Longitudinal replication of a Tier II intervention model for struggling readers across grades 1 - 12

Kathleen J. Brown, Matthew K. Fields, Grace Craig & Kelly P. Robbins

(Kathleen.Brown@utah.edu) (Matt.Fields@utah.edu) (Grace.Craig@utah.edu) (Kelly.P.Robbins@utah.edu)

University of Utah Reading Clinic

(www.uurc.org | UofUReadingClinic)

INTRODUCTION

The purpose of this study was to investigate the longitudinal efficacy of a Tier II intervention model (U Steps) for struggling readers in grades 1 through 12 in Title I schools. U Steps is based on several quasi-experiments published in the research literature nearly 20 years ago and implemented consistently since then. The model spans the course of reading development from "Learning About Print" (Early Steps [ES]), to "Breaking the Code" (Next Steps [NS]), to "Going For Fluency" (Higher Steps [HS]).
Instructional components include: assisted reading of new text, systematic, explicit word study, and repeated readings delivered in small groups or 1:1 tutorials for 45 minutes.

METHODS

- **Participants**: 2,955 ethnically and linguistically diverse struggling readers (as identified by screening instruments and teacher recommendation) from 80 Title I schools in grades 1 through 12. Approximately 1,400 educators from those schools provided intervention during a year-long clinical practicum provided by the UURC, funded by NCLB/ESSA funds.
- **Procedures**: From 2003 to 2017, students received year-long U Steps intervention from teachers and para-professionals (averaging 85 sessions for ES; 52 sessions for NS/HS). Each student was pretested in the fall and posttested in the spring by trained examiners; to ensure scoring fidelity all calculations were verified by a second examiner.
- **Measures**:
  - Criterion-referenced tests
    - Passage Reading
      - Reading Level Assessment (RLA)—grade level scores based on oral reading rate and accuracy.
    - Word Reading
      - Automatic Word Reading (Flash)—*timed oral* reading of graded word lists leveled by frequency and complexity; grade level scores based on accuracy in a 300 millisecond presentation.
  - Norm-referenced tests
    - Passage Reading
      - DIBELS Oral Reading Fluency (ORF) & Maze (DAZE)—expected growth is met when raw score gain ≥ EOY Benchmark Goal – BOY Benchmark Goal.
      - Test of Silent Contextual Reading Fluency (TOSCRF)—*timed* reading based on identification of word boundaries within sentences; grade equivalent scores, standard scores, and percentile ranks
    - Word Reading
      - WRMT--Word Attack; *untimed* nonsense word reading; grade equivalent scores, standard scores, and percentile ranks
      - Test of Silent Word Reading Fluency (TOSWRF)—*timed* word reading based on identification of word boundaries; grade equivalent scores, standard scores, and percentile ranks

RESULTS

- The results of this study suggest that the U Steps intervention model contributes to robust gains in the reading skills of Tier II students. Consistent gains were documented across
  - time (14 years)
  - developmental reading levels ("Learning About Print"→"Going for Fluency")
  - socio-economic status
  - ethnicities
  - English language development
  - special education status
  - schools
  - instructor experience/certification (teacher/paraprofessionals)
  - assessment types (criterion and norm-referenced using timed and untimed presentations)
- **Passage Reading**: Across all years and subgroups, results indicated that students' passage reading skills improved from pre to post. Overall results suggest that the intervention is effective at improving contextual reading skills.
- **Word Reading**: Across all years and subgroups, results indicated that students' isolated word reading and nonsense word reading skills improved from pre to post. Overall results suggest that the intervention is effective at improving students' understanding of graphophonemic relationships and identifying high frequency words with irregular graphophonemic patterns.

UURC Reading Level Assessment / Informal Reading Inventory (RLA)

U-Steps (Tier II) Students

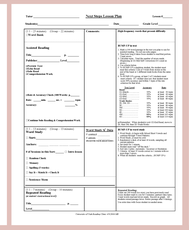
School Year	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	All Years
n	129	145	105	252	159	179	94	61	245	180	175	290	32	26	2071
Ave. Base - Ave. Exit	1.73 - 2.61	1.72 - 2.70	1.76 - 2.80	1.80 - 2.84	2.08 - 3.33	2.42 - 3.67	2.94 - 4.14	2.56 - 3.60	1.88 - 2.98	2.71 - 3.82	2.30 - 3.28	2.11 - 3.02	2.34 - 3.25	2.00 - 2.85	2.12 - 3.18
Ave. Gain (SD) 1.00 = 1 year's gain	**0.88** (0.65)	**0.99** (0.75)	**1.04** (0.86)	**1.04** (1.01)	**1.25** (0.89)	**1.25** (0.73)	**1.20** (0.84)	**1.04** (0.83)	**1.09** (0.66)	**1.11** (0.71)	**0.98** (0.72)	**0.91** (0.66)	**0.91** (0.78)	**0.85** (0.64)	**1.05** (0.78)

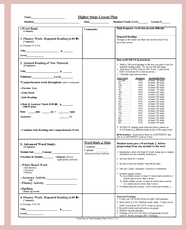
UURC Reading Level Assessment (RLA)

U Steps (Tier II) Students All Years

Model	Early Steps	Next Steps	Higher Steps
n	533	1329	177
Ave. Base - Ave. Exit	1.55 – 2.42	2.08 – 3.18	4.00 – 5.13
Ave. Gain (SD)	**0.87** (0.56)	**1.10** (0.84)	**1.13** (0.80)

LESSON PLAN FORMS



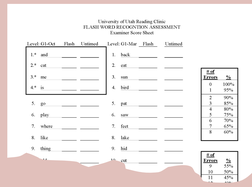


UURC Automatic Word Reading (Flash)

U Steps (Tier II) Students

School Year	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	All Years
n	125	110	24	92	34	180	61	72	41	30	769
Ave. Base - Ave. Exit	2.22 – 3.38	2.49 - 3.64	2.58 - 3.82	3.28 - 4.31	3.10 - 3.88	0.96 - 2.36	1.29 – 2.52	1.96 – 2.99	1.72 – 2.54	3.27 - 3.69	2.06 - 3.19
Ave. Gain (SD) 1.00 = 1 year's gain	**1.16** (0.76)	**1.15** (0.75)	**1.24** (0.83)	**1.04** (1.09)	**0.78** (1.14)	**1.39** (0.76)	**1.23** (0.53)	**1.03** (0.71)	**0.82** (0.89)	**0.42** (0.69)	**1.13** (0.84)

FLASH SCORING FORM



DIBELS Oral Reading Fluency (ORF)

U Steps (Tier II) Students

School Year	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	All Years
n	8	11	21	103	477	513	827	583	2543
% at Benchmark Base - Exit	0.0% – 0.0%	0.0% – 0.0%	19.0% – 23.8%	37.9% – 43.7%	56.4% – 58.1%	56.1% – 56.1%	59.3% – 59.1%	68.1% – 64.5%	58.5% – 58.2%
% at Exit Benchmark and/or Making Expected Growth	**62.5%**	**18.2%**	**57.1%**	**70.9%**	**71.3%**	**67.1%**	**75.5%**	**74.8%**	**72.2%**

DIBELS Maze (DAZE)

U Steps (Tier II) Students

School Year	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	All Years
n	3	12	308	152	794	581	1850
% at Benchmark Base - Exit	0.0% – 0.0%	8.3% – 16.7%	32.8% – 48.1%	39.5% – 49.3%	59.6% – 47.5%	60.1% – 55.9%	53.2% – 50.1%
% at Exit Benchmark and/or Making Expected Growth	**0.0%**	**41.7%**	**68.8%**	**67.8%**	**57.6%**	**64.2%**	**62.2%**

Woodcock Reading Mastery Test Word Attack (WRMT-R/NU WA)

All U Steps (Tier II) Students

School Year	2006-2007	2007-2008	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	All Years
n	126	107	90	33	183	61	70	670
Ave. Raw Base – Exit [Grade Equivalents]	16.4 – 22.7 [2.8 – 4.0]	17.8 – 23.9 [3.2 – 4.3]	21.6 – 28.0 [3.8 – 5.1]	20.0 – 24.4 [3.4 – 4.3]	9.6 – 19.1 [2.0 – 3.3]	11.5 – 18.2 [2.2 – 3.2]	16.7 – 22.7 [3.0 – 4.0]	15.2 – 22.3 [2.7 – 3.8]
Ave. SS Base – Exit [PR Equivalents]	**100.0 – 102.7** [50.0 – 57.1]	**99.6 – 102.1** [48.9 – 55.6]	**99.9 – 104.5** [49.7 – 61.8]	**96.4 – 97.9** [40.5 – 44.4]	**102.1 – 105.7** [55.6 – 64.8]	**99.3 – 100.7** [48.1 – 51.9]	**106.5 – 107.1** [66.8 – 68.2]	**100.9 – 103.7** [52.4 – 59.7]
Ave. SS Gain (SD) [PR Equiv. Gain]	**2.7** (8.2) [7.1]	**2.5** (5.8) [6.7]	**4.6** (8.5) [12.1]	**1.5** (4.0) [3.9]	**3.6** (9.8) [9.2]	**1.4** (8.6) [3.8]	**0.6** (6.6) [1.4]	**2.8** (8.2) [7.3]

WRMT Word Attack (WRMT-III-B WA)

All U Steps (Tier II) Students

School Year	2014-2015	2015-2016	All Years
n	12	30	42
Ave. Raw Base – Exit [Grade Equivalents]	10.1 – 13.2 [1.9 – 2.6]	10.4 – 13.9 [1.9 – 2.9]	10.3 – 13.7 [1.9 – 2.9]
Ave. SS Base – Exit [PR Equivalents]	**79.9 – 82.1** [9.0 – 11.6]	**84.9 – 89.6** [15.7 – 24.4]	**83.5 – 87.5** [13.6 – 20.2]
Ave. SS Gain (SD) [PR Equiv. Gain]	**2.2** (13.8) [2.6]	**4.7** (9.5) [8.7]	**4.0** (10.8) [6.6]

Test of Silent Contextual Reading Fluency (TOSCRF-2)

All U Steps (Tier II) Students

School Year	2014-2015	2015-2016	All Years
n	382	25	407
Ave. Raw Base – Exit [Grade Equivalents]	45.6 – 66.1 [2.2 – 3.2]	39.8 – 59.4 [2.0 – 3.0]	45.3 – 65.6 [2.2 – 3.2]
Ave. SS Base – Exit [PR Equivalents]	**88.0 – 99.6** [21.0 – 50.0]	**80.7 – 94.4** [10.0 – 35.0]	**87.5 – 99.3** [21.0 – 47.0]
Ave. SS Gain (SD) [PR Equiv. Gain]	**11.7** (8.2) [29.0]	**13.6** (11.3) [25.0]	**11.8** (8.4) [26.0]

Test of Silent Word Reading Fluency (TOSWRF-2)

All U Steps (Tier II) Students

School Year	2015-2016
n	30
Ave. Raw Base – Exit [Grade Equivalents]	67.2 – 81.9 [2.5 – 3.5]
Ave. SS Base – Exit [PR Equivalents]	**89.8 – 97.9** [25.0 – 45.0]
Ave. SS Gain (SD) [PR Equiv. Gain]	**8.1** (6.0) [20.0]

CONCLUSIONS

Aggregated and annual data from 2003 to 2017 suggest that the Tier II intervention model under investigation has consistent and measurable efficacy in helping struggling readers in grades 1 through 12 improve their reading abilities.

Moreover, students above G2 typically began intervention a grade level or more behind, yet, on average, in 45 U Steps sessions they made a year or more of growth, met or exceeded benchmarks and/or improved their standard scores on multiple norm-referenced and criterion-based measures.

The results also suggest that the Tier II model is robust in use by a large number of educators with a wide range of experience and abilities in variable school settings.
A caveat is noted: all educators had received at least one year of intensive, ongoing professional development.

REFERENCES (original studies)

Morris, D., Shaw, B., & Perney, J. (1990). Helping low readers in grades 2 and 3: An after-school volunteer tutoring program. *Elementary School Journal*, *91* (2), 133-150.
Invernizzi, M., Rosemary, C., Juel, C., & Richards, H.C. (1997). At-risk readers and community volunteers: A 3-year perspective. *Scientific Studies in Reading*, *1* (3), 277-300.
Morris, D., Tyner, B., & Perney, J. (2000). Early Steps: Replicating the effects of a first-grade reading intervention program. *Journal of Educational Psychology*, *92* (4), 681-693.
Brown, K.J., Morris, D., & Fields, M.K. (2005). Intervention after grade one: Serving increased numbers of struggling readers effectively. *Journal of Literacy Research*, *37* (1), 61-94.
Morris, D., Bloodgood, J.W., Lomax, R.G., & Perney, J. (2003). Developmental steps in learning to read: A longitudinal study in kindergarten and first grade. *Reading Research Quarterly*, *38* (3), 302-328.