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Development of preparatory grade children's reading skills in Romania

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Abstract

Since 2012, when preparatory grade (PG) became compulsory in Romania for 6-year olds, little understanding has been gained of how children's literacy evolves in PG, although over the same period, Romanian 15-year olds' reading performance has shown no signs of improvement (Noveanu et al, 2023). Children enter school with broadly varying literacy skills depending on several factors. As their academic success is heavily dependent on their early reading, understanding how children's literacy skills evolve in the early years of school is important for both educators and education policy-makers. This article explores the evolution of Romanian PG students' six emergent literacy skills (ELS) and whether four selected factors influence this evolution (progress in ELS and ELS at the end of PG) significantly: ELS at the start of PG; previous attendance of preschool; school attendance frequency in PG; and socio-economic status. ELS were assessed for 2134 PG students at the beginning and at the end of the school year. A specific emergent literacy assessment instrument (Temple and Temple, 2023) was used yielding scores from 0 (minimum) to 150 (maximum). To measure the changes in six emergent literacy skills (ELS) over the course of the PG (Q1) and determine whether a selection of factors influence progress in ELS and final ELS (Q2), the present research design uses a pre- and post-evaluation approach. Descriptive and inferential statistics were employed. We found an average initial score of 40.5 points and a final average score of 117.9 points, with the average 77.4-point progress being significantly influenced by previous attendance of preschool and school attendance in PG, as well as ELS at the start of PG, but not SES. Children's final scores were however influenced significantly by all four investigated factors.

Keywords: emergent literacy skills; progress in preparatory grade; preschool attendance; school attendance; socio-economic status.

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1. Introduction

The present study adds to the findings of an earlier one by Balea et al (2023), when we reported that low SES children who received specifically developed emergent literacy instruction in PG that included developing concepts about print, alphabet and letter-to-sound knowledge, concept of word, phonemic awareness, and word recognition, performed significantly better on these measures at the end of PG than their peers who did not receive such literacy instruction. The same study also found that children who in PG had the lowest scores on the initial assessment performed better on the above-listed measures at the end of PG than their peers with similar scores on the initial assessment in the control group. While the earlier study examined 275 children's progress over a 4-month period only, the present study looked at a 7-month intervention period using 10 sets of literacy materials (six more than in the previous study), and at a much higher number of children (2134).

Like the previous study, this one was also carried out as part of the *Școli cu ScLipici* (Glittery Schools) program, run by the non-governmental organization Noi Orizonturi Foundation, which has been supporting the development of early literacy skills among primary school students, primarily in rural areas, since 2020. The program aims to give children in vulnerable communities a strong start in PG by providing effective literacy learning materials, introducing targeted teaching methods, and helping teachers use literacy assessments to better address early literacy goals (Balea et al., 2023). PG students in Romania do not receive free textbooks; learning materials provided free of charge by the Ministry of Education are only available starting with grade 1 (Ministerul Educației, 2024). In response, in over 200 disadvantaged, mostly rural schools, Noi Orizonturi Foundation has supplied free literacy materials for PG students and a guidebook for teachers, available both in print for direct beneficiaries and as an open-access digital resource. These materials included a teacher's guide, reprintable worksheets, and a set of 10 illustrated children's books for each PG student. The guide and worksheets, which observe the stipulations of the national curriculum, featured activities aimed at developing oral language, phonemic awareness, phonics, decoding, and spelling skills. Teachers received training in ELS assessment, planning and instruction in order to use the literacy materials and learning activities presented in the guidebook effectively. Teachers were also assigned literacy mentors who provided ongoing guidance and support throughout the school year, as needed.

As compared to the business-as-usual situation in PGs across the country, in the classes where the Glittery School program was implemented, the following differed radically, as stated by the teachers: each of the 10 learning units was designed around open access children's books made available for free to each PG student, accompanied by attractively designed worksheets. These children's books are lavishly illustrated, of A5 size, and contain mostly narratives where the characters are friendly animals or children and adults in realistic life situations. One of the 10 books is a non-fiction book. The texts are short (a few short lines per page) and some pages only have illustrations. The second

distinguishing feature of the program is that the teachers assessed their students' ELS, and thus could precisely pinpoint the strengths and areas of growth of each student. It was their first experience with such an assessment and they were provided ample support to carry out the assessments accurately, according to the prescribed protocol. It is important to mention that while the teachers enrolled in the program voluntarily, in some cases, the information reached them via the county school inspectors for primary education.

Our study examines the progress of Romanian PG students in ELS and investigates four factors potentially influencing this progress, including ELS at the start of PG, socio-economic status (SES), prior preschool attendance (PSA), and school attendance (SA). The findings aim to inform early literacy policy and practice especially in vulnerable rural communities, where students' reading literacy performance is significantly lower than in urban areas, as clearly shown by results of various national-level evaluation (Laudoiu, 2022, Noveanu et al, 2023), and therefore the need for support is significantly greater.

2. Literature review

What we know about Romanian students' progress in literacy

Preparatory grade (PG) (also called grade 0) was first introduced in the Romanian education system in 2012, for children aged 6, to bridge preschool and school, and thus facilitate children's adjustment to and integration in the school environment (Institutul de Stiinte ale Educatiei, 2013). A new curriculum for primary grades was launched in 2013, which, within the disciplines called *Communication in Romanian Language* (for PG, grades 1-2), and *Romanian Language and Literature* (for grades 3-4), lays down the envisaged development of primary school children's literacy skills (Ministerul Educatiei Nationale, 2013).

Currently, the first evaluation of Romanian children's literacy skills occurs at the end of grade 2 through standardized national tests introduced in 2014. By this point, students are expected to have mastered foundational literacy skills, and comprehend texts up to 120 words (Ministerul Educatiei Nationale, 2013). The results should inform instruction, so that teachers can optimize student learning and take appropriate measures to support accelerated development of students' literacy skills (Laudoiu, 2022). However, these evaluations are not diagnostic tools for identifying specific reading subskills such as fluency or decoding, leaving gaps in identifying students at risk of falling behind. In addition, the evaluation yields no data about students whose literacy skills are too limited to take this pen-to-paper test. Thus, teachers should dig deeper in a multi-step manner to diagnose students' literacy skills: for poor comprehenders, for example, they should further assess fluency. If fluency is found to be adequate, teachers can conclude that they should concentrate on improving students' comprehension, but if fluency is not adequate, then they should further assess decoding skills. Finally, if decoding is found inadequate, then they should work on word recognition (Jones et al, 2016). When word recognition

needs improvement beyond grade 2, this could be interpreted as a sign that students are still performing at PG level foundational literacy. As 15% of Romanian second graders (and of those in rural schools, over 20%) cannot understand written messages in familiar communication contexts, (Laudoiu, 2022), earlier warning and effective intervention measures are needed to prevent children's failure to learn to read by the end of grade 2: the more these interventions are delayed, the bigger the risk that children will remain further and further behind their grade-level peers (Stanovich, 1986, National Reading Panel, 2000, Torgesen et al, 2001, Fuchs and Fuchs, 2006).

Given the well-established impact of early reading skills on later performance (Juel, 1988; Cunningham & Stanovich, 1997), and the finding that an additional year of schooling can boost students' scores by 20 points in the Program for International Student Assessment (PISA) (Avvisati & Givord, 2021), it would be reasonable to expect improved reading performance by age 15 with the introduction of PG, an extra year of schooling. However, the reading performance of 15-year-old Romanian students has shown no improvement over the past 12 years. In fact, there was a slight decline, with the average reading literacy score dropping from 438 in 2012 to 428 in 2022 (Noveanu et al., 2023); 42% of Romanian 15-year-olds still lack basic reading literacy skills. This percentage could be even higher, as Romania's PISA 2022 coverage rate was only 76%, meaning that 24% of 15-year-olds were either not enrolled, had left school, or were in a grade below 7th due to grade repetition (Noveanu et al., 2023).

In PISA 2022, there was a 93-point gap in average reading literacy scores between students in urban schools (437 points) and those in rural schools (343 points) (Noveanu et al., 2023), highlighting the need for greater support in rural areas. Additionally, the influence of socio-economic background on Romanian students' performance increased to 26% in 2022, compared to 19% in 2018, far exceeding the OECD average of 15% (Noveanu et al., 2023). This underscores the urgent need for effective measures to reduce the impact of socio-economic disadvantages on student outcomes.

Studies of early literacy skills in Romania

While early literacy skills development is extensively studied internationally, and especially in English language environments, in Romania this field of study has received little attention despite the unsatisfactory results in reading performance of 15-year olds, as reported in PISA.

Bodea-Hategan and colleagues (2018) established oral reading fluency norms for PG and grades 1 and 2, designed for use by teachers and language disorder specialists to identify at-risk students and develop tailored intervention plans. For PG, only the number of letters read per minute was recorded, with an average of 57.7 letters read and 2.2 errors per minute. However, the study had an underrepresentation of rural areas, with only 120 students from rural schools compared to 933 from urban schools.

In a longitudinal study, Dolean et al. (2019) found that socioeconomic factors—such as mother's education, family income, housing conditions, and parental employment status—not only affect primary school children's early word reading skills (e.g.,

phonemic awareness and letter knowledge) but also limit their further literacy development. Lervåg et al. (2019) similarly found that socioeconomic background, nonverbal IQ, and school absenteeism influence the development of vocabulary and reading comprehension in Romanian children aged 7-10 living in severe poverty. Their findings suggest that poverty negatively impacts both reading skills and verbal ability development.

Balea et al. (2023) reported that in vulnerable rural communities in Romania, specifically designed literacy instruction in PG—focusing on concepts about print, alphabet and letter-sound knowledge, word recognition, and phonemic awareness—resulted in greater progress than typical "business-as-usual" literacy instruction.

Key emergent literacy skills

Emergent literacy, a term introduced by the New Zealand researcher Marie Clay in 1960s, refers to the early stages of literacy development, beginning in infancy and continuing through preschool to kindergarten. It encompasses children's interactions with written text in everyday experiences, such as listening to stories, recognizing environmental print, and experimenting with drawing and scribbling. At the start of learning to read, children must grasp the alphabetic principle—the understanding that symbols in a writing system represent the sounds of spoken language. Once this insight is acquired, they develop increasingly complex alphabetic decoding skills, progressing from partial to full decoding abilities (Castles, Rastle, & Nation, 2018). Emergent readers acquire critical literacy skills well before formal instruction, which later evolve into conventional reading (Mason, 1980).

Whitehurst and Lonigan (1998) emphasized that emergent literacy is a multifaceted construct involving both mechanical reading skills and broader language and cognitive abilities. They proposed a typology that categorizes emergent literacy skills into two types: inside-out skills, which relate to the mechanics of reading (e.g., phonological awareness, letter knowledge, and decoding), and outside-in skills, which focus on contextual and conceptual aspects of literacy (e.g., vocabulary, narrative skills, and concepts about print). Their review of evidence linking children's literacy environments to skill development found that a) socioeconomic status (SES) influences the quality and quantity of children's literacy experiences, with higher SES children having greater access to rich literacy materials and experiences; b) high-quality early childhood education, which includes structured literacy activities (e.g., phonological awareness games, letter recognition activities), supports the development of emergent literacy skills.

Invernizzi (2003) summarized key findings from reading research, concluding that emergent literacy instruction should include the following components: a) oral language development, including vocabulary and concept growth; b) alphabet knowledge; c) phonological awareness (including phonemic awareness); d) concepts about print (e.g., understanding book organization, print directionality, and letter/punctuation awareness); e) knowledge of letter-sound relationships; and f) the concept of word in text. Bear (2022) added spelling to this list, emphasizing that spelling instruction is a part

of phonics instruction, as it reinforces decoding skills. In addition, Treiman and colleagues (2019) found that, by the end of kindergarten, spelling was a significant predictor of later reading performance, more than just a proxy for phonological awareness and letter-sound knowledge, and therefore it should be considered for inclusion when screening children for future literacy problems.

Emergent literacy assessments

Emergent literacy assessments typically evaluate specific literacy behaviours related to both code-based and language comprehension subskills, with a primary goal of identifying early signs of reading difficulties (i.e., screening). For example, the Virginia Language & Literacy Screening System (University of Virginia, 2024) was developed not only to identify students at risk of reading difficulties but also to assess foundational literacy skills and oral language development, both of which are predictive of later literacy success.

Balea and colleagues (2023) employed an emergent literacy assessment tool in Romanian, which was based on several established instruments, including Marie Clay's Concepts About Print Test (Clay, 2000), Darrell Morris's Beginning Reading Inventory (Morris, 2014), and the Yopp-Singer Test of Phoneme Segmentation (Yopp, 1995). The tool comprises five key components: concepts about print, alphabet knowledge and letter-sound correspondence, concept of word in text, phonemic awareness, and word recognition. This instrument is designed to assess code-based foundational literacy skills and serves as a screening tool, offering teachers valuable insights for instructional planning in preschool and PG and, for struggling readers, beyond.

3. Research aims and questions

This study aimed to assess PG students' ELS and their progress in the development of their ELS during PG depending on four hypothesized influencing factors.

The specific questions that we wanted to answer were:

Q1. How do children progress during PG in the following six ELS: concepts about print (CP), alphabet knowledge (AK), concept of word in text (CoW-T), phonemic awareness (PA), decoding (D) and spelling (S)?

Q2. Do a) ELS at the start of PG; b) previous attendance of preschool (PS); c) school attendance (SA); and d) socio-economic status (SES) influence children's progress in ELS and ELS at the end of PG?

4. Research methodology

4.1 Research design

To measure the changes in six emergent literacy skills (ELS) over the course of the PG year (Q1) and determine whether various factors have an influence on overall progress in ELS over the course of PG and final ELS (Q2), the present research design used a pre- and post-evaluation approach.

4.2 Sample and participants

209 PG teachers voluntarily enrolled in September 2023 in the Glittery Schools program, from across Romania, from schools serving low SES communities, of which 81% rural, located in 16 of 41 different counties of Romania. In total, data from 3,485 students were collected in a standardized form. After applying selection criteria: a) student's age (5-7 year olds), b) no reported developmental or learning disabilities that may affect literacy progress beyond the scope of typical ELS development, c) similar initial evaluation date (September-October 2023) and d) available results for both assessments, at the beginning and at the end of PG, a final sample of 2,134 students of 139 teachers was employed. Of these, 79% were from rural schools, 51% were girls, 87.5% had attended PS, and 47% received social scholarships in PG.

4.3 Data collection

Assessment at the start of PG

At the beginning of the program, teachers enrolled in the program participated in a 4-hour training session on the use of the ELS assessment tool (Temple & Temple, 2023). In addition to the training, teachers were provided with a video tutorial demonstrating how to administer the assessment. Before conducting the actual evaluations, the teachers performed 2-3 practice assessments and received any necessary clarifications.

The initial assessments took place in September-October 2023. In total, data from 3,307 students were collected in a standardized form. Besides the ELS scores, teachers were asked to provide the following information for each child assessed: age, gender, if he/she receives social scholarship and if he/she attended preschool. The data collected was pseudo-anonymised by teachers using unique codes for each student to ensure the confidentiality of data.

Assessment at the end of PG

The final assessments, using the very same instrument and the students' unique codes received in the pre-evaluation phase, took place in May-June 2024. In total, data from 2893 students were collected in a standardized form. Additional information regarding students' frequency of school attendance was collected.

Instrument:

The emergent literacy assessment instrument used to collect data was developed by Temple and Temple (2023) based on Marie Clay's Concepts about Print Test (Clay, 2000), Darrell Morris' beginning reading inventory (Morris, 2014), and the Yopp-Singer test of phoneme segmentation (Yopp, 1995). It consists of six main components that measure children's literacy level, namely: concepts about print text, alphabet and letter-to-sound knowledge, the concept of word in text, phonemic awareness, word recognition and spelling (see table 1). This instrument is an improved version of the earlier emergent literacy assessment instrument in Romanian described by Balea et al. (2023).

4.4 Measures

To test the research questions of the present study, we used the following measures:

EL measures:

Total ELS score (max=150 points, min=0 points) represents the total sum of the six component subscores listed in Table 1, calculated at the start of the school year (initial) and at the end (final).

Table 1

Measured components of emergent literacy

	What was measured in the emergent literacy assessment
Concepts about print (CP) (Max. subscore=6; min. subscore=0)	Knowledge of the lay-out of books; Knowledge that we read the print, not the pictures; Directional orientation of print on the page; Knowledge of the terms "word" and "letter" Ability to distinguish between upper and lower case letters
Alphabet knowledge (AK) (Max. subscore=93; min. subscore=0)	Recognition of letters of the alphabet, both upper and lower case, and production of letters, without regard to their case
Concept of word in text (CoW-T) (Max. subscore=12; min. subscore=0)	Knowledge that spoken language comes in units of words, and that those units are represented in print by clusters of letters separated by spaces; ability to track accurately between the words as they are spoken and the words as they are represented on the page
Phonemic awareness (PA) (Max. subscore=22; min. subscore=0)	Student's ability to segment two-, three- or four-phoneme words into their constituent phonemes
Decoding (D) (Max. subscore=12; min. subscore=0)	Students' ability to decode 2-3 letter words (CV, VC, CVC)
Spelling (S) (Max./min subscore=5/0)	Students' ability to spell 2-3 phoneme/ letter words (CV, VC, CVC)
Total ELS score: max=150; min=0	

Progress in ELS represents the difference between the total final assessment scores and the total initial assessment scores.

Explaining factors:

Categories based on initial total score represent the three groups of students defined by their total initial assessment scores: a) *lowest initial scores (LIS)* (<=30 points); b) *medium initial scores (MIS)* (31 – 90 points); c) *highest initial scores (HIS)* (>90 points). The categories were defined based on the observation that the median score in initial assessment was 28 (rounded up to 30) and on our previous study (Balea et al, 2023), adjusted for the different time frame for initial data collection.

*Preschool (PS) attendanc*e was determined based on information provided by the teachers about whether the student had been enrolled in preschool or not prior to PG, and the categories thus defined are: *PS attendant (PSA), PS non-attendant (PSnA)*.

Depending on their regularity of *school attendance (SA*), students were grouped in three categories of attendance: a) *very good SA ("was absent rarely or not at all this school year")*; b) *good SA ("was absent occasionally this school year"*; c) *poor SA ("was absent very often this school year")*. Information about SA was provided by the teachers.

Socio-economic status was estimated using a proxy measure *the receipt of* a social scholarship in PG. Students who qualified for and received the scholarship were classified as having *low socio-economic status (LSES)*, while those who did not qualify or receive the scholarship were classified as having *non-low socio-economic status (nLSES)*.

4.5 Data analysis

ELS assessment results were analysed to explore progress in ELS and final ELS scores, as well as influences of the four hypothesized factors (initial ELS score, PS attendance, SA and SES).

Descriptive statistics were conducted to summarise children's ELS at the beginning and end of the PG and to describe the distribution of the explaining factors.

Inferential statistics: Repeated measures Welch ANOVA, with Games-Howell post-hoc tests, were conducted to compare pre- and post-PG evaluation scores, with explaining factors as independent variables, and to test for significant differences.

5 Results

This study explored preparatory grade (PG) students' progress in six emergent literacy skills (ELS) over the course of the school year, and how this evolution was influenced by four key factors: initial ELS measured at the start of PG, preschool (PS) attendance, school attendance (SA) in PG, and socio-economic status (SES). On average, students start at a total ELS score of 40.5 (27% of the maximum score of 150) and reach a total ELS final score of 117.9 points (78.6% of the maximum score), i.e. 51.6 percentage points. Progress in percentage points (pp) of the subscores for the six ELS is between 26.7 pp for concepts about print and 56 pp for spelling, with alphabet knowledge progress at 53.2 pp, concept of word in text progress at 47.5 pp, phonemic awareness progress at 49.1 pp and decoding progress at 52.5 pp. The lower progress in CP is not surprising as this skill

should be well developed in early childhood from interactions with children's books, which is normally done in preschool if not in the home. Spelling, on the other hand, is much less developed at the start of PG, as children draw and scribble in early childhood rather than spell, and also because invented spelling is not encouraged in Romanian preschools. The average total final ELS score (117.9) is very similar to what has been found before (Balea et al, 2023). Table 2 also shows differences in average scores by the four categories of students defined based on the investigated influencing factors.

Table 2

Initial and final results by components of emergent literacy and progress for each category of students

	CP (0-6 pts)		**AK** (0-93 pts)		**CoW-T** (0-12 pts)		**PA** (0-22 pts)		**D** (0-12 pts)		**S** (0-5 pts)		**Total score** (0-150 pts)		**P**
Categories	I	F	I	F	I	F	I	F	I	F	I	F	I	F	(pts)
Total (n=2134)	3.9	5.5	24.6	74.1	3.5	9.2	5.1	15.9	2.3	8.6	0.9	3.7	40.5	117.9	77.4
nLSES	4.6	5.9	33.3	82.4	4.5	10.3	6.5	18.1	3.1	10.5	1.2	4.2	53.3	131.5	78.3
LSES	3.7	5.5	15.6	66.9	2.4	8.1	3.5	14	1.3	8.2	0.5	3.3	27.1	106.1	79
PSnA	2.4	5.1	6.4	48.2	1.0	6	1.3	9.4	0.4	5.7	0.1	2.3	11.9	76.7	64.8
PSA	4.4	5.8	27.2	78.4	3.8	9.7	5.6	16.9	2.5	9.8	1	4	44.6	124.7	80
poor SA	2.5	4.8	6.4	36.3	0.9	4	1.2	7.2	0.4	3.5	0.1	1.6	11.7	57.4	45.7
good SA	3.7	5.5	17	64.8	2.6	7.7	3.4	13.2	1.1	7.7	0.5	3	28.3	101.9	73.5
very good SA	4.5	5.8	28.8	82.2	3.7	10.1	5.5	17.6	2.6	10.3	1	4.2	46.1	130.2	84.1
LIS (<=30 pts.)	3.4	5.5	6.5	62.7	1.3	7.6	1.2	12.7	0.2	7.6	0.1	3	12.6	99	86.4
MIS (31 <=90)	4.9	5.9	34.3	84.9	4.9	10.7	7	18.7	3	10.9	1.2	4.4	55.2	135.8	80.6
HIS (>90 pts.)	5.6	6	73.6	91.6	9.1	11.6	15.9	21.1	9.1	11.8	3.8	4.9	117.2	147.1	29.9

Note: I = initial score; F = final score; P = progress; pts = points

5.1. Progress in Emergent Literacy Skills (ELS)

The overall mean progress in total ELS score, on a scale from 0 (minimum) to 150 (maximum) was 77.4 points (initial average total score: 40.5, final average total score: 117.9). Not counting HIS, where the ceiling effect of the assessment instrument was obvious (see Table 3), with the median (50th percentile) already at the maximum score, the most progress was made by the LIS (86.4 points), who started from an average initial score of 12.6 and reached an average of 99 points at the end of PG. This final score, however, is very similar to merely the 25th percentile of the entire sample's final score (100 points), indicating that students under this score should be receiving additional support for good progress in literacy beyond PG.

Table 3

Percentiles of initial and final ELS scores and final ELS scores by categories of students' initial ELS scores

Percentiles	5	10	25	50	75	90	95
Initial_ELS score, all (n=2134)	2	4	10.5	28	61	99.6	121
Final_ELS score, all (n=2134)	23	46	100	138	150	150	150
Final ELS score LIS (<=30 pts.)	13	23	61	112	141	150	150
Final ELS score MIS (31<=90 pts.)	86.6	108	131	145	150	150	150
Final ELS score HIS (>90 pts.)	134.2	140	147	150	150	150	150

5.1.1. *Progress in concepts about print (CP)*. The average initial score for the entire sample was 3.98 points (66.3% of the maximum score of 6), PSnA and poor attendants having the lowest starting CP score (2.49 points, and 2.52 points respectively), and nLSES students the highest (4.62 points, 77%). While PSnA recorded the highest progress in this subskill (gaining 2.6 points), their final score of 5.1 (85%) was still below the average final CP score for the entire cohort (5.58 points, 93%). The poor attendants also had above average progress (2.28 points), but their final score (4.8 points) was the lowest of all categories.

HIS students reached the maximum score (6) by the end of PG, having had the highest initial CP score (5.6 points) and. The fact that this was the only group that reached the maximum score indicates that in all other categories there were still students at the end of PG who were not aware of all the measured concepts about printed text (see Table 1).

5.1.2. *Progress in alphabet knowledge (AK)*. On average, students made a 49.5-point gain in AK, with an average starting score of 24.6, and a final score of 74.1 (on a scale from min=0 points to max=93 points). LSES and nLSES students had a similar progress, somewhat bigger for the LSES group (51.2 vs. 49.07). PSAs had a significantly better starting score (27.2 points) and better progress (51.1) as compared to PSnAs (6.4 points initial score, and a 41.7-point progress). The highest progress (56.2 points, from 6.5 points to 62.7 points) was recorded by LIS students. Except for the HIS students, whose progress was affected by the ceiling effect, the lowest progress in AK was recorded by students with poor SA (29.8 points), who also had the lowest starting score in AK (6.4 points). SES does not seem to impact progress in AK.

AK is known to be the focus of instruction in PG in Romania (Balea et al, 2023) and this ELS has the biggest share of the final score (93 points out of 150). The effects of SA on the AK score are markedly visible: children with very good SA reached an 82.2-point score, gaining an extra 53.4 points of their final score on account of AK, outperforming children with good SA (64.8 final score, 47.8 progress) and those with poor SA (36.3, 29.9 progress). This ELS score is not only significant in itself, but – along with CoW-T and PA) it further impacts decoding (D) and spelling (S), and therefore it should be expected that

scores on AK will be directly proportionate with D and S scores. However, this correlation is not examined in this paper.

5.1.3. *Progress in concept of word in text (CoW-T)*. On average, students progressed by 5.7 points, within the range from 0 to 12, from a starting average score of 3.5. Students with poor SA had the lowest progress (3.08 points), while those with very good SA made the biggest progress (6.4 points). A marked difference in progress occurred between PSAs (5.84 points progress) and PSnAs (4.98 points), with PSAs reaching a final score of 9.7 as compared to 6 points for PSnAs. SES status does not seem to impact progress in CoW-T score, however, the final scores of the two categories are evidently different: 10.3 for nLSES and 8.1 for LSES. SA also has an evident impact on both progress in CoW-T and the final scores, students with very good SA reaching a final score of 10.1 (6.4 progress) and those with poor SA reaching a final score of 4 (3.1 progress).

Pointing at words while pretend-reading, in fact reciting, a rhyme is an important measure of foundational ELS, showing the extent to which children are aware that text on the page is the spoken language represented in writing. Not even the HIS students reached the maximum score, suggesting that instruction should pay more attention to CoW-T.

5.1.4. *Progress in phonemic awareness (PA)*: Students had a mean progress of 10.8 points, within the range from 0 to 22, with a starting score of 5.1. SES seems to have an effect on progress in PA, LSES progressing 10.5 points (initial score: 3.5, final score: 14.0), while nLSES students gained an additional 11.6 points (initial score: 6.5, final score: 18.1). PS attendance also influences both the starting score and progress in PA, with PSAs starting at 5.6 and gaining 11.3 points, and PsnAs starting at 1.3 and gaining 8.1 points. LIS students started at the same level as poor SAs (1.2 points), but while the former gained 11.5 points, the poor SAs gained only about half of that (6 points). The highest progress in PA was achieved by very good SAs (12.1 points).

HIS students did not reach the maximum score, their final score of 21.1 indicating that not all of them could segment correctly 2- to 4-phoneme words. The percentage of their final PA score out of the total maximum score (21.1 out of 22) is the lowest (95.9) as compared to the percentages reached in the other measured ELS: CP (100%), AK (98.5%), CoW-T (96.7%), D (98.3%) and S (98%). This may suggest that PA still receives insufficient attention although teacher training and learning materials encourage focus on PA.

5.1.5. *Progress in decoding (D)*: The average progress in decoding skills (scores ranging from 0 to 12) was 6.3 points, from an average starting score of 2.3. The highest initial and final scores were of the HIS (initial score: 9.1, final score: 11.8). The lowest initial score was 0.2 of the LIS students who, however, gained more points (7.4) in PG than the average (equalling the progress score of nLSES students), but only reached a final score of 7.6

(compared to the nLSES, who reached 10.5 points). PSnAs and students with poor SA had a low staring score as well (0.4), but while PSnAs progressed to a final score of 5.7, the poor SAs only reached a final score of 3. PSAs not only started much better than PSnAs (initial scores of 2.51 and 0.4, respectively), but they also progressed much better (6.9 point progress) than PSnAs (5.2 point progress). There are also marked differences between the groups of nLSES and LSES: the former started at 3.12 and gained 7.4 points, while the latter started at 1.34 and gained 6.9 points.

Decoding skills are expected to reflect mastery of AK and PA, however, in this article we do not have the space to discuss the extent to which D is impacted by AK and PA.

5.1.6. *Progress in spelling (S)*: An average progress of 2.8 points was recorded in S (score range 0 to 5), with an initial score of 0.9. The highest initial and final scores were of the HIS (initial score: 3.8, final score: 4.9). The lowest initial was 0.1 of the LIS students who gained about the same number of points (2.9) in PG as the average (equalling the progress score of nLSES students), but only reached a final score of 3 (compared to the nLSES, who reached a final score of 4.2). PSnAs and students with poor SA had a low starting score as well (0.1), but while PSnAs progressed to a final score of 2.3, the poor SAs only reached a final score of 1.6. PSAs not only started much better than PSnAs (initial scores of 1 and 0.1, respectively), but they also progressed much better (3-point progress) than PSnAs (2.1 point progress). There are also evident differences between the groups of nLSES and LSES: the former started at 1.2 and gained 2.9 points, while the latter started at 0.5 and gained 2.7 points.

Similar to D, spelling skills are expected to reflect mastery of AK and PA, but in this article we do not have the space to discuss the extent to which S is impacted by AK and PA.

5.2. Influencing factors

PG students' final scores in ELS were significantly influenced by each of the four factors studied, and their progress in ELS was also significantly influenced by their PS attendance prior to PG, their SA and their starting scores. However, rather surprisingly, in this sample, we found no influence of SES on the size of progress in ELS over the course of PG (Table 4). Interpretation of these results should consider that SES was measured using a proxy.

5.2.1 *Initial total score*. Students' progress in ELS was analysed by grouping students depending on their initial assessment scores into students with low initial scores, students with medium initial scores and students with high initial scores. ANOVA results showed significant differences between the LIS, MIS, and HIS groups' initial scores ($F = 7312.0$, Welch=6109.7, $p < 0.05$), highlighting the varying levels of progress based on initial scores. ANOVA results also indicated that the differences in progress across these three categories of students were statistically significant ($F = 280.4$, Welch= 834.9, $p < 0.05$). Of the three categories, LIS students made the most progress.

Table 4

Results of Welch ANOVA for Differences in ELS Scores Across Explaining Factors

				Welch			
		F test	**Sig.**	**Test**	**df1**	**df2**	**Sig.**
Socio-economic status	Initial Assessment Total score	273.9	0.00	561.0	1	686.6	0.00
	Final Assessment Total score	225.8	0.00	253.6	1	301.5	0.00
	Progress Score	0.2	0.66	30.1	1	320.5	0.00
	Final Percentage achieved of Total	225.8	0.00	253.6	1	301.5	0.00
Preschool attendance	Initial Assessment Total score	189.9	0.00	183.6	2	447.4	0.00
	Final Assessment Total score	376.2	0.00	256.5	2	291.8	0.00
	Progress Score	34.6	0.00	79.5	2	323.2	0.00
	Final Percentage achieved of Total	376.2	0.00	256.5	2	291.8	0.00
School attendance	Initial Assessment Total score	80.3	0.00	183.6	2	447.4	0.00
	Final Assessment Total score	331.1	0.00	256.5	2	291.8	0.00
	Progress Score	73.4	0.00	79.5	2	323.2	0.00
	Final Percentage achieved of Total	331.1	0.00	256.5	2	291.8	0.00
Initial score categories	Initial Assessment Total score	7312.0	0.00	6109.7	2	599.4	0.00
	Final Assessment Total score	337.4	0.00	618.9	2	1393.8	0.00
	Progress Score	280.4	0.00	834.9	2	1004.7	0.00
	Final Percentage achieved of Total	337.4	0.00	618.9	2	1393.8	0.00

Starting from an average of 12.6 points, these students gained an average of 86.4 points in PG (cf. overall average progress of 77.4 points), which was the highest progress. This indicates a strong improvement, with students in this group benefiting the most from the literacy instruction and interventions during PG. MIS students also demonstrated strong progress, improving by 80.6 points. Their average initial score (55.2) positioned them well above the median total initial score (28 points), and much above the LIS group (12.6 points), but also much below the HIS group (117.2 points), indicating they had ample room for improvement. Their progress suggests that PG was similarly effective in building on their foundational literacy skills, pushing them toward higher levels of proficiency and evidently reducing the gap between them and the HIS group at the end of PG (average final score for MIS – 135.8 points compared to average final score for HIS – 147.1 points). Students with the HIS (91-150 points) exhibited the smallest progress, gaining 29.9 points on average, having started from an average of 117.2 points and reaching the highest final score (147.1 points). This smaller improvement is likely due to the ceiling effect, these students having less room for growth

on the measures of the present study. Many of the ELS components may have already been mastered by these students at the beginning of PG, so their progress was naturally limited compared to the other groups.

In the final assessment, the maximum score of 150 points is reached at the 75th percentile, which means that at least 25% of the students are perfectly prepared for grade 1 in terms of total mastery of code-based ELS. On the other hand, for students who are below the 25th percentile (below 100 points) in the final ELS assessment, additional support should be provided; otherwise, their progress in grade 1 is likely to be unsatisfactory.

The maximum score of 150 points was reached by at least half of the students in the HIS group, by over 25% the MIS students and by over 10% of the LIS. The value of the 10th percentile of the HIS students is approximately the same as the value of the 75th percentile of the LIS.

5.2.2. *Preschool attendance*. PSAs entered PG with stronger literacy foundations (44.6 points) and made greater progress (83.1 points) reaching a final score of 124.7 points, compared to PSnAs, who had an initial score of 11.9, and a final score of 76.7 points, gaining 64.8 points in PG. ANOVA results indicated a significant difference between the PSAs and PSnAs, with PSAs making significantly greater progress ($F = 34.6$, Welch=79.5, $p < 0.05$). This indicates that early childhood education plays a critical role in setting the stage for later literacy development. PSnAs not only had significantly lower ELS but also made significantly less progress in PG than their PSA peers.

5.2.3. *Socio-economic status*. LSES students started with a much lower average initial score (27.1 points), and their average final score at 106.1 points remained much below the nLSES students' score (131.5 points), although both groups made nearly identical progress (79 points for LSES and 78.3 points for nLSES). ANOVA results showed no significant difference in progress between LSES and nLSES groups ($p > 0.05$), suggesting that SES did not influence literacy growth in PG. This suggests that the PG instruction received had no effect on closing the gap in ELS accounted for by SES. On the other hand, it did potentially prevent the widening of the gap. Unlike previous studies in Romania (Dolean et al, 2019), which found that SES affected primary students' progress in reading beyond differences due to initial reading levels, our study did not find any significant differences in progress in ELS in the course of PG on account of SES. This is not to say that different growth rates may not appear later, however. In addition, our study was conducted on a group of students who received literacy learning materials and who were instructed by teachers trained specifically to help them have a good start in PG.

5.2.4. *School attendance*. Students with very good SA had the highest average initial score (46.1 points) and the most progress (84.1 points) of the three categories defined based on school attendance, also reaching the highest total final ELS score (130.2 points) of the three categories of SA. The ANOVA analysis revealed significant differences in progress between the SA groups ($F = 73.4$, $p < 0.05$), with better attending students making significantly more progress. The group with good SA had a starting score of 28.3

points and gained 67.9 points, which led to a total final score of 101.9 points. Students who missed school very often (poor SA) started at the lowest level of the three groups (11.7 points) and gained the fewest points (45.7 points) ending PG with a total score of 57.4 points. These results highlight the importance of consistent SA for literacy development in PG, and the implication is that schools need to proactively support improvement in SA. If screening or initial assessment of ELS is performed, then teachers will know that students who have the lowest starting scores are also likely to develop poor attendance unless efforts are made to ensure early successful literacy learning experiences, which may act as a motivating factor for SA.

6. Discussion

As stated previously, the present study aimed to answer two questions: 1. How do children progress during PG in six broadly accepted ELS measures, skills that the national curriculum for PG also mandates: concepts about print (CP), alphabet knowledge (AK), concept of word in text (CoW-T), phonemic awareness (PA), decoding (D) and spelling (S)? 2. Do a) ELS at the start of PG; b) previous attendance of preschool (PS); c) school attendance (SA); and d) socio-economic status (SES) influence children's progress in ELS and their ELS at the end of PG?

The answer to the first question is that, overall, students progress from 40.5 points (27% of the maximum score of 150) to 117.9 points (78.6% of the maximum score), i.e. 51.6 percentage points. Progress in percentage points (pp) of the subscores for the six ELS is between 26.7 pp for concepts about print and 56 pp for spelling, with alphabet knowledge progress at 53.2 pp, concept of word in text progress at 47.5 pp, phonemic awareness progress at 49.1 pp and decoding progress at 52.5 pp.

As concerns the four hypothesised influencing factors, progress in ELS has been found to be being significantly influenced by previous attendance of preschool and school attendance in PG, as well as ELS at the start of PG, but not SES. Children's final scores were however influenced significantly by all four investigated factors.

6.1 Pedagogical implications

Our study leads to the conclusion that there are specific pedagogical implications related strictly to literacy instruction in PG, as well as some more general pedagogical implications.

The fact that at the end of PG only one category of students – HIS – demonstrated that they were aware of all the measured basic concepts about print suggests CP needs more attention in PG. Although sets of 10 books were provided for each child, and training for teachers including how to use these children's books, instruction may not have paid enough attention to this basic emergent literacy skill. Children who did not attend PS and those with LSES are likely to have had limited interactions with books prior to PG, as suggested by their low CP initial scores and below average final scores. In order to become competent readers, children need to interact with books as early as possible, but

in PG at the latest; teachers should ensure that books not only are available for children, but that they are supported in becoming aware of the specific aspects of children's books.

AK is clearly the focus of instruction in PG. However, the fact that other essential ELS such as the concept of word in text and phonemic awareness are not mastered fully, not even HIS students reaching the maximum score, suggests that instruction should focus more on these ELS. Especially PA should also receive more attention, as suggested by the fact that HIS students are the farthest, out of all considered ELS, from totally mastering this particular ELS (their final score is 95.9% of the total score of 22 points for PA, the lowest among all the measured ELS). PA training, especially when practiced with letter-sound associations, helps children decode by enabling them to break words into phonemes and map those phonemes to corresponding letters. Moreover, in transparent orthographies such as Romanian, PA is a strong predictor of reading success, as decoding is more straightforward compared to opaque orthographies.

Assessment of specific ELS skills – if done individually, with each students in the class, in the first weeks of PG – can clearly inform the teacher about students' literacy instruction needs. Early identification and targeted support for struggling readers are essential. This study shows that students who entered PG with the most limited literacy skills made the most progress when provided with the right instruction such as in Noi Orizonturi Foundation's program. To maximize these gains, teachers should implement screening and diagnostic assessments early in the year to identify students in need of additional help. Especially students up to the 25th percentile (with approximate starting ELS scores of maximum 10) would benefit from targeted interventions, such as small group instruction, individualized tutoring, or other forms of additional practice with foundational literacy skills.

The study highlights the importance of differentiated instruction in addressing the diverse literacy needs of students. We found that students enter PG with broadly different ELS, and while those who started with the lowest initial scores showed the highest progress (86.4 points for the lowest scores group compared to 80.6 for the medium scores group; the highest scores group's progress being limited by the ceiling effect of the measures), the final ELS scores of the lower starters (99 points) remained much lower than those of the medium scores group (135.8) and of the highest scores group (147.1), with the lowest group not managing to reach the highest scores group's initial score (117.2) and being similar merely to the 25th percentile of the final total score for the entire sample (100 points). This suggests that teachers should focus on foundational skill-building for students who start at a lower level while providing more advanced literacy activities for higher-achieving students to maintain their engagement and growth. Tailoring instruction to individual student needs is likely to ensure that all learners can make meaningful progress throughout the year.

The fact that in the final ELS assessment 25% of the students reached the maximum score of 150 points, and another 25% had final ELS scores of up to 100 points (Table 3) signalling their need for additional support for success in grade 1 may suggest that

cooperative learning groups with heterogeneous composition could be set up so that the more advanced students would support the less advanced ones including in their literacy class. Notwithstanding, additional resources are certainly necessary beyond cooperative learning and other approaches of differentiated instruction out of class as well (e.g. support teachers for small group or one-on-one tutoring), especially for the students up to the 10th percentile.

Consistent school attendance is crucial for literacy skills development. Students with very good SA in PG made much greater progress in their ELS (84.1 points) than those with good SA (73.5 points) and those with poor SA (38.3 points). Moreover, low initial ELS seems to predict school attendance: students with poor SA had not only the lowest final scores (57.4 points), but also the lowest initial ELS scores (11.7). Teachers – and schools – can expect that children with low initial ESL are likely to have poor attendance unless support is provided for their early success in ELS. Hence, the importance of promoting not only regular attendance but also ensuring that students who start with low ESL receive the necessary support in a timely manner to reduce the gap between them and their more advanced peers as early as possible.

6.2 Policy implications

Based on the findings of this research, several policy implications can be derived to improve early literacy outcomes in PG students, especially for those from disadvantaged backgrounds. As vulnerabilities appear to overlap largely (LSES, PSnA, poor SA, LIS), all these factors should be considered in attempts to prevent failure in literacy skills development.

Regular literacy assessments from preschool through PG can help identify at-risk students early and tailor – as well as provide the necessary – interventions for better progress in PG. Data should inform differentiated literacy instruction in the classroom, and resource allocation at school level to optimize outcomes, including individual or small group support in school or other community settings outside the classroom. For LSES students, early intervention is particularly important, and it should be based on thorough assessment of ELS. Although these children start with lower literacy skills, they can make equal progress with their nLSES peers, provided they are given the right support. Free literacy resources, along with well-structured programs and well-trained professionals are critical for helping these students catch up, especially in rural areas where access to educational resources may be limited.

Preschool attendance plays a crucial role in boosting initial literacy skills, especially for LSES children. Policy measures are therefore needed beyond the existing ones to increase enrolment and attendance in order to give all children a strong foundation for success in preparatory grade (PG). Engaging parents and securing support from social services and community organizations have been reported to yield good results in preschool attendance. Preschool can also be the environment where parents/ carers can learn to support their children with early literacy skills.

Regular school attendance remains a key factor in literacy development. Absenteeism can severely hinder progress in literacy skills development. National, but also local policies focused on support measures are needed to proactively identify and remove barriers which prevent children from attending school. In this case, too, engaging parents/carers and the school community are crucial. Schools in disadvantaged communities most likely require additional resources to keep students consistently engaged in their education.

Finally, improving early literacy instruction is essential to bridging the gap between students, which can sometimes span more than a year. Enhancing teacher training, utilizing effective literacy assessments, and providing access to educational resources will equip educators to better support students' literacy growth, ensuring that no child risks failure in literacy. As concerns instruction, although we did not find that the PG instruction provided in “Glittery Schools” had any effect on closing the gaps in ELS accounted for by SES, LSES and nLSES having progressed the same but from significantly different staring points, it did potentially prevent the widening of the gap between different SES students. This would be a plausible explanation given the aims of the ”Glittery Schools” program, which provided not only free literacy resources but also training and substantial support for teachers.

6.3 Limitations of the study and directions for future research

Despite the large data set of 2134 children, the present study relies on a convenience sample, consisting of teachers that voluntarily enrolled in the Glittery Schools program, who were already aware of the difficulties in teaching all children to read and write. These teachers received instruction on how to develop ELS. There is no data to compare how children progress in PG in a regular setting with teacher-administered assessments and self-reported data, which could introduce biases due to variations in how teachers conducted and scored the assessments, despite the one-day training.

The study tracked literacy progress only during the preparatory grade (PG), providing insights into one academic year, not addressing how these gains impact long-term academic performance. Additionally, with 83% of the sample from rural areas, the findings may not be generalizable to urban settings with different literacy challenges. While key factors like PS attendance, SES, and SA were considered, other important influences, such as home literacy practices, parental involvement (which have strong connections with SES), and teacher experience, were not included.

Future studies should explore instruction practices in ELS development, as well as the extent to which – and the manner in which – especially the ELS that are less commonly part of instruction in PG in Romanian classrooms, such as CP, CoW-T and PA, are addressed.

Conclusions

The study highlights the critical role of the preparatory grade (PG) in developing emergent literacy skills (ELS) among young learners, particularly for those from disadvantaged backgrounds. Key findings suggest that preschool attendance, regular school attendance, and targeted support for students from low socio-economic status (SES) backgrounds are essential for maximizing literacy gains.

Preschool attendance provides a strong foundation for literacy development, and expanding access to high-quality early childhood education is crucial, especially in rural and disadvantaged areas. Consistent school attendance significantly influences progress, underscoring the need for policies to address chronic absenteeism, which disproportionately affects students from low SES backgrounds. Additionally, differentiated instruction is necessary to ensure that both low- and high-achieving students are sufficiently supported and challenged.

Lastly, a data-driven approach is essential for early identification of struggling readers and for designing effective literacy interventions. Regular assessments from preschool through PG can inform policy decisions and resource distribution, ultimately helping to close the literacy gap and promote long-term academic success.

In summary, ensuring equitable access to early literacy support, promoting regular school attendance, and empowering teachers with continuous professional development are key to improving literacy outcomes and reducing disparities in early education.

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