



CLASS Improves Outcomes In Language* And Literacy**

(Pre-K-3rd Grade)

Young children's language and literacy outcomes are important indicators of school readiness and predictors of later academic success¹. Children's skills are not automatic, but developed through conversation, engagement with language- and print-rich environments²⁰. Teachers can promote language and literacy outcomes through the creation of such environments and through interactions in formal lessons and informal moments throughout the day²¹. Effective interactions with teachers, peers, and classroom materials enhance children's literacy development by modeling new language, inviting children's verbal expression through questions and conversation, engaging students in interesting and meaningful lessons, and encouraging persistence and attention when learning new concepts.

Consistent evidence, from ⁵⁷ studies, demonstrates that children perform better in literacy and language when they are in classrooms that provide effective teacher-student interactions, as measured by the Classroom Assessment Scoring System (CLASS). These findings hold up across pre-k to 3rd grade and among diverse populations of children such as dual-language learners (DLL) and children who live in poverty.

The CLASS measures the effectiveness of interactions among teachers and children in the classroom. The Pre-K CLASS framework categorizes interactions into ten dimensions across three broad domains: Emotional Support, Classroom Organization, and Instructional Support.

Emotional Support assesses how teachers support children's social and emotional functioning. Classroom Organization captures how teachers manage children's time, attention, and behavior. Instructional Support measures how teachers promote higher-order thinking skills and language.

All three CLASS domains support children's language and literacy skills both within one school year and over the course of several school years. Children who experienced warm and supportive relationships, engaging lessons, effective feedback and language modeling were more likely to perform better on measures of vocabulary, phonological awareness, letter-word recognition, and reading comprehension. Children in Head Start specifically showed improved letter naming and vocabulary skills when in classroom with higher levels of Instructional Support, and DLL children showed increased skills in phonological awareness, letter naming, and vocabulary in classrooms with effective Emotional Support and Instructional Support.

Below, we highlight key studies describing the critical link between effective teacher-child interactions and children's language and literacy outcomes. The complete reference list is available upon request.

**Language skills are defined as skills that help children hear and use oral language such as receptive and expressive vocabulary, phonological awareness, and pragmatics.*

***Literacy skills are defined as skills that help children read and write such as letter naming, letter-word recognition, print awareness, decoding, encoding, and reading comprehension.*



Children's Literacy and Language Gains are Stronger in Classrooms Offering More Effective Instructional Support

Instructional Support interactions include how teachers promote higher-order thinking skills such as analysis and reasoning, provide specific feedback in response to children, and support receptive and expressive language development. When children experience more effective Instructional Support, they gain in multiple language and literacy skills such as letter-word recognition, vocabulary, and phonological awareness. For young children, these skills are critical for later reading ability and academic success.

- Children in an urban Head Start program demonstrated stronger letter-word recognition and picture vocabulary when provided with more effective Instructional Support interactions².
- In a national sample of Head Start programs, children who experienced higher Instructional Support showed increased letter naming and phonological awareness abilities, two key literacy skills that support children's later decoding during the reading process. Children whose mothers had lower education levels demonstrated higher vocabulary skills only in classrooms with more effective Instructional Support³.
- Even after accounting for child and family characteristics, children who experienced higher Instructional Support in preschool demonstrated better receptive vocabulary and rhyming skills⁴.
- Both teacher ratings of children's language and literacy skills and children's expressive vocabulary scores were higher in classrooms with more effective Instructional Support⁵.
- Instructional Support also acted as a buffer between income levels and children's literacy skills. Children from lower-income backgrounds scored higher on tests of letter-word recognition when they attended classrooms with higher Instructional Support⁹.



Effective Emotional Support and Classroom Organization also Promote Literacy and Language Outcomes

Emotional Support and Classroom Organization also support the development of language and literacy skills. When teachers relate warmly and sensitively to children, follow children's leads, and facilitate engaging lessons, children are more likely to demonstrate skills such as identifying letters and using expressive vocabulary.

- When Emotional Support and Classroom Organization averages were at or above ⁶, children demonstrated higher levels of phonological awareness and print awareness, respectively. These links were not seen in classrooms that did not meet these thresholds¹⁰.
- When children in an urban Head Start program were in classrooms with higher Classroom Organization, they performed better on tests of letter-word recognition skills².
- In general, children showed lower levels of literacy skills when in classrooms with high levels of challenging behavior. However, when teachers demonstrated high levels of Emotional Support, children displayed higher letter-word recognition despite the presence of challenging behaviors².
- Children demonstrated more early writing skills, phonological awareness, listening comprehension, alphabet knowledge, and book knowledge when there were higher levels of Classroom Organization¹³.
- Unfortunately, adverse effects of low levels of Emotional Support also exist. Children in classrooms with lower Emotional Support demonstrate fewer receptive vocabulary skills¹⁴.



Dual-Language Learners' Language and Literacy Outcomes Benefit from More Effective Interactions Across Domains

Children's gains in language and literacy skills are seen for children who are dual language learners. Across the CLASS domains, DLL children who experienced higher quality interactions performed better on tests of vocabulary, phonological awareness, and letter-word recognition.

- Preschool-aged, dual language learners performed better on vocabulary tests in both English and Spanish when in classrooms with higher Instructional Support scores. Additionally, children who scored lowest on English vocabulary at the beginning of the preschool year benefited the most from effective instructional interactions⁶.
- When children are in classrooms with higher proportions of DLL children, Concept Development (a dimension of Instructional Support) acts as a buffer between classroom composition and vocabulary growth. Children who experienced higher levels of support for higher order thinking showed increases in their expressive vocabulary skills⁷.
- For DLL children specifically, higher Language Modeling promoted children's gains in language and literacy skills, specifically receptive vocabulary, phonological awareness, and print awareness⁸.
- Spanish-speaking preschoolers showed gains in letter-word recognition when they experienced more effective Emotional Support. Additionally, these gains were multiplied when high Emotional Support was combined with instruction in their home language¹¹.
- Dual language learners who experienced increased levels of Emotional Support performed better on tests of letter naming¹².
- Dual Language Learners' language skills were higher in both pre-k and kindergarten when they experienced effective Emotional and Instructional Support in their Head Start preschool classrooms¹⁵.



Gains in Literacy and Language Last into Elementary School

When preschool and kindergarten children experience higher quality teacher-child interactions in all three domains, they demonstrate increased levels of language and literacy skills in first and third grade.

- Students demonstrated stronger reading comprehension and literacy skills at the end of third grade if they had more years of better teaching. While all students benefited from access to more effective teachers, it was most critical for students who entered kindergarten with low literacy skills¹⁶.
- First-grade children who experienced higher overall interaction quality in kindergarten were more likely to score well on tests of sight word and decoding skills than first-graders who were in classrooms with less effective interactions¹⁷.



Children's Language and Literacy Skills Benefit Most from Multiple Years of Effective Interactions

Although children experience gains in language and literacy skills from one year of quality interactions, they perform even better when they are in high quality classrooms for multiple years (e.g., pre-k and kindergarten as compared to only pre-k).

- Preschool children who had higher Instructional Support performed better on receptive and expressive vocabulary in kindergarten. If these children attended a kindergarten classroom with higher Instructional Support as well, they received an added boost in their language skills¹⁸.
- Similarly, when children experienced more effective Classroom Organization and Instructional Support in both preschool and kindergarten, they showed higher levels of literacy skills (letter-word identification and phonemic awareness) at the end of kindergarten¹⁸.
- Children in preschools classrooms with higher Instructional Support showed gains in language and literacy skills such as receptive vocabulary and rhyming skills at the end of preschool. The students who went on to experience higher Instructional Support in kindergarten showed additional gains in expressive vocabulary and letter-word recognition at the end of kindergarten¹⁹.

Taken together, these studies show that children benefit from effective interactions as measured by the CLASS. When children experience sensitive and responsive teachers, child-led and engaging instruction, positive and structured classroom management, and in-depth support for cognition and language, they demonstrate higher language and literacy skills.

References Cited

1. Fitzpatrick, C., Boers, E., & Pagani, L.S. (2020). Kindergarten readiness, later health, and social costs. *Pediatrics*, 146 (5). Retrieved from: <https://pediatrics.aappublications.org/content/early/2020/10/29/peds.2020-0978>
2. Bulotsky-Shearer, R.J., Bichay-Awadalla, K., Bailey, J., Futterer, J., Qi, C.H. (2020). Teacher-child interaction quality buffers negative associations between challenging behaviors in preschool classroom contexts and language and literacy skills. *Topics in Early Childhood Special Education*, (need volume and pages).
3. Han, J., Schlieber, M., & Gregory, B. (2017). Associations of home and classroom environments with Head Start Children's code-related and oral language skills. *Journal of Education for Students Placed at Risk*, 22 (4), 200-219.
4. Mashburn, A.J., Pianta, R.C., Hamre, B.K., Downer, J.T., Barbarin, O.A., Bryant, D., & Burchinal, M. (2008). Measures of classroom quality in pre-kindergarten and children's development of academic, language, and social skills. *Child Development*, 79 (3), 732-749.
5. Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early, D., Clifford, R., & Barbarin, O. (2008). Ready to learn? Children's pre-academic achievement in pre-Kindergarten programs. *Early Childhood Research Quarterly*, 23(1), 27-50.
6. Hindman, A.H., & Wasik, B.A. (2015). Building vocabulary in two languages: An examination of Spanish-speaking Dual Language Learners in Head Start. *Early Childhood Research Quarterly*, 31, 19-33.
7. Neugebauer, S., Sandilos, L., Coyne, M., McCoach, D.B., & Ware, S. Highly potent and vastly conditional instructional practices: Variations in use and utility of language interactions for kindergarten. *Early Education and Development*, 31 (4), 541-560.
8. Sonnenschein, S., Thompson, J. A., Metzger, S. R., & Baker, L. (2013). The relation between preschool teachers' language and gains in low income English language learners' and English speakers' vocabulary, early literacy and math skills. *NHSA Dialog: A Research-to-Practice Journal for the Early Childhood Field*, 16, 64-87.
9. Anderson, S. & Phillips, D. (2017). Is Pre-K classroom quality associated with kindergarten and middle-school academic skills? *Developmental Psychology*, 53 (6), 1063-1078.
10. Hatfield, B.E., Burchinal, M.R., Pianta, R.C., & Sideris, J. (2016). Thresholds in the association between quality of teacher-child interactions and preschool children's school readiness skills. *Early Childhood Research Quarterly*, 36, 561-571.
11. Burchinal, M., Field, S., Lopez, M.L., Howes, C., & Pianta, R. (2012). Instruction in Spanish in pre-kindergarten classrooms and child outcomes for English language learners. *Early Childhood Research Quarterly*, 27(2), 188-197.
12. Downer, J.T., Lopez, M.L., Grimm, K.J., Hamagami, A., Pianta, R.C., & Howes, C. (2011). Observations of teacher-child interactions in classrooms serving Latinos and dual language learners: Applicability of the Classroom Assessment Scoring System in diverse settings. *Early Childhood Research Quarterly*, 27(1), 21-32.
13. Maier, M. F., Vitiello, V. E., & Greenfield, D. B. (2012). A multilevel model of child- and classroom-level psychosocial factors that support language and literacy resilience of children in Head Start. *Early Childhood Research Quarterly*, 27(1), 104-114.
14. Weiland, C., Ulvestad, K., Sachs, J., & Yoshikawa, H. (2013). Associations between classroom quality and children's vocabulary and executive function skills in an urban public prekindergarten program. *Early Childhood Research Quarterly*, 28(2), 199-209.
15. Reilly, S.E., Johnson, A.D., Luk, G., Partika, A. (2020). Head Start classroom features and language and literacy growth among children with diverse backgrounds. *Early Education and Development*, 31 (3), 354-375.
16. Vernon-Feagans, L., Mokrova, I.L., Carr, R.C., Garrett-Peters, P.T., Burchinal, M.R., & The Family Life Project Key Investigators. (2019). Cumulative years of classroom quality from kindergarten to third grade: Prediction to children's third grade literacy skills. *Early Childhood Research Quarterly*, 47, 531-540.
17. Lee, P., & Bierman, K.L. (2016). Profiles of kindergarten classroom and elementary school contexts: Associations with the first-grade outcomes of children transitioning from Head Start. *The Elementary School Journal*, 117(1), 119-142.
18. Carr, R.C., Mokrova, I.L., Vernon-Feagans, L., & Burchinal, M.R. (2019). Cumulative classroom quality during pre-kindergarten and kindergarten and children's language, literacy, and mathematics skills. *Early Childhood Research Quarterly*, 47, 218-228.
19. Cash, A. H., Ansari, A., Grimm, K. J., & Pianta, R. C. (2019). Power of Two: The Impact of 2 Years of High Quality Teacher Child Interactions. *Early Education and Development*, 30(1), 60-81.
20. Honig, A.S. (2017). Language insights for caregivers of young children. *Early Child Development and Care*, 87, 527-541.
21. Saracho, O.N. (2017). Literacy and language: New developments in research, theory, and practice. *Early Child Development and Care*, 87, 299-304.

Additional References

1. Araujo, M.C., Carneiro, P., Cruz-Aguayo, & Yyann-Schady, N. (2016). Teacher quality and learning outcomes in kindergarten. *Quarterly Journal of Economics*, 131(3), 1415-1453.
2. Bulotsky-Shearer, R. J., Bell, E. R., Carter, T. M., & Dietrich, S. L. (2014). Peer play interactions and learning for low-income preschool children: The moderating role of classroom quality. *Early Education and Development*, 25(6), 815-840.
3. Burchinal, M., Howes, C., Pianta, R., Bryant, D., Early, D., Clifford, R., & Barbarin, O. (2008). Predicting child outcomes at the end of kindergarten from the quality of pre-kindergarten teacher-child interactions and instruction. *Applied Development Science*, 12(3), 140-153
4. Burchinal, M., Vandergrift, N., Pianta, R., & Mashburn, A. (2010). Threshold analysis of association between child care quality and child outcomes for low-income children in pre-kindergarten programs. *Early Childhood Research Quarterly*, 25(2), 166-176.
5. Curby, T.W., Brock, L.L., & Hamre, B.K. (2013). Teachers' emotional support consistency predicts children's achievement gains and social skills. *Early Education and Development*, 24, 2929-309.
6. Curby, T. W., & Chavez, C. (2013). Examining CLASS dimensions as predictors of pre-k children's development of language, literacy, and mathematics. *NHSA Dialog*, 16, 1-17.
7. Curby, T. W., LoCasale-Crouch, J., Konold, T. R., Pianta, R. C., Howes, C., Burchinal, M., ... & Barbarin, O. (2009). The relations of observed pre-K classroom quality profiles to children's achievement and social competence. *Early Education and Development*, 20(2), 346-372.
8. Curby, T. W., Rimm-Kaufman, S. E., & Ponitz, C. C. (2009). Teacher-child interactions and children's achievement trajectories across kindergarten and first grade. *Journal of Educational Psychology*, 101(4), 912-925
9. Dobbs-Oates, J., Kaderavek, J. N., Guo, Y., & Justice, L. M. (2011). Effective behavior management in preschool classrooms and children's task orientation: Enhancing emergent literacy and language development. *Early Childhood Research Quarterly*, 26(4), 420-429.
10. Goble, P., Sandilos, L.E., Pianta, R.C. (2019). Gains in teacher-child interaction quality and children's readiness skills: Does it matter when teachers start? *Journal of School Psychology*, 73, 101-113.
11. Gosse, C. S., McGinty, A. S., Mashburn, A. J., Hoffman, L. M., & Pianta, R. C. (2014). The role of relational and instructional classroom supports in the language development of at-risk preschoolers. *Early Education and Development*, 25(1), 110-133.
12. Guo, Y., Justice, L. M., Kaderavek, J. N., & McGinty, A. (2012). The literacy environment of preschool classrooms: Contributions to children's emergent literacy growth. *Journal of Research in Reading*, 35(3), 308-327.
13. Guo, Y., Piasta, S. B., Justice, L. M., & Kaderavek, J. N. (2010). Relations among preschool teachers' self-efficacy, classroom quality, and children's language and literacy gains. *Teaching and Teacher Education*, 26(4), 1094-1103.
14. Hamre, B., Hatfield, B., Pianta, R., & Jamil, F. (2014). Evidence for General and Domain Specific Elements of Teacher-Child Interactions: Associations With Preschool Children's Development. *Child Development*, 85(3), 1257-1274.
15. Hindman, A. H., & Wasik, B. A. (2013). Vocabulary learning in Head Start: Nature and extent of classroom instruction and its contributions to children's learning. *Journal Of School Psychology*, 51(3), 387-405.
16. Hong, S.L.S., Sabol, T.J., Burchinal, M.R., Tarullo, L., Zaslow, M & Peisner-Feinberg, E.S. (2019). ECE quality indicators and child outcomes: Analyses of six large child care studies. *Early Childhood Research Quarterly*, 49, 202-217.
17. Hu, B.Y., Zhou, Y., Chen, L., Fan, X., & Winsler, A. (2017). Preschool expenditures and Chinese children's academic performance: The mediating effect of teacher-child interaction quality. *Early Childhood Research Quarterly*, 41, 37-49.
18. Hu, B. Y., Fan, X., Wu, Y., LoCasale-Crouch, J., & Song, Z. (2020). Teacher-child interaction quality and Chinese children's academic and cognitive development: New perspectives from piecewise growth modeling. *Early Childhood Research Quarterly*, 51, 242-255
19. Keys, T. D., Farkas, G., Burchinal, M. R., Duncan, G. J., Vandell, D. L., Li, W., ... & Howes, C. (2013). Preschool center quality and school readiness: Quality effects and variation by demographic and child characteristics. *Child development*, 84(4), 1171-1190.
20. Leyva, D., Weiland, C., Barata, M., Yoshikawa, H., Snow, C., Treviño, E., & Rolla, A. (2015). Teacher-child interactions in Chile and their associations with prekindergarten outcomes. *Child Development*, 86(3), 781-799
21. Logan, J. A. R., Piasta, S. B., Justice, Laura M., Schatschneider, C., & Petrill, S. (2011). Children's attendance rates and quality of teacher-child interactions in at-risk preschool classrooms: Contribution to children's expressive language growth. *Child & Youth Care Forum*, 40(6), 457-477.
22. Lopez, F., Scanlan, M., & Gorman, B.K. (2015). Language modeling and reading achievement: Variations across different types of language instruction programs. *Reading & Writing Quality*, 31(1), 1-29.
23. Ma, X., Shen, J., Brandi, K., Lu, X., & Baron, M. (2020). Effects of classroom practices and funding streams on early childhood learning outcomes. *Early Education and Development*, DOI: 10.1080/10409289.2020.1742039
24. Maier, M. F., Vitiello, V. E., & Greenfield, D. B. (2012). A multilevel model of child- and classroom-level psychosocial factors that support language and literacy resilience of children in Head Start. *Early Childhood Research Quarterly*, 27(1), 104-114.
25. Mashburn, A. J., Justice, L. M., Downer, J. T, & Pianta, R. C. (2009). Peer effects on children's language achievement during pre-kindergarten. *Child development*, 80(3), 686-702.
26. Moiduddin, E., Aikens, N. Tarullo, L., West, J., & Xue, Y., (2012). Child Outcomes and Classroom Quality in FACES 2009. OPRE Report 2013-37a. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
27. Nguyen, T., Ansari, A., Pianta, R.C., Whittaker, J. V., Vitiello, V. E., & Ruzek, E. (2020). The classroom relational environment and children's early development in preschool. *Social Development*, 29, 1071-1091.
28. Niklas, F. & Tayler, C. (2018). Room quality and composition matters. Children's verbal and numeracy abilities in Australian early childhood settings. *Learning and Instruction*, 54, 114-214.
29. Ponitz, C.C., Rimm-Kaufman, S.E., Brock, L.L., & Nathanson, L. (2009). Early adjustment, gender differences, and classroom organizational climate in first grade. *The Elementary School Journal*, 110(2), 142-162.
30. Reid, J. L., & Ready, D. D. (2013). High-quality preschool: The socioeconomic composition of preschool classrooms and children's learning. *Early Education And Development*, 24(8), 1082-1111.
31. Sabol, T.J., Bohlmann, N.L., & Downer, J.T. (2018). Low-income ethnically diverse children's engagement as a predictor of school readiness above preschool classroom quality. *Child Development*, 89(2), 556-576.
32. Silinskas, G., Nurmi, J-E., Pakarinen, E., Larkkanen, M-K., & Poikkeus, A-M. (2017). Classroom interaction and literacy activities in kindergarten: Longitudinal links to Grade 1 readers at risk and not at risk of reading difficulties. *Contemporary Educational Psychology*, 51, 321-335.
33. Tambyraja, S.R., Farquharson, K., Logan, J.A.R., & Justice, L.M. (2015). Decoding skills in children with language impairment: contributions of phonological processing and classroom experiences. *American Journal of Speech-Language Pathology*, 24(2), 177-188.
34. Vitiello, V. E., Moas, O., Henderson, H. A., Greenfield, D. B., & Munis, P. M. (2012). Goodness of fit between children and classrooms: Effects of child temperament and preschool classroom quality on achievement trajectories. *Early Education And Development*, 23(3), 302-322.
35. Wasik, B. A., & Hindman, A. H. (2011). Improving vocabulary and pre-literacy skills of at-risk preschoolers through teacher professional development. *Journal of Educational Psychology*, 103(2), 455.
36. Weiland, C., Ulvestad, K., Sachs, J., & Yoshikawa, H. (2013). Associations between classroom quality and children's vocabulary and executive function skills in an urban public prekindergarten program. *Early Childhood Research Quarterly*, 28(2), 199-209.
37. Xu, Y. (2012). Examining the concurrent validity of assessing preschool language and literacy skills. *Early Child Development and Care*, 182(6), 741-754.
38. Xu, Y., Chin, C., Reed, E., & Hutchinson, C. (2014). The effects of a comprehensive early literacy project on preschoolers' language and literacy skills. *Early Childhood Education Journal*, 42(5), 295-304.