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RECEIVED 24 March 2024

ACCEPTED 31 October 2024

PUBLISHED 10 March 2025

CITATION

Amir A (2025) Literacy resilience: bridging linguistic literacy and self-regulated learning for enhanced educational success. *Front. Educ.* 9:1406205. doi: 10.3389/feduc.2024.1406205

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Literacy resilience: bridging linguistic literacy and self-regulated learning for enhanced educational success

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This paper introduces the innovative concept of “literacy resilience (LR)” as a crucial link between linguistic literacy and self-regulated learning (SRL). The foundation of this concept rests on two fundamental assumptions. First, every educational interaction is a literate interaction, combining the skills of reading, writing, listening, and speaking. Second, self-regulated learning (SRL) is a multidimensional process, encompassing personal, behavioral, and environmental factors, enabling students to enhance their learning management. These principles led to the development of “literacy resilience.” This research aims to investigate “literacy resilience” as a critical connection between linguistic literacy and self-regulated learning, and explore teachers’ perceptions of its importance and their evaluation of students’ literacy resilience levels. The study surveyed 349 teachers across various fields using a dedicated questionnaire. Findings reveal a notable discrepancy between teachers’ perceptions of literacy resilience’s importance and their assessment of students’ levels. While teachers emphasize its high importance, they perceive students’ levels to be low, suggesting a gap between recognized importance and current development. Moreover, there is a significant lack of teachers’ knowledge of both literacy skills and SRL strategies. These findings highlight a potential discrepancy between teachers’ recognition of literacy resilience’s importance and students’ perceived competence, suggesting a need for targeted professional development initiatives.

KEYWORDS

linguistic literacy, literacy resilience, professional development, self-regulated learning (SRL), teachers’ perceptions

1 Introduction

Two basic assumptions form the basis of the present study. First, every educational interaction is essentially a literate interaction. This means that students are expected to skillfully and flexibly navigate between different modes, both spoken and written, in order to express thoughts and feelings, formulate ideas and opinions, defend arguments, present information clearly and concisely, and participate effectively in quality communication tailored to specific goals, circumstances and target audiences (Berman and Ravid, 2008; Tolchinsky, 2022).

The second assumption is that every learning interaction involves processes related to self-regulated learning (SRL) and executive functions. SRL is essential in the students’ learning process, allowing them to manage and monitor their entire learning process (Adams, 2020; Jansen et al., 2019; Lichtinger and Kaplan, 2011; Pintrich, 2000; Pintrich and Zusho, 2002; Zimmerman, 2000, 2002, 2008). Executive functions are high-level cognitive processes necessary to direct behaviors and goal-directed tasks (Ober et al., 2020; Mohseni et al., 2020;

Ravid and Tolchinsky, 2002; Landi, 2012; Oakhill and Cain, 2007; Flower and Hayes, 1981; Kaplan et al., 2009).

These assumptions form the basis of “literacy resilience,” which is examined both from a linguistic literacy perspective and from a metacognitive perspective. The research focuses on the learners’ ability to navigate educational tasks that require literacy skills and self-regulated learning (OECD, 2019a, 2019b, 2021). While educators recognize the importance of fostering SRL and linguistic literacy (Heaysman and Kramarski, 2022; Kistner et al., 2010; Panadero and Järvelä, 2015; Šimić Šašić et al., 2023; Amir, 2024a, 2024b; Tolchinsky, 2022), this study reveals a gap between this recognition and the teachers’ perceptions of their students’ literacy resilience levels (Berman and Ravid, 2008; Tolchinsky, 2022).

This study establishes a theoretical relationship between linguistic literacy, self-regulated learning (SRL) skills, executive functioning, and meta-strategic knowledge. Literacy resilience refers to the learner’s ability to persevere in the face of linguistic challenges and navigate effectively through a combination of linguistic literacy skills and SRL processes. This article provides a comprehensive definition of literacy resilience and conducts an analysis to assess its importance as perceived by teachers, along with their perceptions of their students’ levels of literacy resilience.

2 Theoretical background

2.1 Linguistic literacy

Linguistic literacy is the ability to identify, understand, interpret, produce, and communicate through texts in various contexts. It includes both the comprehension and evaluation of spoken and written texts, as well as the ability to produce them (Sälzer and Roczen, 2018). Proficient linguistic literacy requires a rich linguistic repertoire to navigate between communication modalities, convey focused meanings, respond logically to texts, and organize content appropriate to context (Berman and Ravid, 2008; Ravid and Tolchinsky, 2002; Tolchinsky, 2022).

Our understanding of linguistic literacy has evolved with social and technological changes. Today, it also includes dealing with digital texts and meta-cognitive aspects of reading and writing (Binkley et al., 2019; OECD, 2019b, 2021; Pintrich, 2000; Zimmerman, 2023). The recognition of the importance of meta-cognitive aspects in linguistic literacy leads to an examination of the central role of self-regulated learning in developing and applying literacy skills (Saks and Leijen, 2018).

2.2 Self-regulated learning (SRL)

Self-regulated learning is a process in which learners control their learning through goal setting, planning, monitoring, and evaluation. It is essential for academic success and lifelong learning (Pintrich, 2000; Zimmerman, 2000). SRL includes cognition: strategies for understanding and problem-solving, metacognition: awareness and regulation of cognitive processes and motivation: beliefs about abilities and tasks (Bandura and Cervone, 1986; Flavell, 1979). This process is particularly crucial in complex tasks such as writing, where

self-regulation and transcription skills play a vital role in development (Graham and Harris, 2000).

Research shows that students who regulate their learning achieve higher academic performance (Veenman and Beishuizen, 2004). SRL skills assist in time management, goal setting, adapting learning approaches, and persisting through challenges (Bandura, 1991; Zimmerman and Kitsantas, 2007).

The impact of SRL extends to various domains, including writing instruction, where cognitive self-regulation has been shown to significantly improve writing skills in planning, monitoring, and evaluating writing (Boscolo and Hidi, 2007; Fidalgo et al., 2017; Fidalgo and Torrance, 2017; Lichtinger and Kaplan, 2011, 2015). Furthermore, observational learning in writing, which involves SRL processes, has been found to enhance writing performance (Braaksma et al., 2012; Rijlaarsdam et al., 2006; Rijlaarsdam et al., 2009; Rijlaarsdam et al., 2018).

SRL aids in monitoring comprehension and identifying difficulties in reading (Mohseni et al., 2020). Integrating SRL strategies in literacy instruction leads to more effective learning (Amir et al., 2021; Nurjanah and Pratama, 2020; Zare, 2007).

Educators play a crucial role in fostering SRL through opportunities for self-assessment, goal setting, and reflection (Zumbrunn et al., 2011). Recent studies emphasize the importance of self-efficacy, motivation, and support for basic psychological needs in academic achievement, reinforcing the significance of SRL in education (Basileo et al., 2024).

The integration of linguistic literacy and self-regulated learning creates an essential basis for the development of a new concept: literacy resilience.

2.3 Defining literacy resilience

Although the concept of resilience has been studied for decades, there remains a lack of consensus regarding its definition, conceptualization, and measurement (Vella and Pai, 2019). Resilience is a term that arises in various contexts, including the emotional, mental, and social realms. In the research literature, there is an ongoing debate about whether resilience should be classified as a personality trait, a process, or an outcome (Pooley and Cohen, 2010). When resilience is regarded as a trait, an individual characteristic, it has been defined as adaptive resistance to stress (Ahern et al., 2008). However, when conceived as an outcome, resilience alludes to proficient, stable, and consistent adaptation under challenging conditions (Masten, 2001).

Research on resilience has mainly focused on developmental and clinical psychology (Jowkar et al., 2014; Richardson et al., 1990). In the context of education, the term “academic resilience” as an increased likelihood of achieving success in school despite environmental adversities resulting from personal traits, conditions and early experiences, such as stress and academic research (Mallick, 2016; Wang et al., 1997). Furthermore, within the framework of perceived academic resilience, motivation appears as a key component (Radhamani and Kalaivani, 2021). This suggests that resilient students tend to be more motivated and achieve success despite the presence of stressful events and conditions that put them at risk, such as dropping out of school. Research in this area has largely focused on ethnic minority groups (e.g., Davis and Paster, 2000; Masten, 2001), mental

health (Jowkar et al., 2014), and potential sources of support that can foster academic resilience and hope in coping with academic challenges (Radhamani and Kalaivani, 2021).

Studies that examined the relationship between academic resilience and achievement indicated a positive and distinct relationship between academic resilience and academic achievement among students (Mwangi et al., 2015; Zuill, 2016). Also, academic self-efficacy was correlated with academic resilience, and a significant predictor of academic resilience (Fallon, 2010).

It is crucial to delve into the concept of resilience beyond its conventional definitions, particularly in educational environments where students encounter a range of challenges related to literacy skills. The research perspective outlined in the article on resilience within the educational context revolves around the notion of “literacy resilience.” This concept encompasses the abilities necessary to tackle academic tasks that demand literacy skills, which students must possess in conjunction with self-regulated learning (SRL) skills.

The term “literacy resilience” (LR) is based on a theoretical relationship between linguistic literacy and regulated learning skills (SRL). In this article, I define the term “literacy” (LR). To the best of my knowledge, this term as I define it is not found in the professional and research literature. Figure 1 shows the Key Elements of Literacy Resilience which the broad definition of literacy resilience that will be presented later is based.

When students are given a task that requires literacy skills, for example, to compare different topics, to merge information, to assert a claim and substantiate it, to what extent is the student responsible for the task from start to finish and to deal with the task alone, without the mediation of an adult? To what extent do they know how to identify what is difficult for them regarding the specific task? To what extent do they know how to choose strategies that can help them? And no less important, to what extent do they know how to manage their time and prioritize?

A student who can be responsible for the task from beginning to end, knows how to identify what is difficult for him, how to ask

questions relevant to the task, how to choose appropriate strategies for the task, and manage the task correctly, also in terms of the time available to him, can be said to have reading resilience, that is, he has the tools, and ways to overcome the literacy challenges and know how to deal with the difficulties.

These components helped me refine the definition of Literacy resilience (LR).

The learner’s ability to deal on his own with assignments that require a variety of literacy skills, and to have self-direction and self-ability to deal with oral and written texts. Meanwhile, the learner must carry out the tasks himself from start to finish, know how to identify difficulties, ask relevant questions that may advance him in the performance of the task, and hold a reflective dialogue with himself.

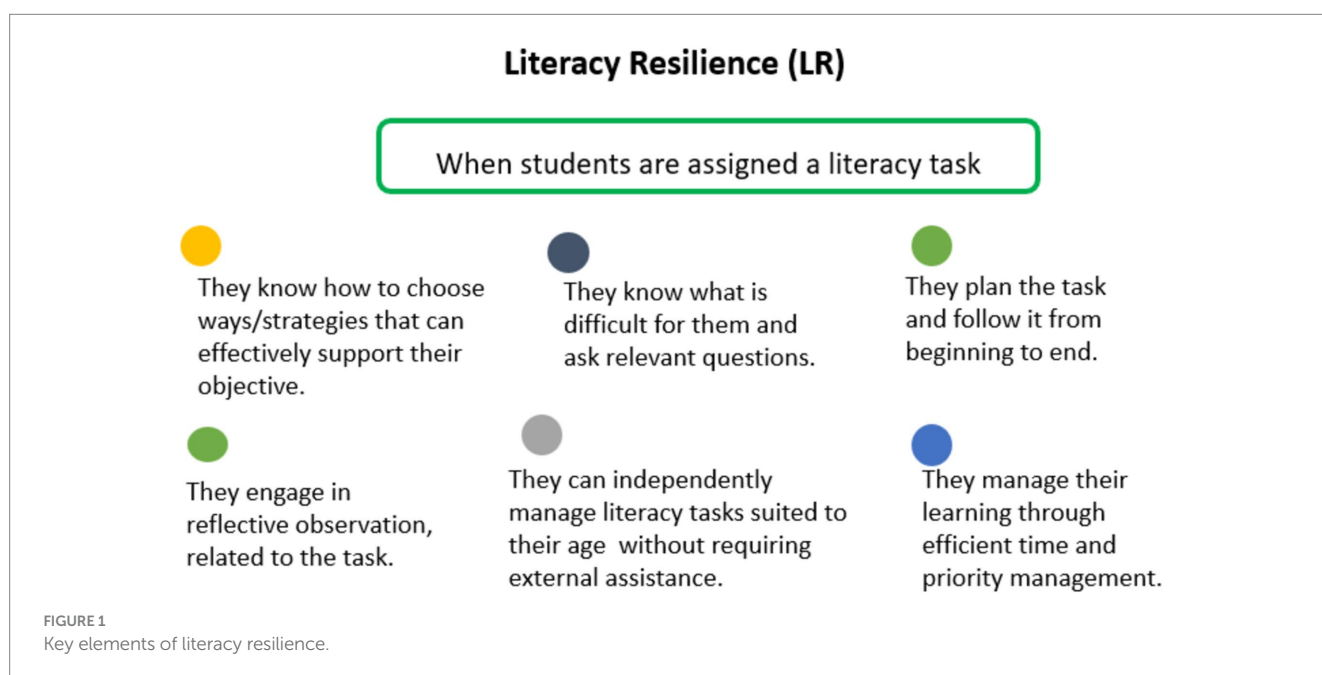
Linguistic literacy skills anchored in SRL are the cornerstones of a learner’s literacy resilience, as shown in Figure 2.

As shown in Figure 2, literacy resilience has two anchors: one related to literacy skills and the other related to SRL skills. Only the combination of them constitutes the foundation for building literacy resilience.

Literacy skills are cognitive skills that include meta-linguistic and meta-textual awareness, and the skills of SRL include, among others, executive functions and emotional functions.

This resilience is evident in the learner’s independent handling of assignments requiring diverse literacy skills, self-directed engagement with oral and written texts, proficient learning management, autonomous planning, and the execution of literacy tasks from initiation to completion. Additionally, it entails the learner’s awareness in identifying challenges, selecting appropriate strategies, and engaging in reflective dialogue about his learning.

Students who have literacy resilience are aware of their ways of learning and know how to identify which ways of learning are effective for them. When the learners have metacognitive control, they can decide on the literacy strategies they should take, and in what order to carry them out, and conduct a meta-linguistic and meta-textual dialogue about the effectiveness of these and other



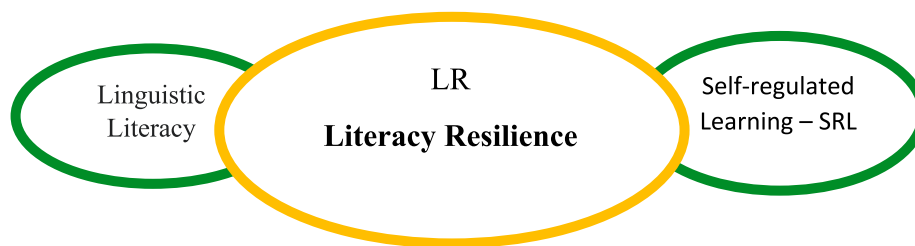


FIGURE 2
The literacy resilience model.

literacy strategies. For instance, in the domain of reading comprehension, the learner must possess the ability to approach the text, understand the genre, and discern the reading objectives (Banditvilai, 2020). They should be able to identify their strengths and weaknesses to the subject, formulate questions that assist in tackling difficulties, apply prior knowledge, determine what to read first, select appropriate strategies, and navigate the reading effectively, among other tasks. A reader who is adept at engaging in a meta-cognitive dialogue with themselves and their environment concerning a task that demands literacy skills can be said to possess literacy resilience. This means they exhibit awareness and self-control in addressing the literacy-related challenges of the task. Even when faced with a complex assignment, such a learner is unlikely to give up, and they are skilled at posing questions and identifying areas of difficulty.

Learners who lack metacognitive awareness are unable to reflect on their cognitive processes and be aware of their literacy activities. In such a case it is difficult to expect that actions will be taken, for example, in the structuring of meaning from the text, or to deal with difficulties when failing or disrupting understanding. Literacy resilience is gradually built and is the result of mastery of the different skills and modalities: speaking, listening, reading, and writing combined with metacognitive, meta-linguistic, and meta-textual awareness and self-management. These abilities involve the learner's behaviors and thoughts and his self-efficacy to cope with the difficulties and literacy tasks in effective ways. Literacy resilience allows the learner to be independent and gradually reduces the need for mediation by a teacher or other adult (Amir, 2024a, 2024b).

Literacy skills and a sense of self-efficacy for coping with literacy tasks are important for creating a learning space and fostering literacy resilience (Amir, 2024a). Their importance is even deeper when students do not show independence spontaneously but are dependent on the mediation of the teacher and have difficulty performing tasks on their own. This is especially true when it comes to complex tasks that require searching for information, assessing the reliability of information, reading many sources, integrating and synthesizing information from various sources, skills of research, critical reading, production of texts, etc. The ability to cope with literacy difficulties independently combined with high self-efficacy constitutes literacy resilience, which may also contribute greatly to the emotional resilience of the learner. Literate resilience, therefore, is also related to meta-linguistic and meta-textual awareness, executive functions, and emotional functions.

2.4 Teachers' perceptions regarding self-regulated learning (SRL)

Teachers' perceptions significantly influence their classroom actions and curriculum planning (Albion and Ertmer, 2004; Park et al., 2006; Kimpston and Anderson, 1986; Louws et al., 2017; Pajares, 2003; Summers, 1977). Teachers' beliefs about teaching SRL predict their classroom behavior, whether or not they have implemented practices that promote self-direction (Dignath-van Ewijk and van der Werf, 2012; Lawson et al., 2019). For example, Dignath-van Ewijk (2016) found a correlation between teachers' belief in the importance of SRL, its use, and self-efficacy for teaching it. Studies have shown that teachers generally attach great importance to SRL (Dignath-van Ewijk and van der Werf, 2012), with some finding no differences between age groups (Huh and Reigeluth, 2018). Despite this recognized importance, many teachers do not teach SRL; some lack knowledge (Dignath and Veenman, 2021; Glogger-Frey et al., 2018), while others do not believe in its explicit instruction (Lawson et al., 2019; Vosniadou et al., 2020). Some believe SRL skills develop spontaneously or cannot be taught at all. Therefore, it's crucial to identify and develop positive beliefs about teaching self-direction in learning across different age groups (Heaysman and Kramarski, 2021).

2.5 The importance of linguistic skills according to teachers' perception

Teachers play a significant role in developing learners' linguistic literacy skills, including learning management and SRL skills (Karlen et al., 2020). Their perceptions of linguistic literacy and its characterizing skills, alongside the learning environment they create, are of great importance. As agents of knowledge and skills, teachers shape their students' habits of using information and linguistic literacy skills. Understanding teachers' perceptions of linguistic literacy and their assessment of students' literacy levels is crucial. Studies show that increased exposure to the field's teaching importance and participation in relevant training or professional development enhances teachers' positive perceptions (Heaysman and Kramarski, 2022).

This study aims to illuminate perceptions of elementary, middle, and high school teachers regarding literacy resilience's importance for learning. Examining these perceptions is crucial as they significantly influence instructional practices and the learning environment. Understanding these views can reveal gaps between the importance teachers attribute to these skills and their classroom implementation.

Assessing teachers' views on students' literacy resilience levels can provide insights into the current state of literacy education and highlight areas needing additional focus. Examining perceptions across different education levels and disciplines can uncover patterns or disparities that could inform targeted professional development initiatives. This research aims to contribute to the broader understanding of literacy resilience in educational settings and its potential impact on students' academic success and lifelong learning skills. These perceptions have led to the formulation of the following research questions:

2.6 Research questions

RQ1: The importance of literacy resilience:

- What is the importance of literacy resilience for the educational success of students, according to the teachers' perception?
- Will there be differences between teachers of different age groups in their perception of the importance of literacy resilience?
- Will there be differences between teachers from different disciplines in their perception of the importance of literacy resilience?

RQ2: The literacy resilience level of students:

- To what extent do teachers perceive their students as literately resilient?
- Will there be differences between the perceptions of teachers in different education levels (elementary, middle, and high school) regarding their students' literacy resilience?
- Will there be differences between teachers from different disciplines in their perception of their students' literacy resilience?

3 Methods

3.1 Participants

The participants were teachers who chose to attend a lecture or a PD (Professional Development) course about literacy that was provided by the researcher through the Ministry of Education. Before the lecture or course began, the teachers were invited to fill out the questionnaire voluntarily, and anonymously. Out of the 512 teachers who attended the lectures or courses, 409 teachers responded to the questionnaire; of whom 26 teachers whose discipline was "other" were excluded because their discipline was unspecified, leaving a total of 383 participants. The teachers varied in age, tenure, teaching subject, and school level. The gender distribution (As seen in [Table 1](#), 87.2% women) is similar to that of the general population of teachers in Israel, in which 82% are women ([Central Bureau of Statistics, 2020](#)). See [Table 1](#) for teachers' background characteristics.

3.2 Research instruments

The research methodology included a survey of 349 teachers in various fields who filled out a valid questionnaire dedicated to the

study. The questionnaire consists of Likert scale questions with the following ratings: 1 (neither/neither), 2 (to a small degree/infrequently), 3 (to a large degree/frequently), and 4 (to an extremely great degree/always). Each question was based on one of the aforementioned facets of the definition of literacy resilience (see [Figure 1](#)). To validate the questionnaire, I took the following steps:

An initial version was drafted. Three experts in the field of literacy evaluated the statements and recommended corrections. The statements were corrected according to their comments. The final version was tested using Cronbach's α for internal reliability.

3.2.1 Components of the questionnaire

- Demographic questions regarding the participants' background characteristics: gender, education level, teaching profession, age group, and teaching experience.
- Teachers' perspectives on the significance of literacy resilience for academic achievement. Five statements were composed for this section of the questionnaire, for example: (1) To what extent is literacy mastery a critical factor in students' success with learning tasks? (2) How important is it for students to be able to complete assignments independently? The "Perception of the importance of literacy resilience" index was calculated using the mean of the statements. The Cronbach's α for internal reliability test confirmed high reliability – = 0.938.
- Teachers' perceptions of their students' literacy resilience, both in terms of linguistic literacy skills and SRL. Thirteen statements were formulated for this portion of the questionnaire. For example: (1) When you assign students a task that requires literacy skills (such as combining information, comparing, making informed choices of sources of information, expressing a reasoned position, etc.), to what extent do you believe/appreciate that they take full responsibility for the assignment? (2) When allowing students to complete an assignment that requires literacy skills on their own, to what extent do you believe/appreciate that they can identify what is difficult for them? (3) When allowing students to independently complete a task requiring literacy skills, to what extent do you believe/appreciate that they can manage their learning in terms of time and prioritization?

The "literate resilience" index was calculated using the average of the statements. The Cronbach's α for internal reliability test confirmed high reliability – = 0.913.

3.3 Research procedure

In the initial phase, a pilot version of the questionnaire was distributed to 30 teachers who attended a lecture about linguistic literacy. The questionnaire was distributed at the beginning of the lecture. It was explained that no personal details are included and the questionnaire is anonymous. After the first phase, several questions were reformulated. After determining the final version of the questionnaire, it was distributed to teachers who attended various lectures or PD courses on the subject of linguistic literacy in the same manner, right before the lecture or PD course began.

TABLE 1 Background characteristics.

		%	N
Gender	Women	87.2%	334
	Men	12.8%	49
Age group	25up to	5.5%	21
	26–35	17.2%	66
	36–45	39.4%	151
	46–55	30.0%	115
	And over 55	7.8%	30
Tenure	5–1	4.2%	16
	10–6	21.9%	84
	15–11	27.4%	105
	16 and over	46.5%	178
School	Elementary	25.8%	99
	Middle school	41.0%	157
	High School	33.2%	127
Teaching subject	Sciences	8.9%	34
	Mathematics	12.5%	48
	Language	44.1%	169
	Social domains	34.5%	132
Total		100.0%	383

3.4 Data analysis

Following De Coninck et al. (2020), scales were constructed and validated using a Factor Analysis to identify the number of factors and confirm they are in line with a theoretical model. Following Costello and Osborne's (2005) recommendations for non-normally distributed items and correlated factors, the Principal-Axis Factoring (PAF) method was used with direct oblimin rotation (oblique rotation). The latter allows factors to be correlated and produces estimates of correlations among factors. Initially, the Kaiser (1960) criterion was used to exclude factors with eigenvalues smaller than one, followed by a Scree plot analysis (Cattell, 1966) to determine factor numbers. Finally, all items with loadings of 0.35 or less were excluded from further analysis, as were items with strong cross-loadings on more than one factor (Costello and Osborne, 2005). All analyses were conducted using SPSS 25.0 and are summarized in Table 2. Next, internal consistency of the scales were determined. Cronbach's α common threshold of 0.70 (Taber, 2018) was used to determine a factor's internal consistency.

To validate the measurement instrument, Cronbach's alpha was used to assess the internal consistency of the items within each factor. As reported earlier, the 'Perception of the importance of literacy resilience' index showed high reliability ($\alpha = 0.938$), as did the 'literate resilience' index ($\alpha = 0.913$). These high alpha values indicate strong internal consistency of the items in each measure, supporting the reliability of the instrument. These reliability measures provide confidence in the coherence of the scales used in this study.

To answer the two research questions, first, a descriptive statistical analysis was conducted for each section of the questionnaire, including

the mean, standard deviation, and range (minimum and maximum). Second, for each of the indices, three level-based categories were established: low, medium, and high. In the initial phase, the mean of each participant's statements for each index was determined. In the second step, the averages in each index into three categories were sorted: low, medium, and high. The low level included averages between 1 and 1.99, medium between 2 and 2.99, and high between 3 and 4. Thirdly, the frequency of each category was determined (low, medium, and high). Lastly, using ANOVA, the prevalence between age groups was compared. Pearson correlation analysis was used to determine association between the indices.

4 Findings

4.1 RQ 1: The level of importance teachers place on their students' literacy resilience

The first research question examined the degree to which educators value the literacy resilience of their students. It was separated into three sections.

(RQ1a) *According to the teachers' perceptions, what is the significance of literacy resilience for the educational success of students?*

To this end, participants rated the importance of literacy resilience in terms of academic achievement. The findings indicate that teachers place a high value on literacy resilience ($M = 3.52$, $SD = 0.76$, $min. = 1.00$, $max. = 4.00$).

TABLE 2 Results of a factor analysis indicating two factors ($N = 383$).

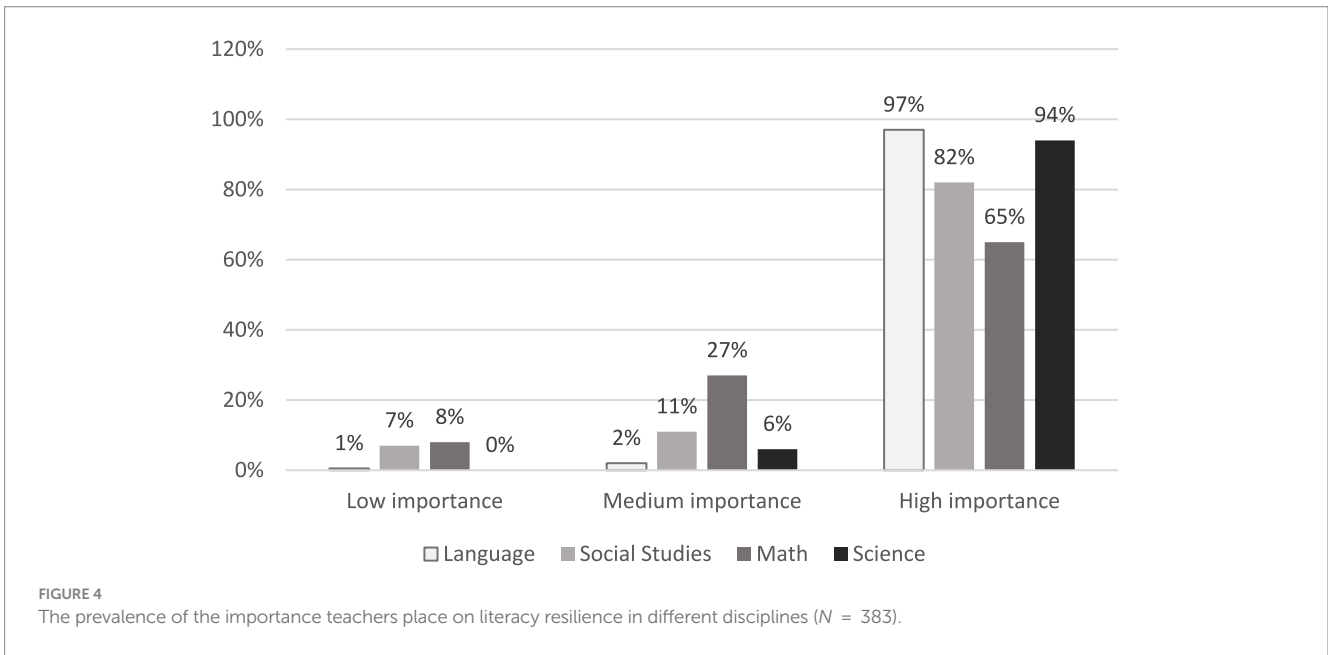
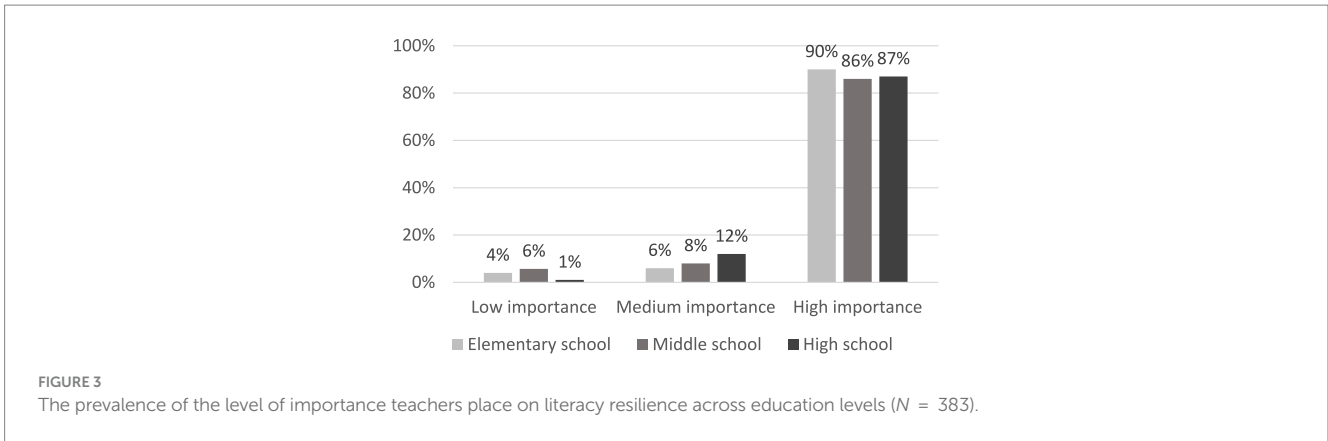
Items	Factors	
	Perceived level of literacy resilience	Perceived importance of literacy resilience
When students are given to complete on their own an assignment that requires literacy skills (such as merging information, comparison, informed choice of information sources, expressing a reasoned position, etc.), to what extent do you think/estimate that they need full mediation?	0.58	
When students are given to complete on their own a task that requires literacy skills (such as merging information, comparing, intelligently choosing sources of information, expressing a reasoned position, etc.) to what extent do you think/estimate that they show responsibility for the task from beginning to end?	0.82	
When students are given to complete on their own an assignment that requires literacy skills, to what extent do you think/estimate that they know what is difficult for them?	0.56	
When you let the students complete a task that requires literacy skills on their own, to what extent do you think/estimate that they know how to ask for help and ask questions when they have difficulty?"	0.77	
When students are given to complete on their own an assignment that requires literacy skills, to what extent do you think/estimate that they know how to choose ways and strategies that can help them?	0.81	
When students are given to complete on their own an assignment that requires literacy skills, to what extent do you think/estimate that they know how to manage their learning: time, prioritization?	0.95	
When students are given an assignment that requires literacy skills, to what extent do you think/estimate that they check their answer to make sure it is correct?	0.64	
When students are given to complete on their own an assignment that requires literacy skills, to what extent do you think/appreciate that they use different ways to answer the questions according to the assignment?	0.79	
When students are given an assignment that requires literacy skills, to what extent do you think/appreciate that they do self-reflection after the assignment?	0.70	
When the students are given to complete on their own an assignment that requires literacy skills, to what extent do you think/estimate that they know how to ask questions that may help them in completing the assignment?	0.69	
When students are given an assignment that requires literacy skills to complete on their own, to what extent do you think/estimate that they check themselves to be sure they will meet the deadlines?	0.89	
When students are given to complete on their own an assignment that requires literacy skills (such as blending information, comparison, informed choice of information sources, expressing a reasoned position, etc.), to what extent do you think/estimate that they Need explanations and scaffolding to do the assignment?	0.56	
When students are given to complete an assignment that requires literacy skills on their own, to what extent do you think/estimate that they do self-feedback following the assignment?	0.69	
To what extent is literacy control (such as the ability to extract information from texts, merge information, compare, express a reasoned position) a key element in the students' success in academic tasks?		0.92
To what extent do you find a connection between mastery of literacy skills and student success?		0.96
Cronbach's α	0.938	0.913

Examining the prevalence of averages by category (low, medium, and high), it was discovered that the majority of teachers (87.47%) rated the importance of literacy resilience as high, while most of the remainder (8.60%) rated it as medium. Few teachers rated the significance as low (4.44%).

Figure 3 displays the data by education level, while Figure 4 displays the data by discipline.

(RQ1b) Will the importance of literacy resilience be perceived differently by teachers teaching at different education levels (elementary school, middle school, high school)?

To determine whether there are differences between the education levels, a one-way ANOVA analysis of variance was performed. The findings indicate that there are no significant differences between



teachers in different education levels (elementary school, middle school, high school) in the perception of the significance of literacy resilience: [$F(2,381) = 0.273; p < 0.05$].

(RQ1c) Will there be differences in the importance of literacy resilience as perceived by teachers from different disciplines?

To determine if there are differences between the disciplines, a one-way ANOVA analysis of variance was performed. The results indicate that there were significant differences in the perception of the importance of literacy resilience across disciplines: [$F(3,380) = 10.075; p < 0.001$]. Further tests revealed that the perceived importance of literacy resilience was higher among Science ($M = 3.89$) and Language ($M = 3.7$) teachers than Math teachers ($M = 3.1$). No differences were found compared to the social domain teachers.

4.2 RQ 2: Teachers’ perceptions of their students’ literacy resilience

The second research question examined how teachers perceive their students’ literacy resilience. To this end, the participants ranked

the students’ literacy resilience based on their literacy level and their SRL skills. Similarly, this question is divided into three parts:

(RQ2a) How do teachers perceive their students’ level of literacy resilience?

The findings indicate that teachers perceive students’ literacy resilience to be low ($M = 1.64, SD = 0.56, min = 1.00, max = 3.38$).

Examining the prevalence of averages by category (low, medium, and high), it was found that 73% of teachers perceive the level of literacy resilience of students to be low, 24% perceive it to be medium, and no teachers (3%) perceive it to be high.

(RQ2b) Will there be differences in how teachers of different education level (elementary school, middle school, high school) perceive their students’ literacy resilience?

The prevalence of the level of student resilience was measured, as perceived by teachers, according to education levels, as seen in Figure 5.

To determine whether there are differences between the education levels, a one-way ANOVA variance analysis was performed. The

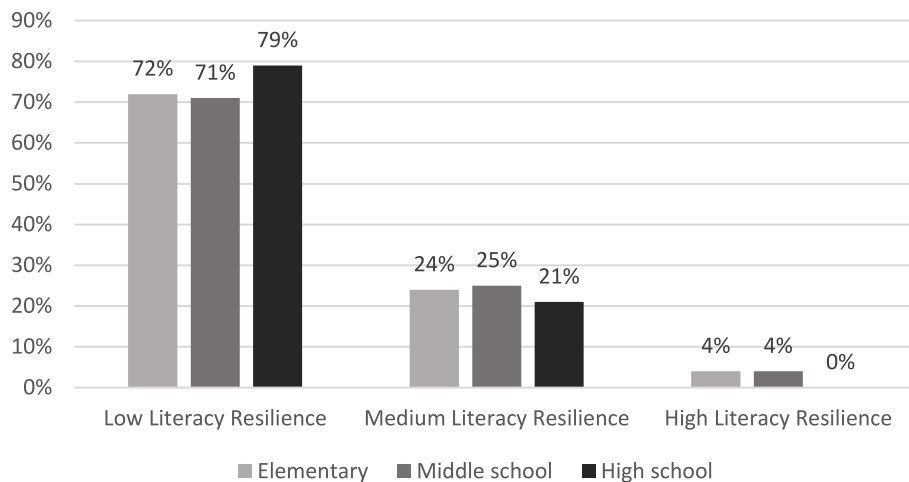


FIGURE 5 The prevalence of the level of student resilience, as perceived by teachers, according to education levels.

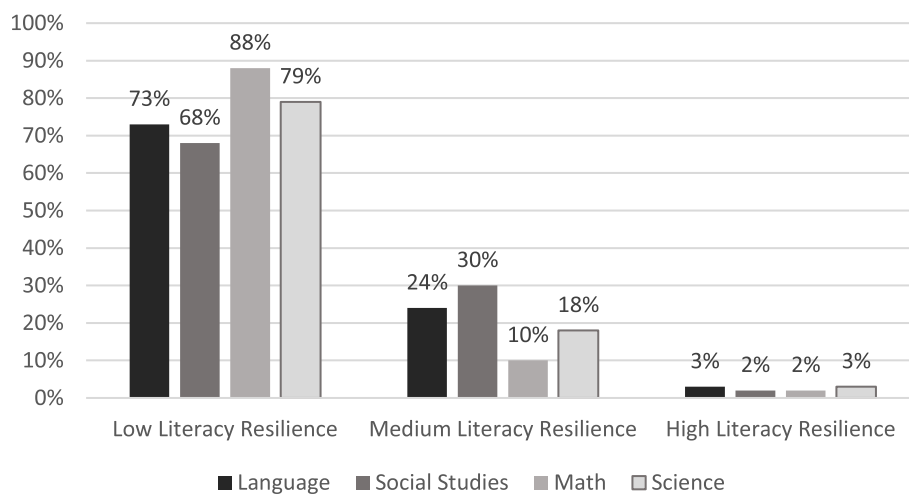


FIGURE 6 The prevalence of teachers' perceptions of their students' level of literacy resilience across disciplines.

results indicate that there are no significant education level differences in teachers' perceptions of their students' literacy resilience [$F(2,381) = 0.273; p > 0.05$].

(RQ2c) Will teachers from different disciplines perceive their students' literacy resilience differently?

The prevalence of teachers' perceptions of their students' level of literacy resilience across disciplines was measured, as seen in Figure 6.

A one-way ANOVA was conducted to determine whether or not there were differences between the various disciplines. The results indicate that there are no significant differences between disciplines in teachers' perceptions of their students' literacy resilience [$F(3,380) = 1.596; p > 0.05$].

Table 3 summarizes the findings regarding teachers' perceptions of the importance of literacy resilience and their assessment of their students' literacy resilience levels in different subject areas and education levels.

As can be seen in Table 3, while teachers generally attribute high importance to literacy resilience, they perceive their students' levels of literacy resilience as low.

4.3 RQ 3: Relationship between indices

There was no significant correlation between teachers' perceptions of the importance of literacy resilience and students' levels of literacy resilience, as perceived by their teachers ($r_{Pearson} = 0.049; p > 0.05$).

TABLE 3 The perception of literacy resilience and its importance according to discipline and education level.

			N	Perceived level of literacy resilience			Perceived Importance of Literacy Resilience			post hoc
				M	(SD)	Statistic	M	(SD)	Statistic	
Teaching subject	Science	(A)	34	1.5	(0.5)	F = 1.596	3.8	(0.5)	F = 10.075***	B < A,C
	Math	(B)	48	1.5	(0.4)		3.1	(1.0)		
	Language	(C)	169	1.6	(0.6)		3.7	(0.5)		
	Social domains	(D)	132	1.7	(0.6)		3.4	(0.9)		
Education level	Elementary	(A)	99	1.6	(0.6)	F = 0.273	3.6	(0.7)	F = 2.738	
	Middle School	(B)	157	1.7	(0.6)		3.5	(0.8)		
	High School	(C)	127	1.7	(0.5)		3.4	(0.7)		

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

5 Discussion

This article had two elementary goals: first, to define literacy resilience; and second, to examine teachers' perceptions of literacy resilience in three dimensions: (a) the degree of importance they attach to literacy resilience; (b) the level of literacy resilience of the students, as perceived by the teachers; and (c) the perceived level of literacy resilience of students about education level and teachers' discipline.

The first research question addressed the importance that teachers attribute to literacy resilience. It was found that the majority of teachers, 87.47%, attribute high value to literacy resilience. In light of this, it is encouraging that most teachers attach importance to literacy resilience among students.

Although there are no studies specifically focusing on literacy resilience, this finding is consistent with studies examining the importance of SRL. For example, the study by Šimić Šašić et al. (2023) indicates that most teachers agree that students should be helped to become self-regulated in their learning. However, teachers only partially understand what self-regulated learning constitutes.

It should be noted that no differences were observed between age groups, indicating that teachers believe literacy resilience is very important for students' learning. However, findings from a follow-up study, though not yet published, referenced in the study (Hamman et al., 2000; Heaysman and Kramarski, 2022; Moely et al., 1992; Šimić Šašić et al., 2023), show that teachers hardly create a learning environment fostering self-regulated learning, although there is a variation between teachers to some extent. And if they do, they mostly do it implicitly and not explicitly.

Assuming that teachers can influence SRL in direct and indirect ways (Kistner et al., 2010; Šimić Šašić et al., 2023; Dignath-van Ewijk, 2016; Dignath-van Ewijk and van der Werf, 2012; Lawson et al., 2019), the more teachers have a clearer understanding of the rationale and the pedagogical actions derived from the concept of literacy resilience, and the more they are offered teaching-learning-assessment materials in the spirit of the principles that will foster literacy resilience, it will be easier for teachers to assimilate these principles in the classroom.

Significant differences were found between teachers from different disciplines. It makes sense that language teachers would place greater emphasis on literacy resilience than math teachers since literacy is the primary aspect of language. Both science and math teachers place importance on literacy resilience. From studies done on mathematics

teachers in what is known as SRL, they are aware of the importance of SRL (Kistner et al., 2010). Math teachers can promote self-regulated learning either directly by teaching learning strategies or indirectly by arranging a learning environment that enables students to practice self-regulation and by systematic professional development.

These findings may explain the importance that math teachers place on literacy resilience; however, perhaps this finding should be tested in a follow-up study.

In examining the second research question pertaining to the level of literacy resilience of the students, it was discovered that the vast majority of teachers, regardless of education level or discipline, perceive the level of literacy resilience of the students to be low. According to the teachers, students require a great deal of assistance when completing assignments, as they have difficulty identifying their difficulties in a focused manner, are unfamiliar with suitable coping strategies for tasks requiring linguistic literacy skills, and do not manage the tasks adequately on their own. Teachers of students of all ages perceive the level of their students' literacy resilience to be low.

This finding has implications for both the pedagogical-didactic and professional development aspects of teacher education. They present teachers with significant challenges of theoretical and practical knowledge as well as beliefs (Dignath and Büttner, 2018; Lawson et al., 2019). Therefore, it is essential to build literacy infrastructures throughout the elementary–middle–high school learning continuum based on aspects of literacy resilience, including the development of linguistic literacy skills and SRL.

Examining the relationship between the variables revealed no correlation between the importance teachers place on literacy resilience and the perceived level of literacy resilience of students. Perhaps this means that regardless of the level of importance teachers place on literacy resilience, they still perceive the students' level of literacy resilience as low, because beliefs of the teacher are not enough: they need knowledge and practice in order to elevate their students' literacy resilience.

Why is it crucial to foster literacy resilience? The ever-changing reality of recent years demonstrates even more clearly the need for learners to develop skills and practices that will accompany them throughout their lives and assist them in navigating an information- and discourse-rich world. To cultivate the image of the ideal graduate, one of the elementary goals of education is to instill in students' lifelong skills for independent learning. Independent learner development is the pinnacle of education and a global trend reflected in international policy

documents (OECD, 2021). Literacy resilience enables students to become independent learners. A learner with literacy resilience will be able to navigate the technology-rich 21st century, manage his learning, plan a complete learning process from beginning to end, know how to ask questions, know where to find information, employ appropriate strategies, and monitor the process. It is an active process of independent learning in which learners act as their learning agents and are conscious of the process: they plan and manage the learning, observe their actions, evaluate their situation, and direct their actions accordingly. Most independent learning does not occur naturally; therefore, it is essential to cultivate it explicitly and deliberately (Dignath and Veenman, 2021; Vandeveldt et al., 2011). Since the learning discourse is based on literacy skills, the student must have literacy resilience to be an independent learner. Therefore, teachers play an important role in imparting the skills of an independent learner based on linguistic literacy skills (Demirel and Akkoyunlu, 2017).

6 Practical recommendations

To enhance educational outcomes and support the development of students' literacy resilience, several practical recommendations can be drawn. Firstly, it is essential to recognize that literacy refers to a student's capacity to address educational tasks that require reading, writing, speaking, and listening skills (Tolchinsky, 2022). Simultaneously, Self-Regulated Learning (SRL) is crucial for lifelong learning and equipping students to face modern challenges in both educational and non-educational contexts (Šimić Šašić et al., 2023). Integrating these aspects, literacy resilience involves a proactive approach where students develop awareness, self-control, and adaptive strategies to overcome literacy-related obstacles.

Teachers must recognize the importance of fostering SRL (Heaysman and Kramarski, 2022; Kistner et al., 2010; Panadero and Järvelä, 2015; Šimić Šašić et al., 2023) alongside linguistic literacy (Amir, 2024a, 2024b; Tolchinsky, 2022). Linguistic literacy includes navigating between spoken and written discourse to convey clear meanings, focus on goals, and respond logically to speech or written text (Berman and Ravid, 2008; Tolchinsky, 2022). Despite this, studies indicate that teachers often feel uncertain about promoting SRL and stimulate it to a limited extent (Kistner et al., 2010; Šimić Šašić et al., 2023; Vandeveldt et al., 2012).

To achieve academic success and develop lifelong learning skills, students need literacy resilience. Understanding this concept can significantly impact teaching practices and the academic dialogue teachers conduct. It is essential for teachers, pedagogic managers, and policymakers to be informed about both the theoretical and practical aspects of literacy resilience. Teachers' perceptions of students' literacy resilience involve assessing how well students manage literacy-related challenges, apply metacognitive knowledge, and engage in SRL. This assessment can be based on observing how students approach assignments, employ reading and writing strategies, address areas of difficulty, and persist in the face of challenges.

Teachers' perceptions influence their teaching practices, lesson planning, and classroom interactions. Understanding these perceptions provides insights into the effectiveness of literacy instruction and helps educators tailor their methods to better support the development of literacy resilience, ultimately improving overall literacy and learning outcomes. Developing literacy resilience necessitates changes in lesson planning and classroom dialogue,

requiring a comprehensive understanding of integrating SRL skills into reading and writing instruction. Teachers' professional development should address the beliefs that influence their classroom conduct (Heaysman and Kramarski, 2022).

It is important to identify and develop positive beliefs about SRL and literacy skills. Many elementary school teachers believe that students are too young to learn SRL skills or that SRL is an innate characteristic that cannot be taught. Some also believe that such instruction will benefit struggling students the most (Lawson et al., 2019; Vosniadou et al., 2020). Therefore, it is crucial to cultivate positive beliefs about teaching SRL, particularly regarding literacy skills (Heaysman and Kramarski, 2021).

The concept of literacy resilience should be integrated across all disciplines, not just language, to enhance the transfer of skills between disciplines (Avidov-Ungar and Amir, 2018; Heaysman and Kramarski, 2022). Teachers should also develop their ability to assess and evaluate their students' literacy resilience accurately. The reliance on teachers' perceptions, rather than actual student ability, may be a limitation of the current study. Since literacy is embedded in every discipline, establishing a common language and school culture regarding literacy resilience is crucial (Avidov-Ungar and Amir, 2018).

7 Research limitations and recommendations for future research

This study introduces the innovative model of literacy resilience and reveals a significant discrepancy in teachers' perceptions: while most teachers attribute high importance to literacy resilience, they perceive their students' levels as low. This disparity suggests a potential gap in addressing literacy resilience within educational settings. A primary limitation of the study is its reliance on teachers' perceptions and self-reports, without directly examining teaching methods or students' perspectives.

Another limitation of this study is that we did not explicitly test for the normality of our data distribution or report skewness and kurtosis indices. While parametric tests like ANOVA were used based on the assumption of normal distribution, which is common in large samples due to the central limit theorem, future research could benefit from a more detailed examination of data distribution. This could include reporting skewness and kurtosis indices and potentially using non-parametric tests if significant deviations from normality are found. Despite this limitation, the large sample size ($N = 383$) in our study provides some robustness to our findings, as parametric tests are generally considered robust to moderate violations of normality in large samples.

To address these limitations and further our understanding of literacy resilience, future research could investigate several directions or possibilities. One key direction might involve exploring how teachers' beliefs translate into instructional approaches and classroom practices through intervention programs and direct observations, providing crucial insights into the practical implementation of literacy resilience strategies. Another possibility could be examining students' perspectives on their own literacy resilience, offering a more comprehensive view of this concept in practice and enabling a comparison between teacher and student perceptions.

An additional study, already in progress, examines the impact of teachers' deeper understanding of the rationale and pedagogical actions derived from the concept of literacy resilience. Based on the assumption that teachers can influence self-regulated learning (SRL)

in direct and indirect ways (Kistner et al., 2010; Šimić Šašić et al., 2023; Dignath-van Ewijk, 2016; Dignath-van Ewijk and van der Werf, 2012; Lawson et al., 2019), this research investigates how the provision of teaching-learning-assessment materials in line with principles that foster literacy resilience affects teachers' ability to integrate these principles in the classroom. This study is expected to provide important insights into how the concept of literacy resilience can be translated into effective educational practice.

Furthermore, expanding the research population to include other countries would provide global insights into the study's findings. These research directions could broaden our understanding of the concept of literacy resilience and the integration between linguistic literacy and self-regulated learning (SRL). Moreover, they could contribute to developing more effective strategies for fostering literacy resilience in diverse educational contexts.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

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AA: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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