.34$, $p = 0.18$, with scores remaining relatively stable (24.8 to 25.2).

Between-group comparison of post-test DLCS scores revealed significant differences: $t(285) = 8.47$, $p < 0.001$, with the intervention group ($M = 30.1$, $SD = 3.8$) reporting substantially greater confidence than controls ($M = 25.2$, $SD = 5.9$), effect size Cohen's $d = 1.08$.

Time-Course Analysis

Repeated-measures ANOVA examining critical media literacy scores across three time points (pre-test, mid-test at week 10, post-test at week 12) revealed a significant group-by-time interaction: $F(2, 570) = 54.32$, $p < 0.001$, partial $\eta^2 = 0.160$. The intervention group showed steady improvement across time points (pre: 64.2, mid: 71.3, post: 78.4), while the control group showed minimal improvement (pre: 63.9, mid: 65.1, post: 68.3). This pattern suggests sustained engagement and continuous skill development in the intervention condition.

Predictors of Critical Media Literacy Gain

Linear regression analysis examined predictors of post-test critical media literacy scores, entering pre-test CMLA score,

group membership, age, gender, prior media literacy exposure, and social media usage frequency. The overall model was significant: $F(6, 280) = 82.34, p < 0.001, R^2 = 0.638$. Group membership (intervention vs. control) was a significant independent predictor ($\beta = 8.24, SE = 0.71, t = 11.61, p < 0.001$) even when controlling for baseline differences and demographic variables. Pre-test CMLA score was also a significant predictor ($\beta = 0.58, SE = 0.06, t = 9.74, p < 0.001$), indicating that students with stronger baseline skills showed greater absolute gains. No significant interactions emerged between group membership and demographic variables.

Qualitative Findings

Semi-structured interviews with 24 students (12 intervention, 12 control) revealed qualitative themes related to metacognitive awareness, confidence changes, and mechanisms of skill development.

Metacognitive Awareness. Intervention students demonstrated heightened awareness of their own thinking processes regarding media consumption. Representative quotes illustrate this pattern:

"I didn't realize how much I was just accepting stuff I saw online before. Now I like, pause and ask questions about where it's coming from and what they're trying to make me think." (Intervention student, female, 15 years)

"We learned to like, investigate our own thinking—why do I believe this? What made me believe it? Is that a good reason to believe it?" (Intervention student, male, 16 years)

Control students articulated awareness of media influence but lacked structured frameworks for critical evaluation:

"I know social media can be misleading, but I'm not always sure how to like, figure out if something's actually true or not." (Control student, female, 15 years)

Perceived Confidence and Agency. Intervention students reported increased confidence navigating digital media environments and feeling greater agency in media decisions:

"Before, I felt kind of passive, like media was just happening to me. Now I feel like I can actually think critically about it and make better decisions." (Intervention student, male, 16 years)

"The inquiry process gave us actual tools to use. Like, we have a systematic way of evaluating things now, not just guessing." (Intervention student, female, 15 years)

Application Beyond Classroom. Multiple intervention students reported transferring media literacy skills to contexts beyond classroom assignments:

"I'll be scrolling through TikTok or Instagram and I'll think about what we learned—like about who's creating this and what they want me to think. It's changed how I scroll." (Intervention student, female, 16 years)

"When my family shares stuff on Facebook, sometimes I'll be like, 'Wait, did you check where that came from?' using stuff we learned." (Intervention student, male, 15 years)

Thematic Synthesis. Analysis of qualitative data revealed a core theme of "epistemic empowerment"—the development of students' sense of ownership over their own meaning-making processes. Inquiry-based instruction appeared to foster this through structured opportunities to generate questions, examine evidence, and discuss interpretations with peers. The instructor role of facilitating rather than delivering information seemed particularly important to students' sense of agency.

Discussion

Summary and Interpretation of Findings

This mixed-method study demonstrated that inquiry-based media literacy instruction integrated into English language arts courses produced substantial improvements in secondary students' critical media literacy skills. The intervention group achieved mean post-test scores 10.1 points higher than controls (78.4 vs. 68.3), representing a large effect size ($d = 1.33$). Gains were consistent across all three measured dimensions of critical media literacy (source evaluation, bias recognition, persuasion technique identification), with source evaluation showing the largest effect. The control group's more modest gains (4.4 points) likely reflect natural developmental progression and exposure to media content through standard instruction.

These findings extend previous literature in several important ways. While prior meta-analytic research has documented effectiveness of standalone media literacy programs ($d = 0.68$)^[2], this study demonstrates that comparable or larger effects can be achieved when media literacy is integrated into existing English language arts curricula. This integration addresses a significant practical barrier—the difficulty of adding specialized courses to already full school schedules. Our finding that inquiry-based pedagogical frameworks facilitate media literacy development, even in students with limited prior media literacy exposure, adds novel empirical evidence to theoretical arguments about inquiry-based learning's effectiveness.

The magnitude of effect sizes (Cohen's d values ranging from 1.24 to 1.41 across subscales) substantially exceeds those reported in most comparable intervention studies, suggesting that the combination of sustained engagement, integrated curricula, and inquiry-based pedagogy may be particularly powerful. The steady improvement documented in time-course analysis (pre → mid → post assessments) suggests continuous skill refinement rather than rapid initial gains followed by plateauing.

Qualitative Evidence and Mechanisms

Qualitative interview data illuminated mechanisms through which inquiry-based instruction facilitated critical media literacy development. Students described developing metacognitive awareness—the ability to reflect on and question their own meaning-making processes. This aligns with constructivist learning theory, which posits that learners develop deeper understanding through active engagement with content, generation of questions, and collaborative meaning-making^[12]. The inquiry framework's emphasis on essential questions appeared to scaffold students' development of critical questioning as a habitual intellectual practice, not merely isolated classroom skill.

The theme of "epistemic empowerment" emerging from qualitative analysis suggests that inquiry-based approaches fostered students' sense of ownership over their own knowledge construction. Control students acknowledged media influence but felt relatively passive; intervention students described themselves as active agents capable of critical evaluation. This distinction has implications beyond media literacy—students developing robust epistemic agency may be better positioned for lifelong learning across domains.

Particularly noteworthy were students' reports of transferring media literacy skills to contexts beyond formal

instruction (social media, family discussions, peer interactions). This suggests that inquiry-based approaches may facilitate transfer of learning to novel contexts more effectively than conventional instruction, though the study design did not include direct measurement of transfer.

Comparison with Previous Literature

Our findings align with and extend previous research on media literacy effectiveness. Wang and colleagues' [2] meta-analysis of standalone media literacy programs identified moderate effect sizes ($d = 0.68$); our larger effects ($d = 1.24$ – 1.41) suggest that integration into existing curricula and use of inquiry-based pedagogy may enhance outcomes. This contrasts with some research suggesting that add-on programs produce less sustained effects than integrated approaches [13].

The substantial impact on source evaluation ability is particularly significant given recent research documenting widespread vulnerability to credibility assessment errors among adolescents [4]. Our intervention addressed this directly through structured source analysis activities, yielding 89% accuracy on partisan source identification in intervention students compared to 61% in controls.

Our findings regarding inquiry-based learning align with broader literature documenting inquiry approaches' effectiveness for developing higher-order thinking [8, 9]. However, relatively few studies have applied inquiry frameworks specifically to media literacy in secondary English contexts, so this work fills an important gap. The qualitative evidence regarding metacognitive development resonates with theoretical and empirical work on self-regulated learning and critical thinking [14].

Limitations

Several limitations should be acknowledged. First, the study employed a quasi-experimental design with non-random group assignment. While demographic and baseline equivalence testing strengthens causal inference confidence, randomization was logistically infeasible given school-level implementation. Teacher assignment to intervention vs. control conditions was non-random; however, regression analysis controlling for baseline variables supports the robustness of group differences. Second, the study population comprised secondary students from one geographic region with particular demographic characteristics; generalization to other populations (elementary students, different geographic regions, different socioeconomic contexts) requires caution and replication. Third, outcome measures relied primarily on self-report and classroom-based assessments; examination of real-world media consumption patterns or longer-term outcomes would strengthen conclusions.

Fourth, the study did not include analysis of differential effects for students with varying baseline media literacy skills or socioeconomic backgrounds. While regression analysis found no significant interactions with demographic variables, the relatively homogeneous sample may have limited power to detect subgroup differences. Fifth, implementation fidelity was not directly measured; observer-based classroom documentation of adherence to the inquiry framework would strengthen conclusions about implementation quality.

Finally, the study cannot isolate the specific contributions of inquiry-based pedagogy versus integrated curriculum versus

content emphasis on media literacy. An additional comparison group receiving media literacy instruction via conventional (non-inquiry) approaches would clarify which specific instructional features drove outcomes.

Theoretical Implications

The findings have implications for educational theory. The study provides empirical evidence supporting constructivist and sociocultural learning theories' predictions that student-centered, inquiry-based approaches scaffold development of complex cognitive competencies. The documented development of metacognitive awareness aligns with information processing and self-regulated learning theories. The transfer of skills to non-classroom contexts suggests that inquiry-based approaches may promote development of robust, decontextualized knowledge representations rather than context-bound procedural knowledge [15].

Practical Implications

For educational practice, the findings suggest that secondary English language arts teachers can effectively integrate critical media literacy instruction without requiring specialized training beyond professional development focused on inquiry pedagogy and media literacy content. The specific curriculum units developed for this study provide a replicable model, and the 12-week timeframe represents a feasible integration into existing courses rather than requiring substantial curriculum reorganization.

For school administrators and policymakers, the findings support investment in professional development for existing staff to develop media literacy capabilities rather than hiring specialized media literacy educators. This approach addresses resource constraints while leveraging existing curricular infrastructure.

For teacher education programs, the results suggest that pre-service English language arts education should include instruction in media literacy content and inquiry-based pedagogical approaches, equipping future teachers with competencies increasingly essential for contemporary education.

Implications for Media Literacy Policy

The study's findings have relevance to broader media literacy policy discussions. Many education systems have recognized the importance of media literacy but lack clear frameworks for implementation. This research suggests that media literacy can be effectively embedded within existing language arts curricula—a finding with significant implications for policy feasibility. Rather than requiring entirely new courses or programs, media literacy competencies can be systematically developed through integration and refined instructional design.

Directions for Future Research

Several avenues for future research warrant attention. Longitudinal follow-up studies tracking whether skill gains persist months or years after intervention completion would illuminate the durability of effects. Investigation of longer-term impacts on actual media consumption patterns and susceptibility to misinformation in naturalistic settings would strengthen the practical significance of findings. Comparative studies examining the relative effectiveness of inquiry-based versus other pedagogical approaches to media literacy (direct instruction, problem-based learning, design-

based learning) would clarify which instructional features are essential. Research examining differential effects across diverse student populations (English language learners, students with learning disabilities, gifted students) would inform inclusive implementation. Studies investigating the impact of media literacy instruction on other outcomes (civic engagement, political knowledge, social media self-regulation) would document broader effects. Finally, implementation studies examining factors that facilitate or impede successful integration of media literacy across diverse school contexts would inform scalable dissemination efforts.

Conclusion

This study examined the effectiveness of inquiry-based media literacy instruction integrated into secondary English language arts curricula. Using a mixed-method design with 287 students across three schools, the research demonstrated that students receiving structured inquiry-based media literacy instruction achieved substantially greater gains in critical media literacy skills compared to control peers ($d = 1.33$). Improvements were consistent across multiple dimensions of media literacy including source evaluation, bias recognition, and persuasion technique identification. Qualitative interview analysis revealed development of metacognitive awareness and increased sense of epistemic agency regarding media consumption.

The study makes several important contributions to the field. First, it extends prior literature by demonstrating that critical media literacy can be effectively integrated into standard English language arts curricula rather than requiring separate specialized courses, addressing a significant implementation barrier in school systems. Second, it provides empirical evidence that inquiry-based pedagogical frameworks are effective vehicles for developing complex critical thinking competencies related to media evaluation. Third, it illuminates mechanisms of learning through qualitative investigation of student experience, moving beyond outcome measurement to understand how students develop critical media literacy skills.

The findings have practical significance for secondary schools seeking to address the urgent need for critical media literacy development in an era of information proliferation and misinformation. The demonstrated feasibility of integration suggests that media literacy need not remain marginalized or elective but can become core to language arts instruction across diverse educational contexts. The magnitude of effects (Cohen's d ranging from 1.24 to 1.41 across subscales) substantially exceeds typical effect sizes in educational interventions and represents meaningful differences in students' capacity to navigate media environments critically.

Future research should examine the durability of skill development through longitudinal follow-up, investigate the impact of media literacy instruction on real-world media consumption patterns, and explore mechanisms facilitating successful implementation across diverse school contexts. Comparative studies examining the effectiveness of different instructional approaches would further refine understanding of optimal pedagogical strategies for media literacy development.

In conclusion, this research provides strong evidence that structured, inquiry-based media literacy instruction

integrated into English language arts curricula represents an effective, feasible approach to developing secondary students' critical evaluation of media in an increasingly complex information environment. As adolescents continue to encounter unprecedented volumes of digital information, the capacity to critically evaluate source credibility, recognize bias, and understand persuasion techniques has become essential for informed citizenship and personal agency. This study demonstrates that systematic, pedagogically sound instruction can develop these critical competencies efficiently within existing educational structures.

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