Article

Learning Critically and Confidently: A Correlation Study of the New Media Literacy and English Learning Self-efficacy of Junior High School Students

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Abstract

In today's digital age, where students are immersed in a vast array of digital media, understanding new media literacy (NML) is important. This is especially the case for junior high school students who are generally considered to be 'digital natives' and are at the critical age of value formation. In language learning, self-efficacy (SE) cannot be underestimated because of its impact on students' language learning performance. Although previous studies offer meaningful insights into the effects of NML and SE in English learning, they have concentrated chiefly on college students. Few studies have provided solid theoretical and empirical support for the potential relationship between these two constructs among junior high school students. In this study, we investigated 400 Grade 8 students. We used two highly reliable and valid questionnaires to evaluate students' current NML and SE in English learning and their correlations. The results show that the students' NML is above average; their SE in English study is average, and a strong positive correlation exists between their NML and SE in English learning. Specifically, their functional consuming (FC) ranked at the top of the NML scale, and their writing ranked highest on the SE scale. Thus, our results suggest that junior high school students need to focus more on their abilities to critically create media content and interactively participate in the new media environment. The findings illuminate the way to enhance students' language competence in the digital context and assist educators in developing tailored strategies to equip students with the necessary competencies for success in today's interconnected world.

Keywords

New media literacy, self-efficacy, junior high school students, correlation study

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1 Introduction

In the contemporary digital age, new media platforms have significantly transformed the education landscape, reshaping how students engage with information and acquire knowledge (Pirbhai & Bheekharry, 2021). This paradigm shift highlights the necessity of equipping students with adequate skills to navigate and critically evaluate the vast array of digital resources beyond traditional literacy skills. Therefore, NML has become a crucial ability that empowers individuals to navigate and evaluate information in the contemporary age strategically and critically (Liu, 2020; Ugurhan et al., 2020). According to Lee et al. (2015), new media literacy (NML) can be categorized into two continuums: (1) consuming literacy, which includes essential skills such as accessing, analyzing and evaluating media content, and (2) prosuming literacy, which is based on Toffler's (1981) notion of "prosumer", i.e., being both a producer and a consumer.

In the context of junior high school education, junior high school students have been identified as "digital natives", highlighting their immersion in the new media environment (Chandler, 2013). Today's youth are digital content consumers and producers, actively participating in online communities, creating multimedia content, and sharing information across global networks (Harlan & Lupton, 2014). Such students, mainly aged between 13 and 15, are still physically and mentally developing, and the formation of their values is often strongly influenced by the media content they are exposed to (Khurana et al., 2019). Hence, it is essential to cultivate proficient NML, which is imperative for these students to effectively communicate and collaborate in digital environments and enhance their language learning experiences (Luan et al., 2020).

Furthermore, English is the primary language in various domains, from academia to business. Given the importance of English, many students in China experience tremendous psychological pressure during their English language studies, which may negatively affect their well-being (Xie, 2020). Since English is one of the three main subjects that determine their grades in China's vital high school entrance exams, junior high school students are under intense pressure when developing their learning strategies and skills (e.g., independent critical thinking skills) and more proficient language skills (e.g., listening, speaking, reading and writing skills). Self-efficacy (SE), which is a subjective psychological activity, influences learners' behavioral choices, willpower levels, thinking patterns, and emotional responses (Askim & Knardahl, 2021). It is a determining factor that can profoundly affect students' learning behavior and their learning outcomes (Ruegg, 2018; Sahan et al., 2023).

While existing research provides valuable insights into the individual effects of NML and SE in English learning, few studies have explored the potential interplay between these constructs among junior high school students. Understanding the relationship between these two constructs may hold significant implications for educational practitioners, policymakers, and curriculum developers in designing effective instructional strategies that foster digital literacy and language proficiency among students. Given this, this study aims to explore students' current NML and SE and to investigate the relationship between these constructs in English learning. The results could contribute to our understanding of enhancing students' proficiency in digital and linguistic domains and equipping them with the necessary skills to thrive in an increasingly interconnected and information-driven society.

2 Literature Review

2.1 New media literacy

Literacy can be classified into classic literacy (reading, writing, and understanding), audiovisual literacy, digital literacy, information literacy, and, recently, NML (Tornero & Varis, 2010). With the daily use of mass media such as newspapers, radio, movies, and television, the effects of media culture and

communication represented by different media forms have become essential topics in media research. Therefore, NML, which responds to the requirements for improving media literacy in the internet era from different perspectives, is increasingly vital.

Chen et al. (2011) proposed a conceptual framework for NML consisting of (1) functional consuming (FC), (2) functional prosuming (FP), (3) critical consuming (CC), and (4) critical prosuming (CP). Specifically, FC refers to the ability to create new media and understand what is being conveyed; CC refers to the ability to study the social, economic, political, and cultural contexts of media content; FP involves the ability to participate in the creation of media content; and CP focuses on individuals' contextual interpretation of media content when engaging with media.

However, Lin et al. (2013) argued that there are two major limitations to the aforementioned framework. Firstly, they argue that the framework needs to be more precise in characterizing the four types of NML, evidenced by its relatively vague definition and conceptualization of each dimension. Secondly, as the contemporary media environment gradually reshapes how information is disseminated and social interaction occurs, the emerging new media audience is also transformed from passive information receivers to important participants in information production (Lu, 2015). In light of this, NML was proposed to facilitate a better understanding of media ecology in the Web 2.0 environment (Lin et al., 2013). However, the framework does not distinguish Web 1.0 from Web 2.0. This is a significant oversight as Web 2.0 has played a pivotal role in shaping a distinct participatory media culture (Berger & McDougall, 2011; Jenkins, 2009; Jolls & Wilson, 2014). To address these limitations, Lin et al. (2013) proposed a refined framework with ten indicators to better unpack NML (Figure 1).

Figure 1

A Refined NML Framework (Lin et al., 2013)
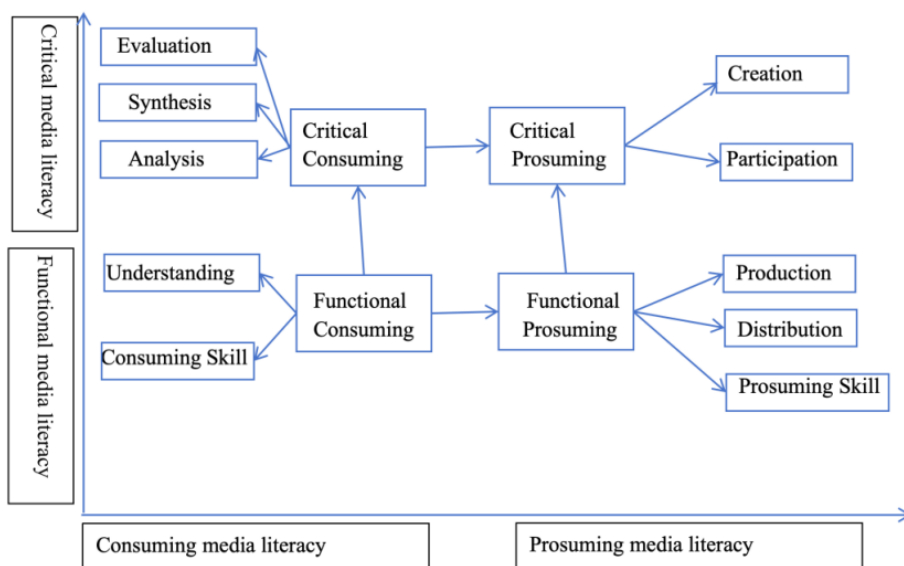
In the context of China, Luan et al. (2020) surveyed 553 non-English major students at a Chinese university. Based on their revised English NML Scale, they found that the overall English NML level among college students remains low, specifically as manifested by their emphasis on functional use and their neglect of critical use. Specifically, FC ranked highest among the students, followed by FP and CC, while CP ranked lowest. Moreover, Koc et al. (2016) indicated that the college students they investigated exhibited a high level of functional literacy while their level of critical literacy was relatively low. Li (2017) also surveyed college students and found that they displayed good awareness of accessing all kinds of media content, but their ability to process and create media information was poor.

Furthermore, Li (2022) examined the NML skills of prospective Chinese language teachers, finding that they demonstrated satisfactory levels of NML, with no significant difference based on gender. The study also highlighted the significance of integrating information technology into Chinese language teaching in higher education. Moreover, Zhang and Wu (2023) explored how a "Media + English language learning" course helps Chinese English majors improve their NML. The quantitative results revealed students' NML performance, and the differences between the pre- and post-course questionnaires were statistically significant in most of the NML skills. Evidence from the students' group work also verified their progress in NML. Moreover, the students' reflective journals showed their gains and challenges concerning NML development. They also detailed several solutions to address the challenges, which can be summarized in three words – *study*, *practice*, and *collaboration*.

As for junior high school students, who are at an age when their values are being formed, media literacy instruction is essential for helping them develop analytical and critical thinking skills so that they can evaluate information critically, especially in the digital era where false information is widespread (Art, 2018). Although previous research offers rich insights and constructive suggestions for defining, conceptualizing, and measuring NML, these studies have predominantly focused on college students' NML. In contrast, few studies have investigated junior high school students who are at the critical stage of value formation, knowledge accumulation, and learning ability cultivation. This research gap has motivated us to explore NML in the junior high school setting.

2.2 NML and SE in English learning

The concept of SE was first proposed by the renowned American psychologist Albert Bandura, which refers to an individual's judgment of their ability to complete a task or confidence in using their skills to complete a work (Bandura, 2001). He argued that SE mainly affects people's behavior in four aspects: (1) the determination of behavioral goals, (2) the subject's mode of thinking, (3) behavioral intensity, and (4) the subject's capacity to adjust their abilities (Da & Dou, 2011). Furthermore, self-efficacy can be constructed through four sources: mastery experience, vicarious experience, verbal persuasion, and physiological and emotional states (Bandura, 1997). Besides, it has been thoroughly investigated that personal self-efficacy judgments can predict student's academic functioning, which sets a fine base for confidence, motivation and commitment (Zimmerman & Schunk, 2003). The importance of self-efficacy in theory has been recognized by many researchers (Park & Lim, 2024). Learners with high SE invest more energy and cognitive resources when encountering difficult tasks, for they tend to get involved in behaviors that advance learning and perseverance (Teng, 2024). while people with low SE tend to adopt avoidance behavior patterns. Besides, "Self-efficacy is dynamic, interacting with different variables (e.g., strategy use, task persistence, goals, and motivations) in the self-regulating process, impacting learners' academic success" (Teng & Teng, 2024). Therefore, building on the well-established importance of self-efficacy in learning, how to enhance students' self-efficacy has interested researchers and educators (Won et al., 2023).

In China, as English is included in compulsory examinations, junior high school students are generally strongly committed to learning English and obtaining high exam scores (Fang, 2018). English teachers strive to use efficient teaching methods to improve scores (De Jong & Harper, 2005). However, previous research, such as Zhang (2013), shows that Chinese junior high school students' SE in English learning is relatively low. According to Xuan (2023), due to barriers like the differences between Chinese junior high school students' native and foreign language (Chinese and English), the exam-oriented education system, and prevailing teaching methods which often emphasize cramming, students may lack confidence in their English learning, so their SE in English learning is adversely affected. Ping (2015) highlighted that Chinese English learners were deficient in cognitive and meta-cognitive strategies, affecting their SE and motivation in vocabulary learning. Such low levels of SE in English learning may

have a negative impact on students' attitudes towards learning English as well as their English language engagement and performance (Chou, 2017; Wang et al., 2023).

In the digital era, studies have shown that the intensity of English language social media usage positively correlates with students' perceived language abilities, encompassing reading, writing, listening, and speaking (Anwas et al., 2020). This correlation suggests that exposure to and engagement with new media platforms can bolster students' confidence in their language skills. Moreover, platforms such as *WeChat* and *Facebook*, which are popular among students, have been recognized for their potential to enhance English language learning (Bermudez et al., 2016). Many scholars (e.g., Lailiyah & Cahyono, 2017; Lin, 2012; Liu & Huang, 2019; Su et al., 2018), including us, believe that the integration of these technologies into educational settings is linked to improved language acquisition, critical thinking, and reduced anxiety among learners, as well as advancements in writing and study skills (Pradeepa & Hema, 2022). Therefore, in China, where technology-driven learning is increasingly prevalent, it is imperative to examine how effective and critical use of new media (i.e., NML) influences SE, including whether the adoption of new media in educational practices could provide students with a sense of achievement and foster a growth mindset, which are key components of SE.

Previous studies have mainly investigated the relationship between students' SE in English and learning pressure (Xuan, 2023), learning attitudes (Ping et al., 2015) and learning performance (Chou, 2017; Wang et al., 2023). However, few studies have focused on junior high school students to explore the relationship between NML and SE in English learning in China. We believe that a deeper investigation into the interplay between NML and SE is not only timely but also essential for understanding and enhancing the educational experiences of junior high school students. Moreover, having a more profound and comprehensive understanding of junior high school students' English learning will also benefit teachers, enabling them to implement more effective teaching approaches.

In this study, there are three main research questions:

1. What is the current situation of Chinese junior high school students' NML?
2. What is the current situation of Chinese junior high school students' SE in English learning?
3. What is the relationship between Chinese junior high school students' NML and their SE in English learning?

3 Methodology

3.1 Research context and participants

In this study, we conducted an empirical survey using two printed questionnaires among 400 Grade 8 students in 10 classes. Since they are in the medium stage of junior high school study (between 13 and 15 years old), they are more representative than Grade 7 and 9 students. Specifically, Grade 9 students facing intense learning pressure are less likely to be exposed to digital devices and media content, and Grade 7 students are still adapting to their new school lives. Participants started learning English and information technology courses in Grade 1, so they all have rich new media using experiences.

3.2 Measurements

3.2.1 NML Scale

The first questionnaire was adapted from Lee et al. (2015). This study collected data from 574 Singapore students from Grades 4 to 11 (ages 10-17). The reliability of this instrument was established by

internal consistency (Cronbach's alpha). The values ranged from .72 to .96, showing its high reliability. Furthermore, its content validity was also evaluated by inviting an expert in foreign language education to give suggestions. Some modifications were made to ensure it conformed to Chinese students' real learning and living conditions. For example, because our target respondents were Chinese junior high school students, we changed words like *Facebook* and *YouTube* to *WeChat* and *Weibo*, as the former two platforms are not commonly used in mainland China. The final version of the first questionnaire included four dimensions (FC, FP, CC, CP) and 61 questions. Specifically, there were 18 questions relating to FC, 13 to CC, 25 to FP, and 5 to CP. A five-point Likert scale was used in the questionnaire, with higher scores indicating higher NML levels.

3.2.2 English Learning SE Scale

Since there is not any published questionnaire for measuring junior high school students' SE in English learning, we designed a SE questionnaire based on Wang et al. (2014), which involved 500 second-year students at a university in southern China. They were primarily (82%) male students (17 to 25 years old). Most of them had about eight years of experience studying English as a foreign language at the time of their study. We assess the internal consistency of the scales utilizing Cronbach's alpha values. The reliability of the questionnaire scale was 0.97 for all 32 items, 0.88 for items related to SE in listening, 0.92 for items related to SE in speaking, 0.88 for items related to SE in reading, and 0.89 for items related to SE in writing. The convergent validity was 0.52, and the criterion-related validity was 0.58, which were statistically significantly different from zero at a confidence level of 99%. Although this questionnaire initially targeted college students, we consulted some professors who are experts in applied linguistics and media studies, and they all agreed to use this questionnaire on junior high school students. In future studies, we will develop a questionnaire for targeted students based on theoretical and empirical research. The final version of our questionnaire utilized a five-point Likert scale. It comprised four dimensions and 28 questions (8 relating to English listening, 10 to English speaking, 4 to English reading, and 6 to English writing).

3.3 Research procedure

To ensure the questionnaires' effectiveness, the researchers contacted all Grade 8 class advisors and decided to survey the students in class meetings. The class advisors provided participants with the necessary instructions before completing the questionnaire. Students were expected to follow the instructions in the questionnaire to ensure that their responses reflected their actual situation to the utmost extent. After excluding questionnaires with missing or incorrectly completed information, 288 valid questionnaires were collected, with a response rate of 72%.

3.4 Data analysis

Since analyzing ordinal data as interval data is often more straightforward in interpretation with additional information than non-parametric alternatives (Coakes & Steed, 2009), we opted to rescale the ordinal data to an interval scale. The five-point Likert scale responses were imported into SPSS 28.0 to compute the mean rating for each question.

The NML questionnaire contained 61 items across FC, CC, FP, and CP dimensions. Each used a five-point Likert scale to describe degrees of acceptance of each concept: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree, or degrees of frequency of each action: 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Very often. Regarding the SE questionnaire, there

were 28 items relating to the dimensions of listening, speaking, reading, and writing. Each used a five-point Likert scale to demonstrate varying degrees of capability of completing each task: 1 = I cannot do it at all, 2 = I can probably do it, 3 = I am not sure whether I can do it, 4 = I can probably do it, 5 = I can do it well.

The data analysis process included three stages: (1) conducting normal distribution analysis and descriptive analysis to explore the current situation of junior high school students' NML and SE in English learning (i.e., the mean of each student's scores across the eight dimensions); (2) conducting Pearson correlation analysis to explore the relationship between the students' NML and their SE in English learning; and (3) conducting stepwise regression analysis by considering learners' NML as the independent variables (i.e., FC, FP, CC, CP) and SE in English learning as the dependent variables (i.e., listening, speaking, reading, writing).

3.5 Ethical issues

The American Psychological Association's Ethical Principles and Code of Conduct (2017) outlines five general principles concerning ethical issues: beneficence and non-maleficence, fidelity and responsibility, integrity, justice, and respect for people's rights and dignity. Besides, Edwards and Mauthner (2002) delineated several key areas of ethical responsibility, including responsibilities to the research profession, responsibility to the participants and the public, relationships with funding agencies, publications and intellectual ownership, and relationships with host institutions. In line with these principles and responsibilities, it is imperative to treat participants fairly, sensitively, and respectfully when conducting academic research (McCulloch, 2018). As this study's participants were between 13 and 14 years old, we asked the target school's president and students for permission before issuing the questionnaires. We strictly followed the above principles throughout the research to protect students' legal rights. During the study, the first author introduced the research, sought participants' permission before starting, and ensured they had the necessary information about this research. Participants were also assured of their right to withdraw from the study if they felt discomfort or dissatisfaction with any aspect of the study. Besides, ensuring anonymity is another significant ethical consideration. To achieve this, all participant information, particularly demographic data, remained anonymous throughout all study phases. All data were stored on the first author's computer and secured with a password. As the administrator, the first author oversaw the entire data collection process, monitored participants' responses, and closed the survey when needed. Additionally, participants were informed that the research would not disrupt their lives or studies.

4 Results

4.1 Descriptive results

Table 1 shows that the participants' overall NML is above average, with an average score of 3.71. The mean values of the four indicators of NML are ranked from high to low as follows: FC (4.42) > FP (3.65) > CC (3.56) > CP (3.22). The junior high school students scored highest in FC and lowest in CP. In terms of their SE, Table 2 shows that the students achieved an average of 2.64 in SE in English learning. The ranking of the four indicators is as follows: writing (2.85), speaking (2.78), listening (2.59), and reading (2.35). Therefore, the participants have relatively higher SE in English writing and speaking and lower SE in English listening and reading.

Table 1

Descriptive Results of NML

Indicators	Sample size	Mean	Standard deviation	Skewness	Kurtosis
FC	288	4.42	0.58	-1.91	4.15
CC	288	3.56	0.79	-0.40	-0.18
FP	288	3.65	0.67	-0.31	-0.14
CP	288	3.22	1.04	-0.07	-0.79

Table 2

Descriptive Results of SE

Indicators	Sample size	Mean	Standard deviation	Skewness	Kurtosis
SE in English listening	288	2.59	0.10	0.11	-0.80
SE in English speaking	288	2.78	1.13	-0.07	-1.05
SE in English reading	288	2.35	1.04	0.32	-0.87
SE in English writing	288	2.85	1.15	-0.12	-1.01

4.2 Results of Pearson correlation analysis

To further explore the relationship between NML and English SE, this study used the Pearson correlation analysis method to test the research variables. As Table 3 shows, there is a significant positive correlation ($r=0.20$~0.44, $p<0.01$) between the eight research variables in NML and SE in English learning. Specifically, among the four indicators of NML, there is a higher correlation between CC ($r=0.36$~0.44) and the four dimensions of SE. As for the four indicators of SE, SE in listening ($r=0.26$~0.44) and SE in speaking ($r=0.26$~0.43) exhibit a higher degree of correlation with NML.

Table 3

Pearson Correlation Analysis Results

	SE in English listening	SE in English speaking	SE in English reading	SE in English writing
FC	0.26**	0.26**	0.20**	0.27**
CC	0.44**	0.43**	0.36**	0.40**
FP	0.37**	0.34**	0.29**	0.30**
CP	0.34**	0.31**	0.26**	0.29**

* $p<0.05$ ** $p<0.01$

4.3 Results of Stepwise Regression Analysis

According to the correlation analysis results, there is a significant positive correlation ($p<0.01$) between various indicators of NML and SE in English learning. Therefore, all corresponding variables can be included in the stepwise regression analysis, which is mainly used to explain the predictive relationships between them. To improve students' SE in English learning via their development in NML, we used

the four indicators (i.e., FP, FC, CC, CP) in the NML questionnaire as independent variables, and the four indicators (i.e., SE in English listening, speaking, reading, and writing) in the SE questionnaire as dependent variables to test whether the NML indicators can predict SE. Details are presented in Tables 4, 5, 6 and 7.

Table 4

Stepwise Regression Analysis Results between NML and SE in Listening

	Stepwise regression analysis results (*n*=288)							
	No standardized coefficient		Standardized coefficient	*t*	*p*	Collinearity diagnosis		
	B	Standard error	*Beta*			VIF	Tolerance
Constant	0.22	0.30	-	0.74	0.46	-	-
CC	0.44	0.09	0.35	5.23	0.00**	1.65	0.61
FP	0.22	0.10	0.15	2.16	0.03*	1.65	0.61
R^2			0.21				
Adjust R^2			0.20				
F			$F(2,285) = 37.85$, *p*=0.000				
D-W number			2.19				

Dependent variable: SE in English speaking

* *p*<0.05 ** *p*<0.01

Table 5

Stepwise Regression Analysis Results between NML and SE in Speaking

	Stepwise regression analysis results (*n*=288)							
	Non standardized coefficient		Standardized coefficient	*t*	*p*	Collinearity diagnosis		
	B	Standard error	*Beta*			VIF	Tolerance
Constant	0.60	0.28	-	2.14	0.03*	-	-
CC	0.61	0.08	0.43	8.01	0.00**	1.00	1.00
R^2			0.18				
Adjust R^2			0.18				
F			$F(1,286) = 64.22$, *p*=0.000				
D-W number			2.00				

Dependent variable: SE in English speaking

* *p*<0.05 ** *p*<0.01

Table 6

Stepwise Regression Analysis Results between NML and SE in English Reading

	Stepwise regression analysis results (n=288)							
	Non standardized coefficient		Standardized coefficient	t	p	Collinearity diagnosis	
	B	Standard error	$Beta$			VIF	Tolerance
Constant	0.66	0.27	-	2.48	0.01*	-	-
CC	0.47	0.07	0.36	6.48	0.00**	1.00	1.00
R^2			0.13				
Adjust R^2			0.13				
F			$F(1,286) = 41.98, p=0.000$				
D-W number			2.09				

Dependent variable: SE in English speaking

* p<0.05 ** p<0.01

Table 7

Stepwise Regression Analysis Results between NML and SE in English Writing

	Stepwise regression analysis results (n=288)							
	Non-Standardized coefficient		Standardized coefficient	t	p	Collinearity diagnosis	
	B	Standard error	$Beta$			VIF	Tolerance
Constant	0.77	0.29	-	2.66	0.01**	-	-
CC	0.59	0.080	0.40	7.41	0.00**	1.00	1.00
R^2			0.16				
Adjust R^2			0.16				
F			$F(1,286) = 54.86, p=0.000$				
D-W number			2.052				

Dependent variable: SE in English speaking

* p<0.05 ** p<0.01

As the above tables show, CC (B=0.44~0.61, t=6.48~25.21, p<0.01) can positively predict SE in English listening, speaking, reading and writing. Furthermore, FP (B=0.22, t=2.16, p<0.05) can positively predict SE in English listening. Therefore, among all the independent variables, only CC can positively predict all the dependent variables in SE in English learning, indicating that junior high school students with higher CC are more confident in their English learning.

5 Discussion

5.1 Junior high school students' NML level

RQ 1 aimed to determine junior high school students' NML level. The results show that their overall NML is above average, and they performed better in consuming skills than prosuming skills. The participants excelled the most in the FC dimension, suggesting a solid capacity to access, comprehend, and utilize media information. This was followed by their performance in FP and CC, indicating a solid foundation in producing and critically engaging with new media content. However, their weakest performance was in CP, which implies a relative deficiency in the ability to analyze, synthesize, evaluate, and create new media content and interactively and critically participate in the new media environment.

This corresponds theoretically to the study of Lin et al. (2013), which found that FC, FP, CC, and CP ascend in order of difficulty. According to Lin et al.'s framework, individuals score higher in the functional scales than the critical scales, which is precisely what our study observed. Moreover, our findings resonate with empirical studies focusing on college students. For instance, Luan et al. (2020) reported similar results among non-English major students at a Chinese university, where the highest scores were achieved in FC and the lowest in CP. Similarly, Koc et al. (2016) found that while students demonstrated a high level of functional literacy, their critical literacy was comparatively underdeveloped. These consistent results across studies underscore the need for educational interventions to enhance critical literacy skills, particularly critical production (Morgan, 2002). For example, Saadé et al. (2012) conducted a survey and test to measure and improve the critical thinking of 490 university students, pointing out that teachers need to integrate more interactive components and social media principles tied to critical thinking activities. By doing so, we can foster a more media-literate population capable of consuming and producing media content and critically engaging with such content in a constructive and informed manner.

5.2 Participants' SE in English learning

RQ 2 was designed to explore the current situation of junior high school students' SE in English learning. Overall, participants had the highest SE scores in English writing and speaking but the lowest in listening and reading. These results align with the outcome of Luan et al.'s (2020) study, which revealed that the investigated college students' SE scores in English writing and speaking were higher than in reading and listening, indicating they were more confident in language output than language input. Similarly, a meta-analysis by Schunk and Pajares (2009) across various educational domains, including language learning, showed that students consistently report higher self-efficacy for skills that involve the active production of knowledge.

Some studies have shown that EFL learners' SE significantly correlates with their language skills, highlighting the necessity of stimulating learners' SE to achieve excellent outcomes in language learning environments (Zimmerman & Schunk, 2003). The important effect of SE on language acquisition has been well-documented and recognized (Park & Lim, 2024), with Bandura's (2001) social cognitive theory positing that an individual's beliefs about their capabilities to perform tasks effectively influence their motivation and performance. Many researchers and educators have conducted relevant empirical research in this field (Won et al., 2023). For example, in today's technology-enhanced language teaching and learning environment, Wendt et al. (2018) studied the role of mobile-assisted language learning on elementary learners' SE and academic achievement. Their study revealed that language learning applications (e.g., Duolingo) significantly enhanced learners' positive emotions concerning language learning, enabled scaffolding that increases learners' SE, and improved their academic achievement. These findings can be extended to NML, encompassing a range of competencies required to effectively

access, analyze, evaluate, create, and act using information communicated through various digital platforms (Lin et al., 2013).

5.3 The correlation between NML and SE in English learning

The results of the correlation analysis revealed that there is a significant positive correlation between the four indicators (FC, CC, FP, CP) of the junior high school students' NML and the four indicators (listening, speaking, reading, and writing) of SE in English learning. Meanwhile, the stepwise regression analysis further revealed the predictive role of learners' NML on their SE. According to the results, CC, which includes students' abilities to actively analyze (i.e., deconstruct media messages), synthesize (i.e., remix media content by integrating their own viewpoints and reconstruct media messages) and evaluate (i.e., question, criticize, and challenge the credibility of media content) is the most influential factor that can predict all the variables of SE in English learning. Therefore, if students can efficiently analyze, synthesize, and evaluate media information while learning English, they will become more proactive and confident in English listening, reading, speaking, and writing activities.

Similar findings were found in Lin's (2012) survey of 4,174 diverse users of the world's most popular language learning social networking site (i.e., Livemocha), which revealed that through analyzing the information content on social media, learners' anxiety and stress about using the target language could be reduced. Thus, learners' SE in English learning can be improved. The study by Liu and Huang (2019) emphasized the importance of media literacy in English newspaper and journal reading among college students. Results suggested that when students are taught to critically engage with media, their ability to understand and interpret English language materials improves significantly. Su et al. (2018) conducted a quantitative study with 424 first-year undergraduate students, focusing on the relationship between learners' online self-regulation and their SE in learning English as a foreign language. Their findings reveal that the more sophisticated learners were in evaluating online learning material (i.e., media information and content), the more confident they were in learning English. Lailiyah and Cahyono (2017) conducted a case study with 23 English teachers in Indonesia and found a significant relationship between integrating technology into education and SE. They argued that teachers who successfully integrated, analyzed and synthesized the media content and technology were more self-efficacious in their EFL teaching practices.

5.4 Summary of the discussion

Therefore, the results of this research empirically corroborate the previous work of Lin et al. (2013), in which they conceptualize NML as comprising four types of literacy (i.e., FC, FP, CC, CP) containing two continuums from functionality to criticality and from consumption to prosumption. The descriptive statistics for the NML factors in our study show that participants possess good levels of FC, FP, and CC but low levels of CP, which may be because CP is the most complex and crucial part of NML. The results are in line with the study mentioned above. Besides, students achieved higher scores in SE in English writing and speaking than in listening and reading, indicating that they are more self-efficacious in language output activities than in language input activities, which contradicts the previous findings. Therefore, future studies will collect more data for a more comprehensive analysis. Practically, this study indicates that there is a strong positive correlation between the two concepts, with CC being the most significant predictor to explain all the SE variables in English learning, shedding new light for teachers, educators and school managers who strive to inspire students' interest to reach good teaching results.

6 Conclusion

In today's globalized and interconnected world, English plays a decisive role in students' education as a vital communication tool and carrier of culture (Zhang et al., 2024). Furthermore, thanks to the advances in information technology (e.g., new media), second language learners are empowered with ever more innovative online applications and the technology-enhanced language learning practices they enable produce a positive impact on their SE. Individuals who are new media literate can actively participate in new media and fully understand the social, emotional and cultural aspects of digital content (Koc & Barut, 2016). Against this background, this study focused on junior high school students in China, seeking to determine the current situation of their NML and SE in English learning and the correlation between the two concepts. According to the results, they achieved the highest scores in FC relative to the other three indicators of NML. Specifically, their scores on the functional scale were higher than those on the critical scale. This shows that these students are relatively skillful in accessing, understanding, producing and distributing media content but still need further support in critically analyzing, synthesizing, evaluating and creating new media information. Furthermore, all of the NML indicators exhibited a strong and positive correlation with the SE in English learning indicators; more importantly, CC can accurately predict all the constructs in SE. Therefore, integrating NML education into junior high school English education is significant.

Methodologically, this study adopted two questionnaires to conduct a large-scale quantitative study of eighth-grade students, generating a comprehensive picture of their current NML and SE in English learning and the correlation between the two. Moreover, this study provides theoretical and pedagogical insights for improving junior high school students' SE in English learning by integrating NML education into day-to-day learning activities. Furthermore, our findings will support junior high school teachers in updating their teaching strategies, which should increase the quality and efficiency of English language teaching. However, while this study has offered valuable implications, several limitations should be recognized. First, as the focus of this study was junior high school students, in future, participants could be extended to include students from different school levels and regions. Secondly, for the data collection method, this study used a self-report questionnaire to conduct a descriptive survey but did not undertake any related experimental interventions. In the authors' follow-up study, a greater diversity of data collection instruments, such as interviews and teacher evaluations, could generate a more comprehensive picture of junior high school students' NML. Thirdly, regarding data analysis, this study used Pearson correlation analysis and Stepwise Regression Analysis to explore the current situation of students' NML and SE in English learning. We would consider integrating Structural Equation Modeling into future studies, which may help us establish a greater degree of accuracy on this matter.

Fund

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