

making a meaningful difference

February 2014

Evaluation of the Starfall Kindergarten Curriculum in Roaring Fork School District

Findings from the 2012-13 Evaluation

SUBMITTED TO:
Starfall Education



120 Wall Street
21st Floor
New York, New York 10005
212-425-8833
www.metisassociates.com

metis associates

Table of Contents

ABSTRACT	ii
EXECUTIVE SUMMARY	iii
INTRODUCTION	i
A. Background	1
B. Evaluation Purpose	2
STUDY DESIGN	3
A. Research Questions	3
B. Research Methods	4
PROGRAM IMPLEMENTATION	6
A. Stakeholder Impressions of the Starfall Training and Support	6
B. Use of Curriculum Materials	7
C. Overall Impressions of the Starfall Curriculum	11
D. Impact on Teacher Practice	12
E. Perceptions of Impact on Students	13
STUDENT OUTCOMES FROM STANDARDIZED TESTS	15
A. 2012-13 Cross-sectional analyses (same year- different schools)	15
B. Historical Cross-sectional analyses (different year- same schools)	17
CONCLUSIONS AND RECOMMENDATIONS	20
A. Key Takeaways	20
B. Recommendations	21
APPENDIX	22

Abstract

Metis Associates collaborated with Starfall to develop a study to assess the implementation and overall impact of the Starfall Kindergarten Reading and Language Arts Curriculum on student reading achievement. The study includes cross-sectional analyses of 431 Title-I kindergarten students, 267 who received Starfall instruction and 164 who did not receive Starfall. Results of the study show that a significantly larger proportion of Starfall students achieved proficiency or higher in the spring administration of the Developmental Reading Assessment- 2nd edition (DRA-2), than did non-Starfall students (58.8% versus 31.1%). Starfall students also achieved significantly higher average DRA-2 scores than non-Starfall students (4.7 versus 3.1). Statistically significant differences were observed for all tested subgroups including students with Limited English Proficiency status. The study also includes an historical cross-sectional analysis by school, summary of teacher surveys, as well as a discussion of the study's limitations and recommendations for expanded future studies.

Executive Summary

Based on their success with www.Starfall.com, Starfall Education developed a complete reading and language arts curriculum for widespread implementation in kindergarten classrooms throughout the country. Developed by experienced kindergarten educators, Joan Elliott and Pam Ferguson, the Kindergarten Reading and Language Arts Curriculum is comprised of paper-based and online materials (www.More.Starfall.com) that are aligned with the Common Core Standards and focus on phonemic awareness, phonics, vocabulary, fluency, comprehension and writing. In addition to the curriculum, Starfall Education provides on-site training and technical assistance to support kindergarten teachers and school administrators with implementation. The overall goals envisioned for the Starfall Kindergarten Reading and Language Arts Curriculum are to motivate learning among children through an interactive and engaging curriculum; provide opportunities for child-directed instruction in the classroom; and improve the reading skills of all learners, including English language learners and struggling readers.

In 2011, Starfall Education contracted with Metis Associates, a national research and evaluation consulting firm, to assess curriculum implementation and the impact of curriculum adoption on student reading achievement. For the study, Metis and Starfall Education selected Roaring Fork School District in Glenwood Springs, CO as the focus because of their recent adoption (2011-12 school year) of the Kindergarten Reading and Language Arts Curriculum.

To investigate the implementation and overall impact of the kindergarten curriculum, Metis designed, administered and analyzed the Starfall Teacher Survey in spring, conducted site visits, and collected historical district-wide data to conduct the outcome analyses for reading achievement focusing on the difference between students instructed with the Starfall curriculum and students not instructed with Starfall.

Comparative analyses based on the implementation of the Developmental Reading Assessment- 2nd edition (DRA-2) demonstrate that Starfall students far outpaced non-Starfall students in reading proficiency for all student subgroups. Students at schools with longer tenure of Starfall implementation were also more likely to outperform students at schools that were new to Starfall during the 2012-13 school year. Additional comparative analyses of reading proficiency among kindergartens at the same schools reveal that schools achieved higher proportions of kindergarten reading proficiency after Starfall curriculum adoption.

In the 2012-13 cross-sectional analyses, Starfall students demonstrated greater reading proficiency on the DRA-2 than non-Starfall students across all student groups. A significantly larger proportion of Starfall students tested at the proficient or higher levels in spring 2013 than non-Starfall students (58.8% versus 31.1%). Starfall students averaged 4.7 while the average for non-Starfall students was significantly lower at 3.1. Statistically significant differences were also observed for all tested subgroups. Larger proportions of Limited English Proficient (LEP), non-LEP, male and female Starfall students tested at the proficient or higher levels in spring 2013 than non-Starfall students.

A review of the data and analyses from both the implementation and student outcome portions of the evaluation revealed a set of key takeaways and recommendations for the future which are presented in the study. To confirm that outcomes can be generalized, Metis suggests that Starfall Education conduct a study in other school districts of varying sizes and geography (e.g., urban/suburban) using a large randomized controlled trial design.

Introduction

A. Background

In 2002, the Polis-Schutz family founded Starfall Education to create a fun, engaging and accessible resource to support early literacy among all young children. Starfall Education developed a free educational website (www.Starfall.com) to teach young children to read through a series of online interactive games and activities, grounded in a systematic phonics approach. The website launched with much acclaim from teachers and educators. Based on the success of www.Starfall.com, Starfall Education decided to create a complete reading and language arts curriculum as an expansion of their important work in literacy.¹

In 2009, Starfall Education successfully released their Kindergarten Reading and Language Arts Curriculum in school districts throughout the country. Their kindergarten curriculum includes paper-based and online materials (www.More.Starfall.com) that are aligned with the Common Core Standards and focus on phonemic awareness, phonics, vocabulary, fluency, comprehension and writing. In addition to supplying the curriculum materials, Starfall provides on-site training and technical assistance to support kindergarten teachers and school administrators with implementation. The overall goals envisioned for the Starfall Kindergarten Reading and Language Arts Curriculum are to:

- Motivate learning among children through an interactive and engaging curriculum;
- Provide opportunities for child-directed instruction in the classroom; and
- Improve the reading skills of all learners, including English language learners and struggling readers.

Since the inception of the program, Starfall has introduced the Kindergarten Reading and Language Arts Curriculum to a number of school districts across the country to much acclaim. Summer 2011 marked Starfall's most recent collaboration with the Roaring Fork School District in Glenwood Springs, CO. Glenwood Springs Elementary initially approached Starfall Education about curriculum adoption at the recommendation of one their teachers who had previous experience teaching Starfall. Glenwood Springs Elementary and other schools in the district faced ongoing challenges with preparing kindergarteners, who typically enroll in school with little exposure to reading and literacy, for first grade. Teachers were particularly interested in Starfall because of their positive experiences with www.Starfall.com. In the first phase of implementation during the 2011-12 school year, the Roaring Fork School District introduced

"We had Houghton Mifflin as our kindergarten curriculum before [Starfall] and it was outdated. I think it was a consensus among us that we needed a new program and we knew about the benefits of Starfall because we've used it online for a few years. We were excited to get it in our classrooms, especially for the English language learners." - Teacher

¹ The curriculum was created by experienced educators, Joan Elliott and Pam Ferguson. Ms. Elliott is a veteran kindergarten teacher with 30 years of experience in the North Carolina and Texas public schools. In addition to the public school systems, Ms. Elliott also taught at the education departments at the University of North Carolina Asheville and University of Texas at Brownsville and was the recipient of the Christa McAuliffe Teaching Award and a Fulbright fellowship. Ms. Ferguson is also a seasoned educator with 40 years of experience as a kindergarten teacher at the Holy Family Catholic School in St. Petersburg, Florida. She has also served on the Florida Catholic Conference Accreditation team since 1994.

the curriculum to all kindergarten classes at Glenwood Springs Elementary. In the 2012-13 school year, two of the three remaining elementary schools adopted the Kindergarten Reading and Language Arts Curriculum and included all students at Sopris Elementary and a subset of students at Basalt Elementary. The remaining school, Crystal Rivers, opted out of curriculum adoption and served as a point of comparison in the study.

B. Evaluation Purpose

Recognizing the importance of evaluation in facilitating program improvement, Starfall Education contracted with Metis Associates, a national research and evaluation consulting firm, to investigate how the curriculum is being implemented at schools and the impact of curriculum adoption on student reading achievement in the Roaring Fork School District. The results of the 2012-13 study are presented in this report and include five sections:

- **Introduction.** The first section of this report (this section) introduces Starfall and their Kindergarten Reading and Language Arts Curriculum, describes the major goals of the evaluation, and presents an overview of the structure of the evaluation report.
- **Study design.** The study design outlines the evaluation methodology and the major research questions.
- **Program implementation.** The program implementation section presents the major evaluation findings from qualitative data collection endeavors, including findings around program usage, teacher opinions of the training and materials, overall impressions of the curriculum and perceptions of program impact.
- **Student outcomes.** The student outcomes section presents the evaluation findings related to reading achievement among Starfall students.
- **Conclusions and recommendations.** The final section of this report offers conclusions and recommendations for future implementation.

Study Design

Metis Associates collaborated with Starfall to develop an appropriate study designed to assess the implementation and overall impact of the Kindergarten Reading and Language Arts Curriculum on student reading achievement. The evaluation was guided by the following set of research questions and methods.

A. Research Questions

Implementation

- What is the nature and quality of the implementation of the Starfall Kindergarten Reading and Language Arts Curriculum?
 - What are stakeholders' overall impressions of the curriculum?
 - In what ways has the adoption of the kindergarten curriculum impacted teachers' practices in the classroom?
 - To what extent (if at all) have there been perceived impacts on students since the implementation of the curriculum?
 - What are stakeholders' impressions of the major challenges associated with implementation? How can the program be improved?
-

Student Outcomes

- What is the impact of exposure to the Starfall Kindergarten Reading and Language Arts Curriculum on student reading achievement?
 - How does the reading performance of Starfall students compare to non-Starfall students?
 - How does the reading performance of current (2012-13 school) kindergarteners who participate in Starfall compare with the reading performance of previous (2010-11, 2011-12 school year) kindergarteners within the same schools?
-

B. Research Methods

Methods designed to address the research questions include:

- Administration and analysis of a Starfall Teacher Survey;
- School site visits; and
- Analyses of student reading achievement data.

Each of these methods is described briefly below.

Starfall Teacher Survey. Metis managed the online administration of the Starfall Teacher Survey in spring 2013 to all Roaring Fork School District teachers who adopted the kindergarten curriculum in their classrooms during the 2012-13 school year. A total of 16 Starfall teachers responded to the survey, representing an 88.9 percent response rate. Table 1 presents the response rates by school.

Table 1. Teacher Survey Response Rates

Elementary School	Number Completed	Response Rate
Basalt (N= 5)	7	100%
Glenwood Springs (N= 5)	4	80.0%
Sopris (N= 8)	5	62.5%
All Schools (N= 18)	16	88.9%

Data from the teacher survey reveal that respondents have an average of 11 years of experience as a full-time teacher and one year of experience teaching the Starfall kindergarten curriculum. While respondents taught a range of students at their schools, the majority instructed general education students (87.5 percent) and/or English language learners (62.5 percent). Almost a third of teachers also instructed special education students (31.3 percent).

School Site Visits. In April 2013, a researcher from Metis conducted school site visits at each of the three implementing elementary schools, which included the following activities:

- **focus groups** with a total of 23 teachers,
- **interviews** with four school administrators (four principals and an assistant principal), and
- **school tours**, including classroom observations and informal conversations with students and teachers.

Student Reading Achievement Data. The Metis research team acquired historical district-wide data to conduct the outcome analyses for reading achievement. Student demographic data (e.g., sex, race/ethnicity, Limited English Proficiency status), and end-of-year Developmental Reading Assessment® 2nd edition (DRA 2) scores were collected for the 2010-11, 2011-12 and 2012-13 school years to facilitate two separate sets of outcome analyses:

- **2012-13 Cross-sectional analyses (same year – different schools)** focused on the difference between students instructed with the Starfall curriculum² and students not instructed with Starfall³. Direct comparisons of DRA 2 achievement between the Starfall and non-Starfall students were conducted while accounting for possible subgroup (e.g., Limited

² The “Starfall” group: Students at Glenwood Springs, Sopris, and approximately half of the students at Basalt

³ The “non-Starfall” group: Students at Crystal River and the remainder of the students at Basalt.

English Proficient, sex) differences. Further analyses were also conducted based on years of school experience with the curriculum to determine whether school “comfort level” with curriculum implementation had an effect on achievement.⁴

- **Historical cross-sectional analyses (different years – same schools)** focused on the differences between school performance before and after Starfall implementation. These analyses compared student DRA 2 performance in the 2012-13 school year to student performance in the school year prior to Starfall curriculum implementation⁵. To further control for the possible confounding effects of differences between student populations from year to year, propensity score matching techniques were utilized to equate student groups on key characteristics such as sex, race/ethnicity and Limited English Proficiency.
-

⁴ Analysis methodologies used to compare outcomes for groups included Yates chi-square, t-tests for independent samples, analyses of variance and multiple linear regressions. Group summary statistics and values for appropriate test statistics are provided in Appendix B.

⁵ For Basalt and Sopris, the school year prior to Starfall implementation was 2011-12. For Glenwood Springs it was 2010-11.

Program Implementation

This section includes a summary of the implementation findings, beginning with stakeholder impressions of the curriculum training and support, an assessment of teachers' use of the Starfall Reading and Language Arts Curriculum materials and resources, overall impressions of the curriculum, and a discussion of the perceived impacts of Starfall on teacher practice and perceptions of impact on students.

A. Stakeholder Impressions of the Starfall Kindergarten Curriculum Training and Support

Stakeholders generally felt that Starfall provided a range of quality training and technical assistance to support curriculum implementation. Teachers felt well supported and were comfortable with using the kindergarten curriculum in their classrooms.

- Prior to and during curriculum implementation, Starfall offered a range of training and technical support to schools, including:
 - **Spring 2012 training.** The initial half-day, on-site training introduced new teachers to the kindergarten curriculum, which included an overview of the curriculum materials and general instructions on how to implement it in the classroom. Second year curriculum adopters from Glenwood Springs Elementary School also shared their experiences with teachers who were new to Starfall.

“I think the people from Starfall build nice relationships and rapport with us as a school community. This was a big strength. Often times it can feel very corporate working with curriculum folks.” - Principal
 - **Fall 2012 training.** The second half-day, on-site training session focused more extensively on the day-to-day curriculum implementation through the lens of the Teacher's Guide. The Starfall trainer reviewed the Teacher's Guide, discussed the structure of the units and lessons, and advised teachers on ways in which they can modify activities or lessons to address possible time constraints in the field.
 - **School site visits.** In spring 2013, trainers visited the three implementing schools to observe individual Starfall classrooms and meet with teachers to discuss their experiences with the curriculum and solicit feedback on ways in which the curriculum could be improved.

“We could always email them [Starfall trainers], if we had questions. We had iPad issues at the beginning of the year. We mentioned it, and it was fixed literally within three days.” - Teacher
 - **Technical assistance.** Starfall trainers were accessible to teachers and administrators via phone and email throughout the school year. Teachers most frequently contacted Starfall trainers about missing curriculum components and additional literature sources cited in the materials.
- Data from the site visit interviews and focus groups suggest that Starfall offered **high quality training and technical assistance**. Teachers and school administrators described the trainings

as “informative,” were comfortable providing feedback to Starfall on the curriculum materials and generally felt well supported by Starfall staff. The majority of teacher survey respondents reported that:

- Starfall training was relevant to their work (78.6 percent);
 - They were sufficiently trained to use Starfall in the classroom (60.0 percent); and
 - They felt supported in their use of Starfall (76.7 percent).
- The effectiveness of the training is clearly reflected in the teacher survey data. Most teacher survey respondents (93.8 percent) noted that they were *moderately* or *very comfortable* with using Starfall in their classrooms.
 - When asked about additional training and support needed, some first-year Starfall teachers thought that they could have benefited from modeling or observing classrooms prior to implementation. In contrast, other first- and second-year Starfall teachers believed Starfall provided all necessary training and supports, and that no additional assistance could replace their year of experience with implementation.

B. Use of the Starfall Curriculum Materials

Teachers regularly implemented the Starfall Reading and Language Arts Curriculum and used approximately half the materials, tools, and resources in their instruction. Teachers often modified the activities or supplemented lessons with additional materials and resources to address students’ varied individual needs. Overall, teachers found the curriculum materials easy to use.

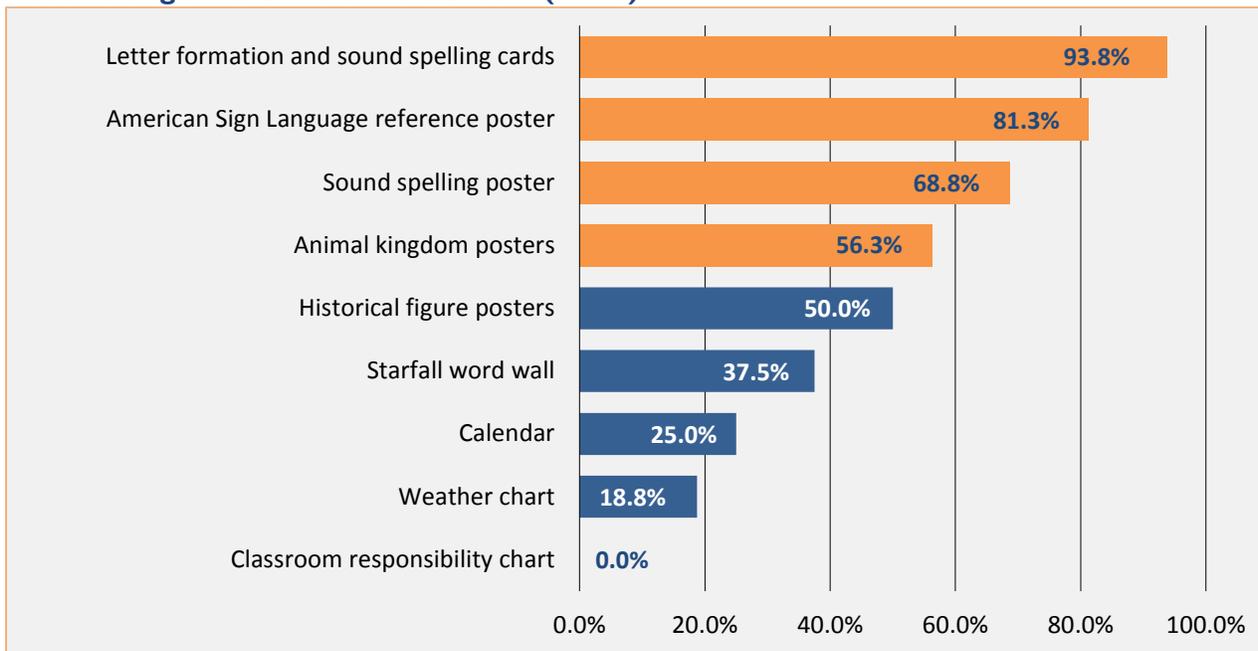
- Data from the teacher survey show that, on average, respondents used the Starfall kindergarten curriculum on a **daily basis** for an average of **64 minutes per session**.
- During the site visit focus groups, both first- and second-year Starfall kindergarten teachers indicated that they did not find it necessary to implement the curriculum strictly as outlined in the Teacher’s Guide. Because the materials are flexible, teachers often made modifications based on the needs of their students or time constraints. For example, teachers may have:
 - Opted to implement whole group activities in a small group, or vice versa because certain groups of students required additional attention.
 - Skipped activities or changed the sequence of activities based on the pace of their students or the limited time available for the lesson. (E.g. Teachers sometimes skipped the science and social studies content because of time constraints.)

“At first I followed along with the units, the letters being introduced, and the sight words. But then we started implementing sight words much earlier than advised because they needed to know them much earlier. Then, I followed along with the books and the theme of it, but then I usually create my own activities because of the time frame. —Teacher

While all teachers may have skipped some of the curriculum activities, second-year Starfall teachers were more comfortable with doing so than first-year Starfall teachers.

- In addition to the curriculum modifications, teachers often supplemented Starfall with other materials. As shown on the teacher survey, 93.8 percent of the respondents **supplemented their literacy lessons with other resources** to address the needs of struggling or advanced readers. These materials include:
 - Guided reading books to address phonological awareness;
 - Writing curriculum (e.g. Lucy Calkins) to better address the Colorado state writing standards;
 - Read aloud books to include in daily instruction;
 - Additional centers to address students' varied needs;
 - Levelled books and readers for struggling readers, and
 - Their own assessments to better ascertain if they are adequately addressing the Colorado state standards.
- A closer examination of the teacher survey data further suggests that teachers adopted a “pick and choose” approach to curriculum implementation.
 - As shown in Figure 1, the majority of teacher survey respondents integrated nearly half of the Starfall wall reference items/daily routine organizers (4 of 9 items or 44.4 percent) by the end of the 2012-13 school year.

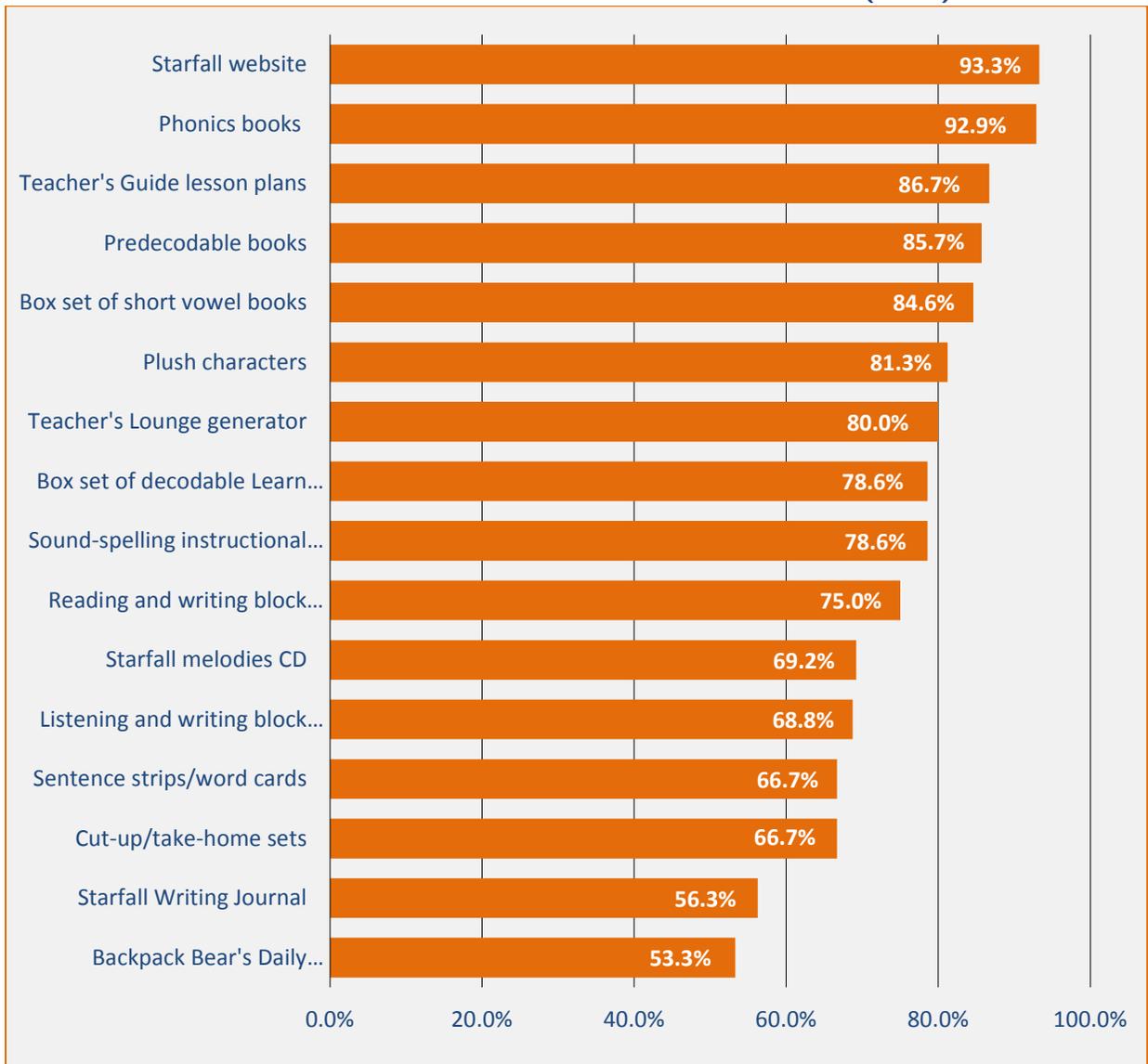
Figure 1: Percentage of Teachers who Integrated the Starfall Wall Reference Items/Daily Routine Organizers in their Classroom (N=16)



- Similarly, **respondents consistently implemented most** of the Starfall hands-on and technology materials, tools, and resources (16 of the 29 items or 55.2 percent) (Figure 2). In particular, teachers regularly used the following types of curriculum materials:
 - Teacher’s Guide Lesson Plans
 - Backpack Bear’s Daily Message

- Plush Characters (Backpack Bear, Zac the Rat, Peg the Hen, Mox the Fox, Tin Man and Gus the Duck)
- Phonics Instruction Tools (Sound-spelling instructional cards, word/picture cards)
- Sentence Strips and Word Cards (Sentence strips/word cards and pre-decodable books)

Figure 2: Percentage of Teachers who Consistently (At Least a Few Times per Week) Used Various Starfall Curriculum Materials and Tools in their Classroom (N=14)



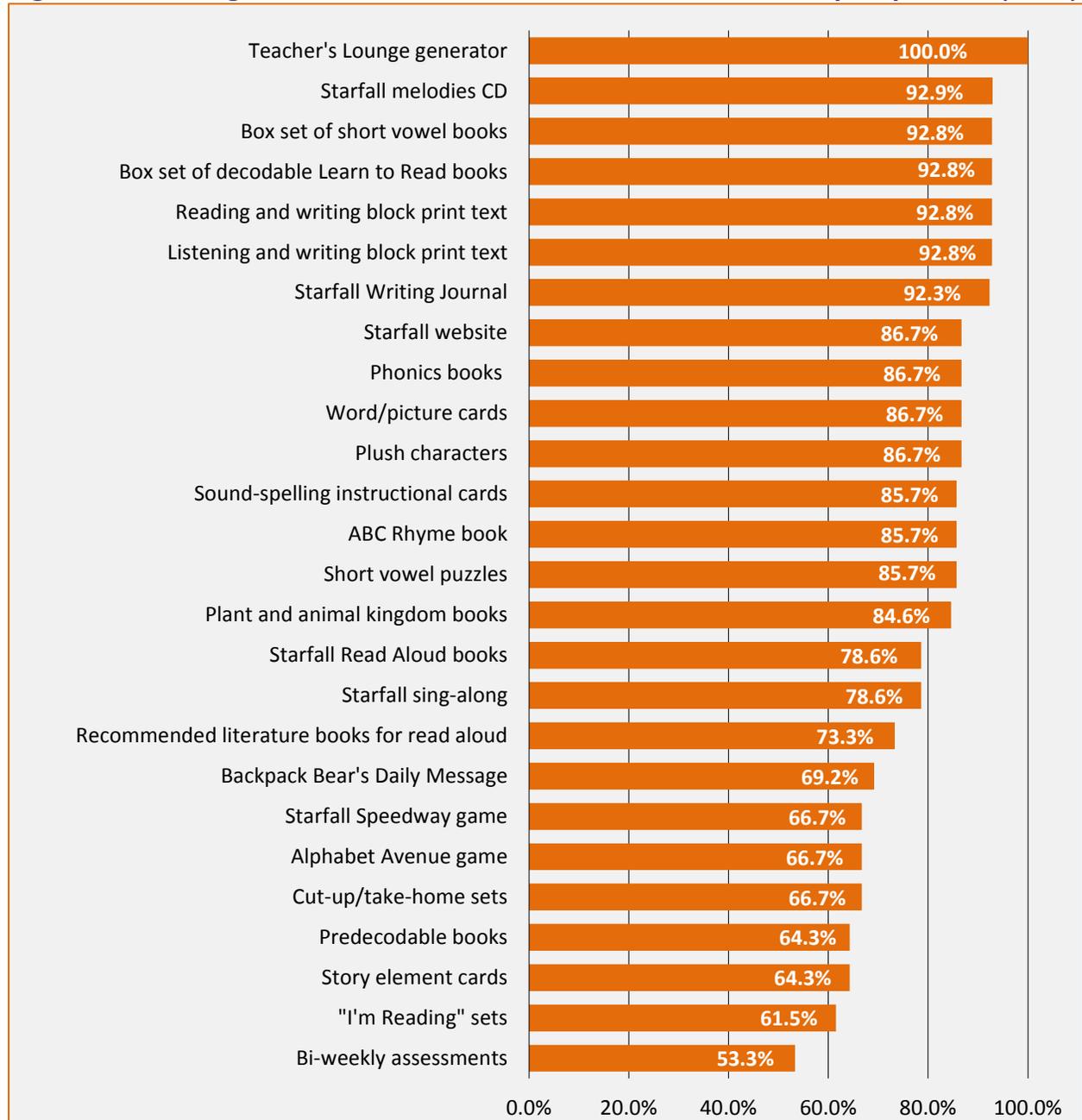
○ Curriculum components that teachers used less frequently included:

- Games (Starfall Speedway, Alphabet Avenue, short vowel puzzles, and story element cards)
- Read-aloud books (Plant and animal kingdom books, Starfall Read Aloud Books, and recommended literature)

- Media resources (Starfall Sing-along book and CD and Starfall Writer Melodies CD)
- Margaret Hillert’s beginner readers “I’m Reading” sets

When asked about how easy it was to use the kindergarten curriculum materials, teacher survey respondents reported that **the vast majority of materials were very easy to use** (26 of 30 items or 86.7%) (Figure 3).

Figure 3: Percentage of Teachers who Found the Starfall Materials Very Easy to Use (N=14)



- Respondents deemed all items at least *moderately easy* to use, with the exception of the Starfall Dictionary. Survey feedback on the Starfall Dictionary mirrored feedback from teachers during the site visit focus groups. Teachers noted that the dictionary was inappropriate for many of their students, especially at the beginning of the year. One teacher explained, *“At the beginning of the year, some kids did not know their letters, so writing in the dictionary was difficult. By mid-year, I was able to use it as an independent center, in which they took words from the word wall.”*

C. Overall Impressions of the Starfall Kindergarten Curriculum

Teachers found Starfall to be more effective than previously adopted curricula in addressing the varied needs of their students. Overall, teachers were satisfied with the Starfall kindergarten curriculum and would opt to continue implementation in the following school year.

- Teachers and administrators felt that **Starfall better addressed the needs of their kindergarteners than did previous curricula**. Although the Starfall curriculum proved to be difficult for many of their students at the beginning of the school year, teachers found that even the lowest level readers benefited from the program by the end of the year.
 - *“I think it's challenging for many of our students, especially our lowest achieving ones. But I think it's so engaging that they're learning more than we've ever seen them learn with any other curriculum. So, while I don't think the curriculum is necessarily exactly designed for our lowest level learners, I don't think we want a curriculum that's only designed for our lowest level learners, either.”- Teacher*
 - *“The materials are much more visual and engaging than our previous curriculum. And I've seen that piece very differently defined than it was with our previous curriculum. I've seen more enthusiastic teachers feeling like they have a curriculum that better meets the needs of students.”-Principal*
- Reports from the teacher survey and site visit focus groups indicate that the following components were especially helpful in aiding student literacy development:
 - **Plush characters.** Teachers praised the incorporation of the Starfall characters into the curriculum, noting the importance of the characters in helping students to make connections across curriculum components.
 - **Online activities.** The online Starfall reading activities engaged the interest of special education students and English language learners, and assisted them with making connections between pictures while listening to stories and reading along.
 - **High frequency words.** By the end of the school year, kindergarteners were able to identify most of the nearly 100 high frequency words identified in the Teacher's Guide.

- **American Sign Language.** Teachers reported that the use of American Sign Language especially helped English language learners make connections between letter sounds and print language.
- **Picture cards.** Teachers found the picture cards useful for word recognition and building vocabulary.
- **Overall, teachers were satisfied with the Starfall kindergarten curriculum.** Most teacher survey respondents indicated that they would continue to use Starfall with their students next year (76.9 percent) and would recommend it to other teachers (80.0 percent).
- Despite their generally high praise of the Starfall kindergarten curriculum, data from the teacher survey, site visit interviews and focus groups reveal that teachers faced some minor challenges with curriculum implementation. In particular, teachers indicated that they:
 - Did not always have sufficient time to prepare and carry out all the activities outlined in the Teacher’s Guide.
 - Encountered difficulties with locating the recommended literature books for reading aloud. Teachers reported that they either could not locate copies of the texts in the district or there were an insufficient number of the recommended texts to facilitate sharing among teachers.
 - Faced technical challenges with using the Starfall online resources based on the existing technology at the school. One school was equipped with dated hardware and experienced difficulties with slow connections, while another could not consistently access the website with their login on their iPads.

“The nice thing is, you as a teacher know where they are. You can work on those skills that they need. I’ve found that to be really hard the first couple of months for those that have never heard English. But I do feel that they started to pick up. I really like the American Sign Language part because it’s been really good for those kids. [After using it] I feel like they are racing.” —Teacher

D. Impact on Teacher Practice

The adoption and implementation of the Starfall Kindergarten Reading and Language Arts curriculum facilitated improvements in teacher practice in the areas of technology integration, differentiated instruction, pacing, and collaboration with other teachers.

Teacher survey, site visit interview and focus group data demonstrate that the adoption of the Starfall kindergarten curriculum changed teacher practices in important ways. In particular, teachers and stakeholders found that teachers:

- Employed more frequent use and integration of technology (e.g. Starfall website for centers, use of the Teacher’s Lounge to generate worksheets). “The Starfall curriculum taught me how to teach kindergarten students in a fun, interactive, and engaging way. It also helped me instruct them on how to use technology. The curriculum offered many ideas on how to teach and was very helpful for a new teacher.”- Teacher

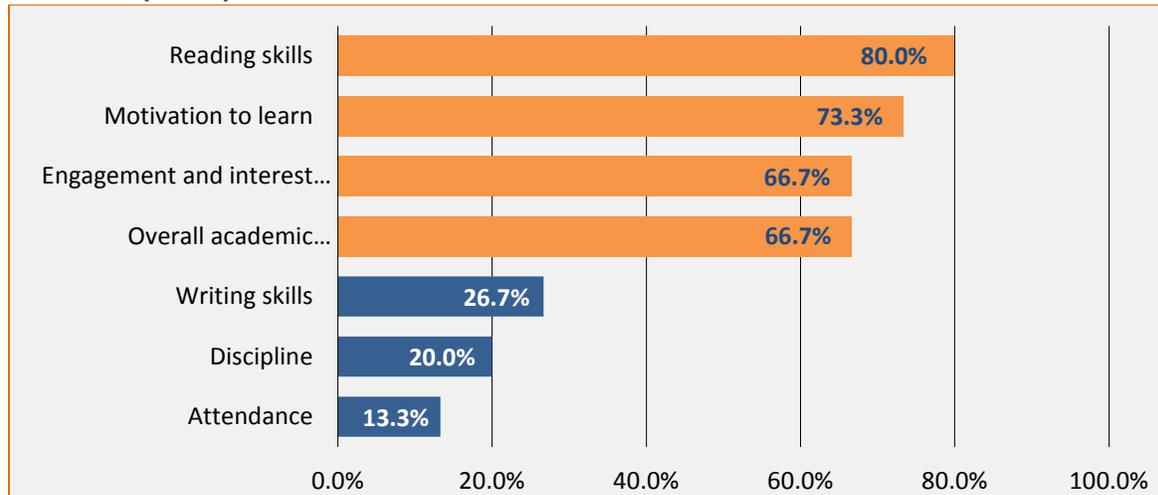
- Collaborated more effectively with one another. *“I think as a team, we're more on the same page than we ever have been. And also, I mean, just timing-wise, I think it's really kept me much more on track.”*– Teacher
- Engaged and challenged students more effectively. *“Well, I talked to one of the kindergarten teachers just last week, and she said, ‘I am doing stuff with kids I've never done before.’ She is very excited that they are reading and writing, and doing things that she, in however many years she's been teaching, has never asked kindergarteners to do.”*- Principal
- Included more science and social studies content in literacy instruction. *“Well, we're doing a lot more science and social studies than we've ever done because they just make it so easy. It's engaging for the kids. It's great that it all goes along and you can bring it up later. I brought up Ruby Bridges several times [throughout the year]. I think that's been one of the biggest changes.”* -Teacher
- Improved the pacing of their lessons. *“I think the pacing in the classroom has improved from what I saw in previous years. And we have classes where teachers are teaching in Spanish instead of teaching in English. So you know, I'm comparing in my own mind, some of the pacing and the differences instructionally. So, I see that difference.”*- Principal
- Integrated differentiated instruction through the use of small groups in the classroom.
- Used American Sign Language to help kindergarteners make the connection between the sounds and print.

E. Perceptions of Impacts on Students

Overall, school stakeholders perceived that Starfall positively impacted student reading skills, motivation to learn, engagement in school, and overall academic achievement.

- As shown in Figure 4, more than half of the teacher survey respondents indicated that they believed that Starfall had a *substantial* impact on students’ reading skills, motivation to learn, engagement and interest in school and overall academic achievement. Importantly, over two-thirds of the teacher survey respondents reported that Starfall had at least a *moderate* impact in all student performance areas listed in Figure 4.

Figure 4: Percentage of Teachers who Thought Starfall had a Substantial Impact on Students (N=15)



- Data from the school site visits further support the teacher survey findings. Teachers and school administrators expressed accolades over the progress of their current (2012-13) kindergarten students in comparison to that of kindergarteners from years prior to Starfall curriculum adoption.
 - *“I’m not hearing the same stress that I’m hearing from kindergarten teachers last year [prior to Starfall implementation], about getting the kids where they need to be. The stress was very high, and a lot of anxiety around that. I’m not hearing that same anxiety. And boy, I heard it.”- Principal*
 - *“It’s just a challenging curriculum, and they’re meeting the expectations. All of them are. Even the low performing kids. The English language learners are doing better than they’ve ever seen.”- Teacher*
 - *“Now we had all the kids in heterogeneous groups, and kids are more self-aware, and take more responsibility for their learning. More so than they ever had in the past in kindergarten. And I think that, along with the goal-setting and the individual conferencing, I think kids are taking responsibility for their behavior a lot more this year.”- Principal*

Student Outcomes from Standardized Tests

This section includes a summary of the major student outcome findings from standardized achievement tests. Findings are presented first for the 2012-13 cross-sectional analyses, then for the historical cross-sectional analyses. Full tables of results are reported in Appendix B.

A. 2012-13 Cross-sectional analyses (same year – different schools)

Starfall students demonstrated greater reading proficiency than non-Starfall students across all student groups. Years of Starfall implementation at the school level was also a factor in students' reading achievement.

The following figures present the results of the 2012-13 comparative reading achievement analyses for Starfall and non-Starfall students. Figure 5 details the proportion of Starfall and non-Starfall students who achieved proficiency on the DRA 2 assessment. Figures 6 and 7 follow with the mean DRA 2 scores by school and years of Starfall implementation, respectively. An asterisk denotes whether a statistically significant difference was found between groups.

Figure 5: Proportion of students who achieved proficiency on the spring 2013 DRA 2

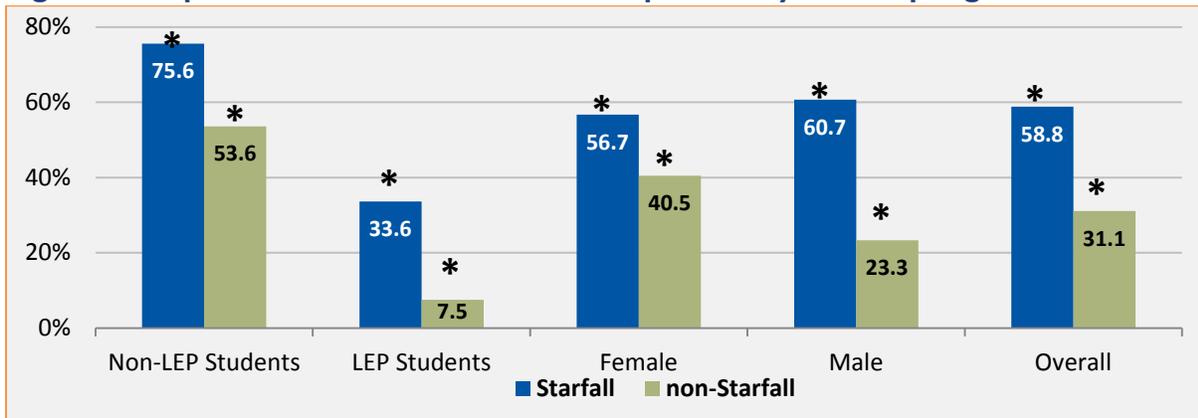


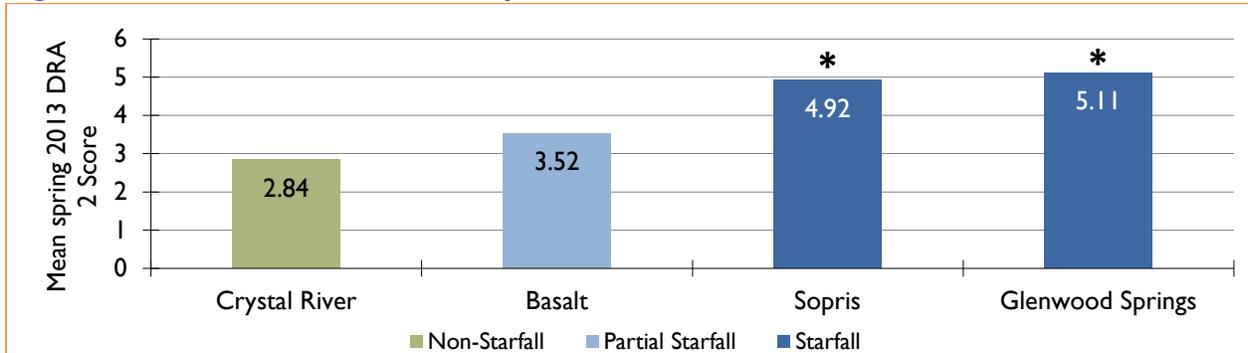
Figure 5 shows that:

- **A significantly larger proportion of Starfall students** tested at the proficient or higher⁶ levels in spring 2013 than non-Starfall students (58.8% versus 31.1%). The average score for all tested students was 4.1 – Starfall students averaged 4.7 while the average for non-Starfall students was significantly lower at 3.1.

⁶ A score of 4 or higher on the spring administration of the DRA 2 is considered proficient.

- **Statistically significant differences were also observed for all tested subgroups.** Larger proportions of LEP, non-LEP, male and female Starfall students tested at the proficient or higher levels in spring 2013 than non-Starfall students.

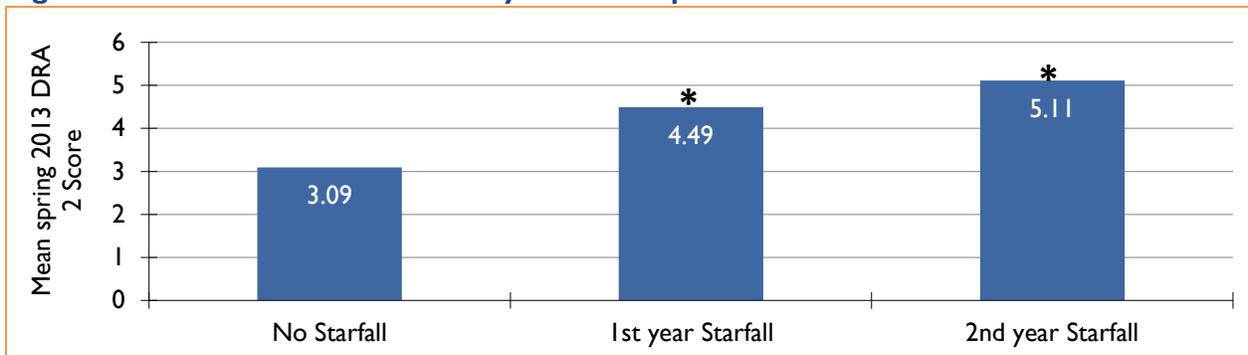
Figure 6: Mean 2013 DRA 2 Scores by School



Further, tests⁷ comparing individual school performance for mean spring 2013 DRA 2 scores in Figure 6 showed that:

- Glenwood Springs students (full implementation for two school years) scored **significantly higher than** students from Basalt (partial implementation), and Crystal River (non-Starfall).
- Similarly, Sopris students (full implementation for one year) also scored **significantly higher than** Basalt (partial implementation) and Crystal River (non-Starfall) students.

Figure 7: Mean 2013 DRA 2 Scores by Starfall Implementation



Finally, as shown in Figure 7, students in schools implementing Starfall in their first or second year **achieved significantly greater mean scores** on the spring 2013 DRA 2 than students that did not receive the Starfall Kindergarten Curriculum⁸:

- Students attending both second and first year Starfall implementing schools **scored higher** than students at non-Starfall implementing schools.

⁷ ANOVA and Scheffe post-hoc tests applied at the .05 level of significance.

⁸ ANOVA and multiple regression analyses applied at the .05 level of significance.

- Years of Starfall implementation was a **statistically significant positive predictor** of increased achievement on the spring 2013 DRA (see results of multiple regression analyses in Table D, Appendix B).

B. Historical cross-sectional analyses (different year – same schools)

Overall, the proportion of kindergarten students who achieved reading proficiency at the Starfall schools was higher after their adoption of the Kindergarten Reading and Language Arts Curriculum.

The following figures present the results of the historical comparisons of reading achievement within the same schools prior to and after Starfall implementation. Displayed in Figures 8 and 9 are the proportions of students achieving proficiency on the DRA 2 before and after adoption of Starfall at Glenwood Springs and Sopris and Basalt, respectively. Figure 10 presents mean DRA 2 scores by year within school. An asterisk denotes whether a statistically significant difference was found between groups.

Figure 8: Proportion of students who achieved proficiency on the spring DRA 2 before (2011) and after (2013) Starfall implementation at Glenwood Springs

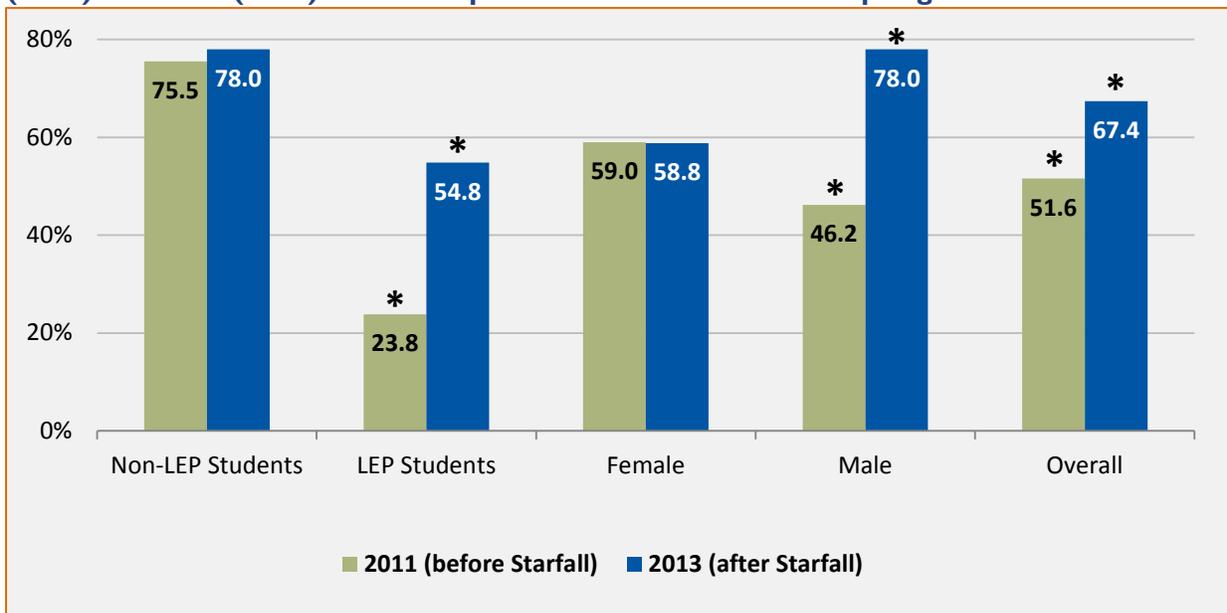
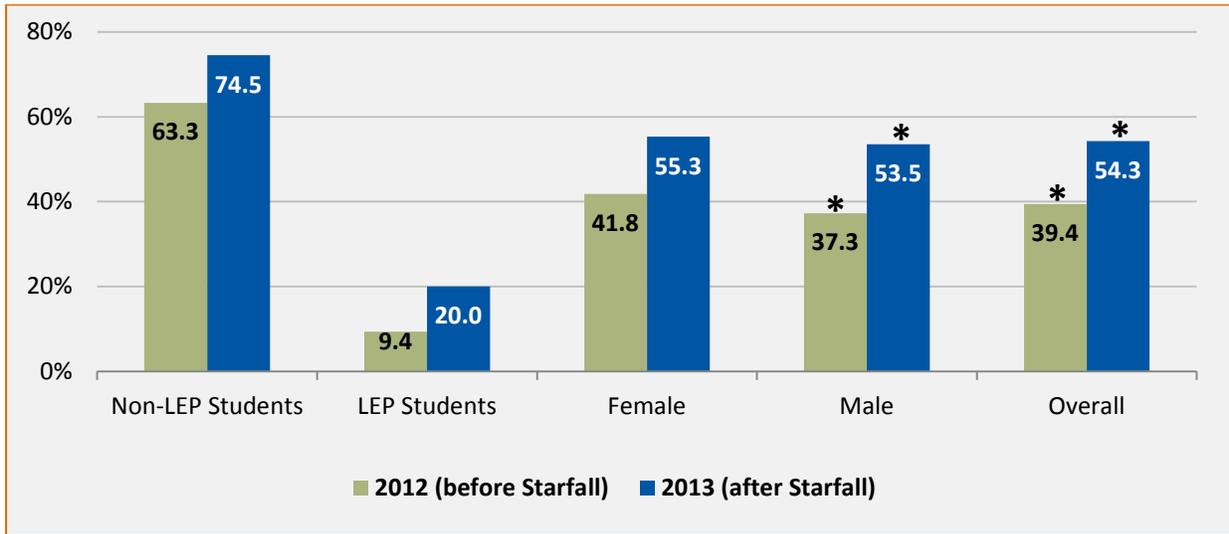


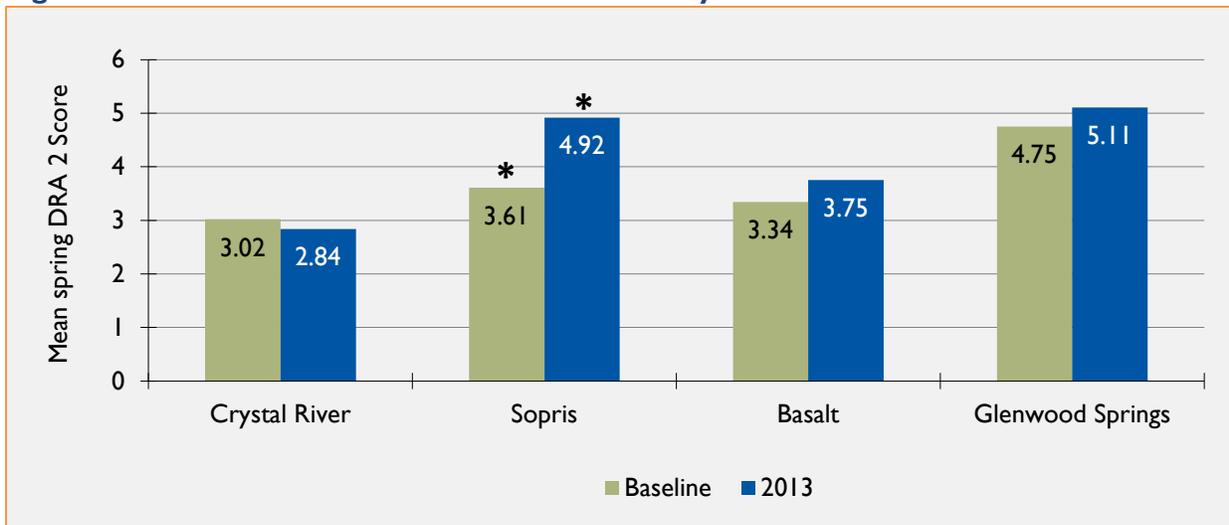
Figure 9: Proportion of students who achieved proficiency on the spring DRA 2 before (2012) and after (2013) Starfall implementation at Sopris and Basalt



A comparison of DRA 2 scores within schools from baseline (the year prior to Starfall implementation) to school year 2012-13 (i.e., the first or second year of Starfall implementation) showed that:

- A **significantly larger proportion** of kindergarten students at Glenwood Springs tested at proficient or higher in spring 2013 than in spring 2011 (67.4% versus 51.6%). For tested subgroups:
 - Significantly more Limited English Proficient (LEP) students tested at the proficient or higher levels in spring 2013 than in spring 2011 (54.8% versus 23.8%).
 - Significantly more male students tested at the proficient or higher levels in spring 2013 than in spring 2011 (78.0% versus 46.2%).
- Likewise, a **significantly larger proportion** of students at Sopris and Basalt also tested at the proficient or higher levels in spring 2013 than in spring 2012 (54.3% versus 39.4%). For tested subgroups:
 - Significantly more male students tested at the proficient or higher levels in spring 2013 than in spring 2012 (53.5% versus 37.3%).
- Importantly, analyses conducted on non-Starfall kindergarteners at Crystal River and Basalt revealed **no statistically significant difference** between students tested in the spring of 2013 and the spring of 2012 (31.1% proficient or higher versus 34.1% proficient or higher – see table G in Appendix B).

Figure 10: Mean Baseline and 2013 DRA 2 Scores by School



Further analyses conducted on differences between baseline and 2013 DRA 2 performance revealed a statistically significant increase in mean scores for the kindergarteners at Sopris (4.92 versus 3.61).⁹

Finally, after matching students at baseline on key pre-intervention demographic characteristics, it was found that spring 2013 DRA 2 results were **significantly higher**¹⁰ than baseline DRA 2 results for students at both Sopris and Basalt. Note that significance was not achieved at Glenwood Springs for this branch of analysis (See tables I – K in Appendix B).

⁹ t-Test applied at the .05 level of significance.

¹⁰ t-Tests applied at the .05 level of significance.

Conclusions and Recommendations

A review of the data and analyses from both the implementation and student outcome portions of the evaluation revealed a set of key takeaways and recommendations for the future.

A. Key Takeaways

Starfall Training and Support

- At the start of the school year and again at the middle of the year, Starfall Education personnel conducted curriculum training for Roaring Fork District kindergarten teachers, conducted observations and offered feedback during school site visits, and provided ad-hoc technical assistance.
- Teachers found the training relevant and useful for their work in the classroom. Teachers also felt well supported by Starfall staff. Importantly, most teachers felt comfortable with using the Starfall kindergarten curriculum, which may be attributed in part to Starfall’s training and support.

Use and Impressions of the Starfall Curriculum

- Teachers used the Starfall kindergarten curriculum on a daily basis for an average of 64 minutes.
- Although teachers faced challenges associated with insufficient time, the flexibility of the Starfall kindergarten curriculum allowed them to effectively adopt a “pick and choose” approach to their instruction. Teachers opted to modify lessons and activities and supplemented instruction with other resources based on the needs of their students (including struggling and advanced readers) and time availability. Overall, teachers found nearly all of the materials, tools and resources easy to use and were able to consistently integrate approximately half of the Starfall curriculum classroom and instructional resources into their daily instruction.
- Teachers and school administrators were generally quite satisfied with the Starfall curriculum, noting that it was more effective than previously adopted curricula in addressing the diverse needs of their kindergarteners. In particular, teachers found the plush characters, online activities, high frequency words, American Sign Language components, and pictures particularly useful in supporting literacy development.

Impacts on Teacher Practice and Students

- Adoption of the Starfall curriculum improved teachers’ abilities to integrate technology into their literacy instruction, collaborate more effectively with their peers, engage and challenge students, differentiate instruction, and improve the pacing of their lessons.
- By the end of the school year, teachers and school administrators believed that their kindergarteners had improved their reading skills, motivation to learn, engagement and interest in school and overall academic achievement because of their exposure to the Starfall curriculum. School stakeholders also thought that their current kindergarteners who were exposed to Starfall developed a stronger literacy foundation than did kindergarteners from the previous school year (when they had no exposure to Starfall).

- Results of the student outcome analyses from standardized achievement exams appear to strongly confirm the assertions of school stakeholders. Comparative analyses demonstrate that Starfall students far outpaced (significantly) non-Starfall students in reading proficiency for all student subgroups. Students at schools with longer exposure to Starfall implementation were also more likely to outperform students at schools that were new to Starfall during the 2012-13 school year. Additional comparative analyses of reading proficiency among kindergartens at the same schools reveal that schools achieved higher proportions of kindergarten reading proficiency after Starfall curriculum adoption.

B. Recommendations

The current evaluation yielded a number of promising findings on the quality and effectiveness of the implementation of the Starfall Kindergarten Reading and Language Arts Curriculum. Teachers regularly used the curriculum with their students and through their “pick and choose” approach, students demonstrated strong literacy development by the end of the 2012-13 school year. Descriptive analyses indicated significant positive differences between the proportion of Starfall and non-Starfall students scoring at proficient or above. Further, more robust analyses – including those using sophisticated matching procedures – aimed at reducing the influence of biasing factors such as race/ethnicity and English proficiency largely corroborated that students receiving the Starfall curriculum academically surpassed their non-Starfall counterparts.

While these findings demonstrate positive outcomes for Starfall students, Metis recommends further implementation and study to determine the lasting impact of exposure to the kindergarten curriculum on student literacy through future evaluation activities. To this end, replication studies should be conducted in other school districts of varying sizes and geography (e.g., urban/suburban) along with different achievement metrics to confirm that outcomes can be generalized to broader populations of kindergarten students.

Further, if feasible Metis suggests that Starfall Education conduct a randomized control trial (RCT) to provide rigorous evidence of program impact and support program expansion and improvement. The RCT should include an implementation component to assess the minimum threshold of curriculum fidelity/implementation that is required to support positive student outcomes. Unlike the replication studies suggested above, a well-designed RCT that meets What Works Clearinghouse (WWC) standards can be used to establish the Starfall Kindergarten Reading and Language Arts Curriculum as a nationally recognized **evidence-based early literacy intervention**.

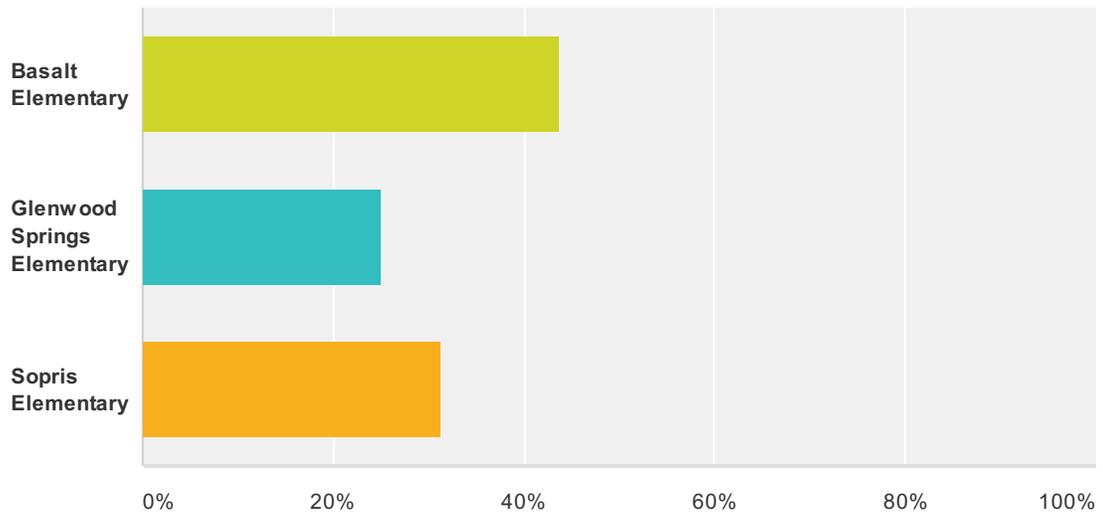
Appendix

- [Appendix A: Starfall Teacher Survey](#)
- [Appendix B: Group Summary Statistics and Achievement Data Tables](#)

Starfall Teacher Survey

Q1 At what school do you teach?

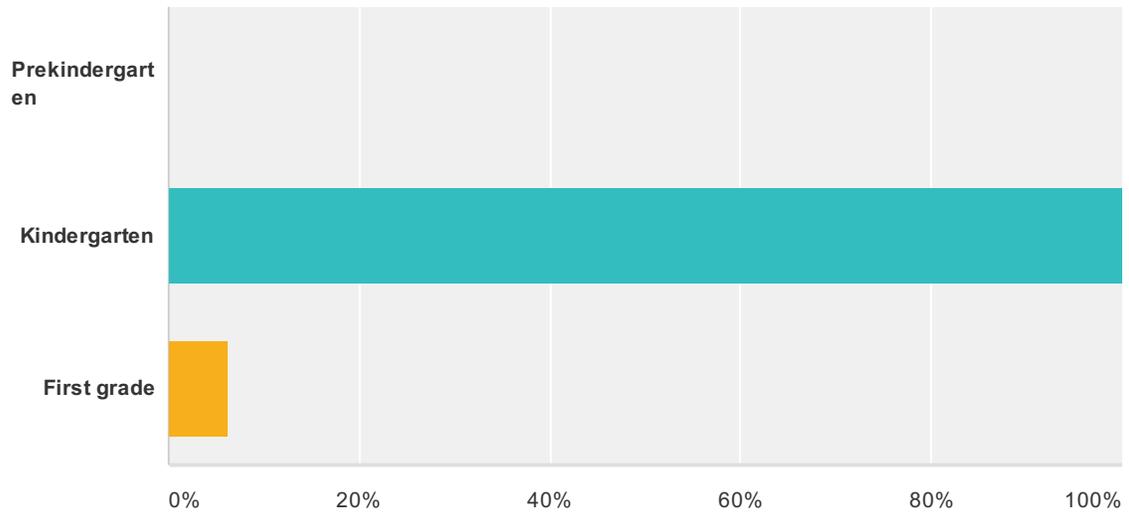
Answered: 16 Skipped: 0



Answer Choices	Responses
Basalt Elementary	43.75% 7
Glenwood Springs Elementary	25% 4
Sopris Elementary	31.25% 5
Total	16

Q2 Which grade levels did you teach during the 2012-13 school year? (Check all that apply)

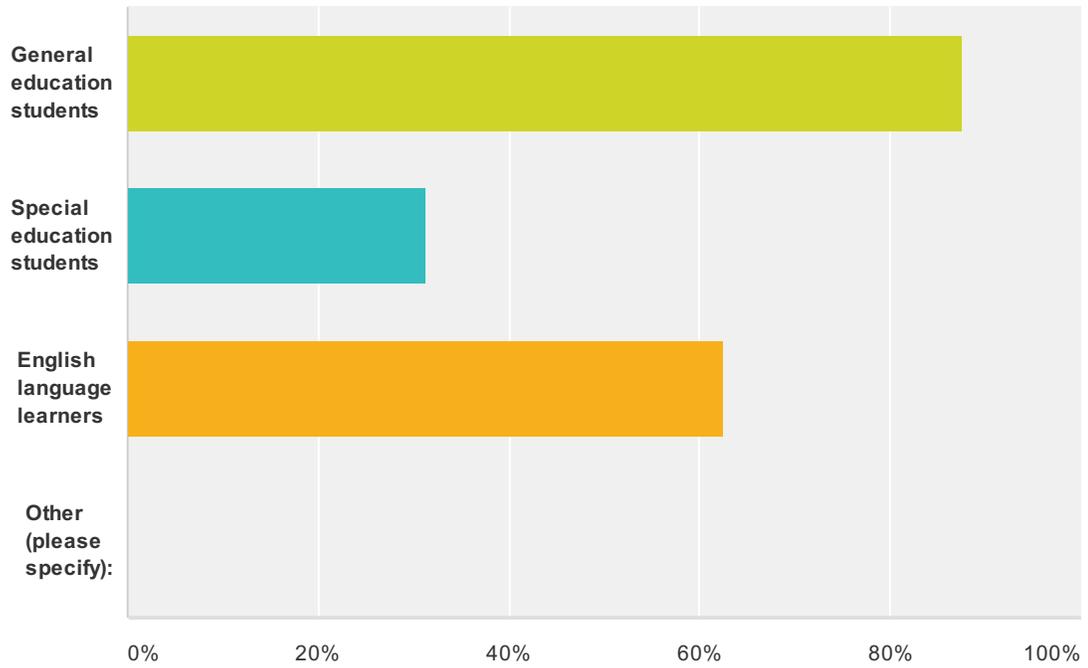
Answered: 16 Skipped: 0



Answer Choices	Responses
Prekindergarten	0% 0
Kindergarten	100% 16
First grade	6.25% 1
Total Respondents: 16	

Q3 Which of the following student groups did you teach during the 2012-13 school year? (Check all that apply)

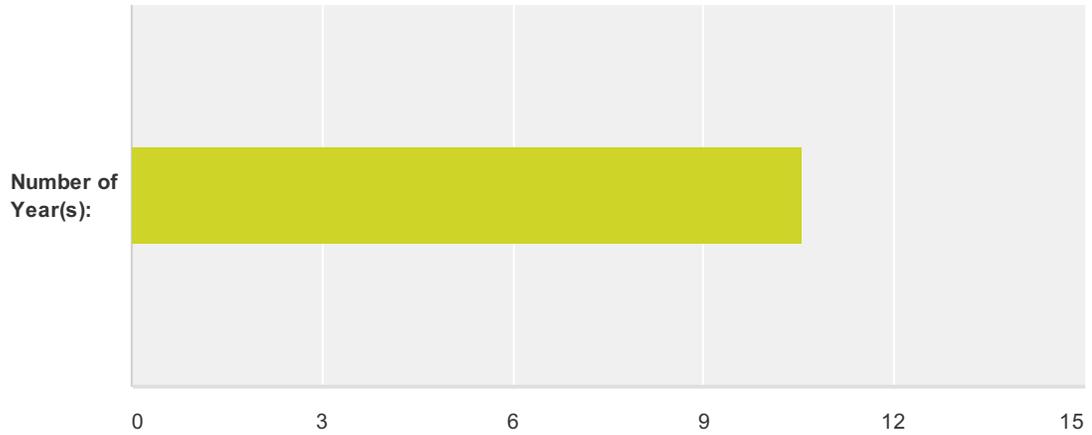
Answered: 16 Skipped: 0



Answer Choices	Responses
General education students	87.50% 14
Special education students	31.25% 5
English language learners	62.50% 10
Other (please specify):	0% 0
Total Respondents: 16	

**Q4 How many years have you been a full-time teacher by the end of June 2013?
(Round to the nearest whole year)**

Answered: 16 Skipped: 0

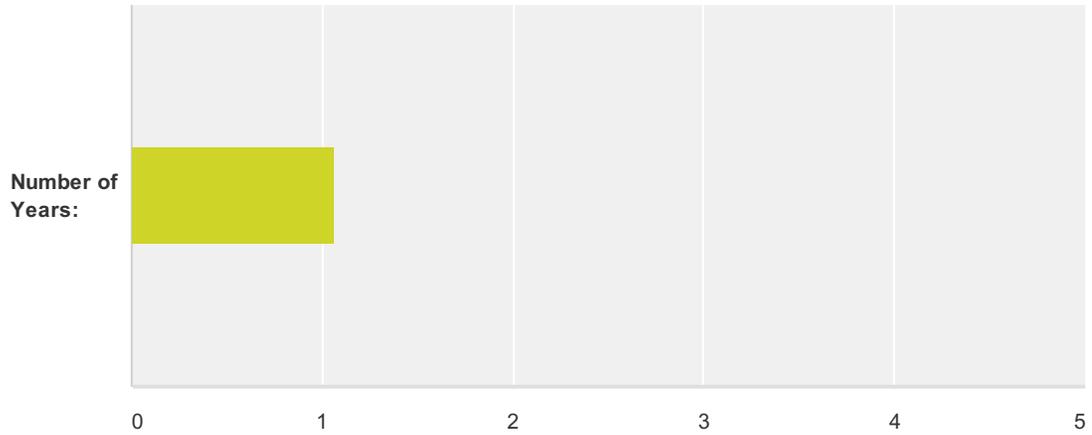


Answer Choices	Average Number	Total Number	Responses
Number of Year(s):	11	169	16
Total Respondents: 16			

Starfall Teacher Survey

Q5 Including the 2012-13 school year, how many years will you have used the Starfall curriculum at your current school?

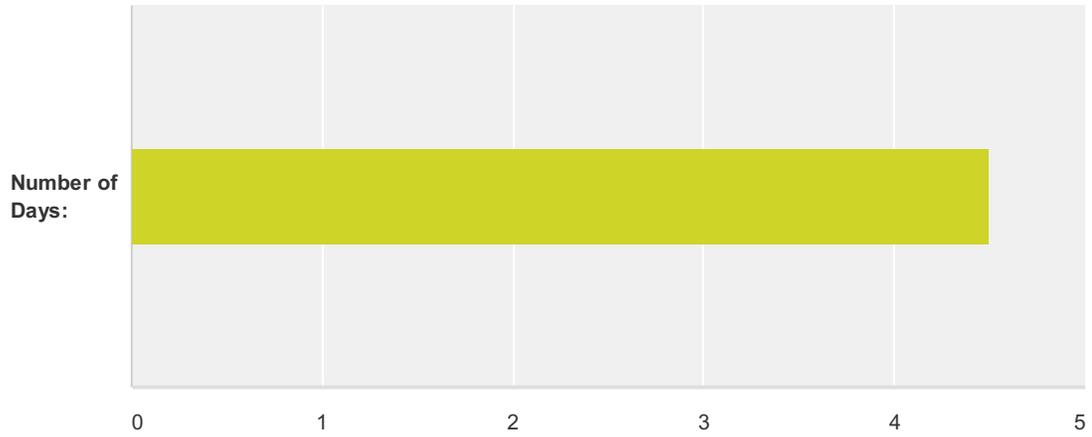
Answered: 16 Skipped: 0



Answer Choices	Average Number	Total Number	Responses
Number of Years:	1	17	16
Total Respondents: 16			

Q6 On an average week during the 2012-13 school year, how many days of the week did you use the Starfall curriculum with your students?

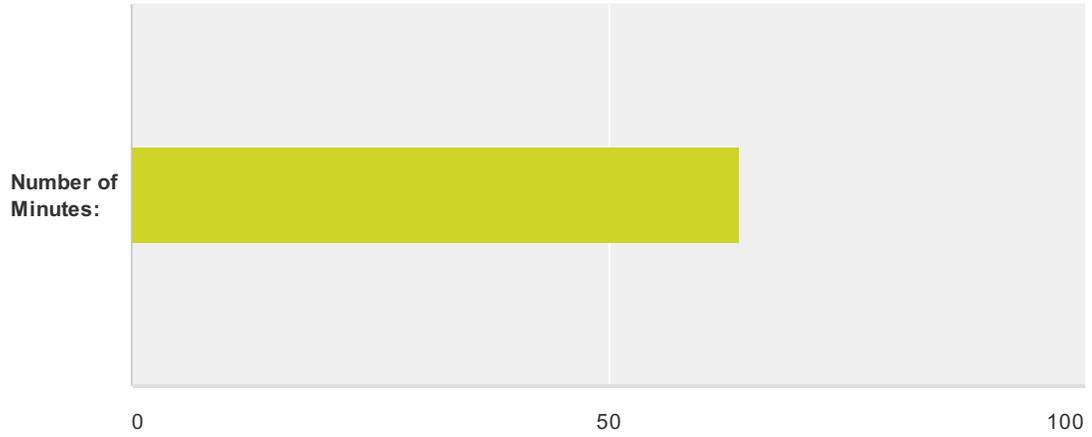
Answered: 16 Skipped: 0



Answer Choices	Average Number	Total Number	Responses
Number of Days:	5	72	16
Total Respondents: 16			

Q7 Typically, how long was each Starfall lesson (per session)?

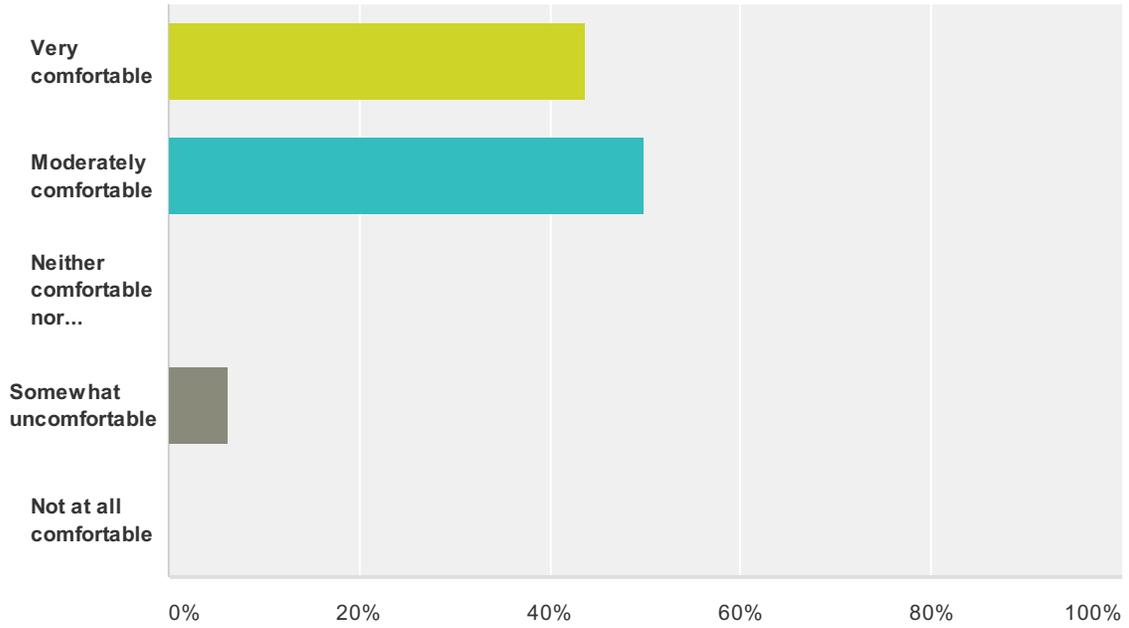
Answered: 16 Skipped: 0



Answer Choices	Average Number	Total Number	Responses
Number of Minutes:	64	1,020	16
Total Respondents: 16			

Q8 How comfortable are you with using Starfall for instruction?

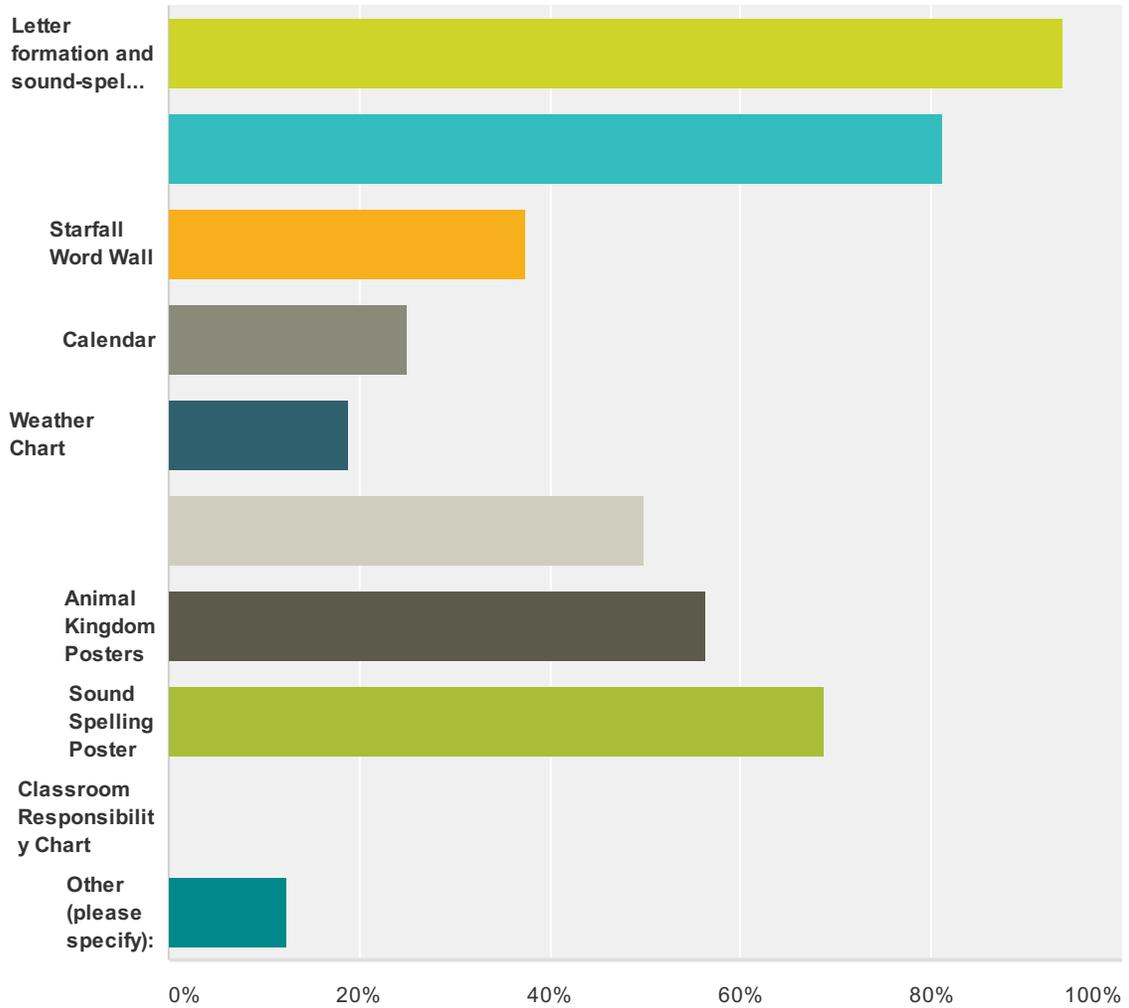
Answered: 16 Skipped: 0



Answer Choices	Responses
Very comfortable	43.75% 7
Moderately comfortable	50% 8
Neither comfortable nor uncomfortable	0% 0
Somewhat uncomfortable	6.25% 1
Not at all comfortable	0% 0
Total	16

Q9 Which of the following Starfall materials were you able to integrate into your classroom during the 2012-13 school year? (Check all that apply)

Answered: 16 Skipped: 0



Answer Choices	Responses
Letter formation and sound-spelling cards	93.75% 15
American Sign Language reference poster	81.25% 13
Starfall Word Wall	37.50% 6
Calendar	25% 4
Weather Chart	18.75% 3
Historical Figure Posters	50% 8
Animal Kingdom Posters	56.25% 9
Sound Spelling Poster	68.75% 11
Classroom Responsibility Chart	0% 0

Starfall Teacher Survey

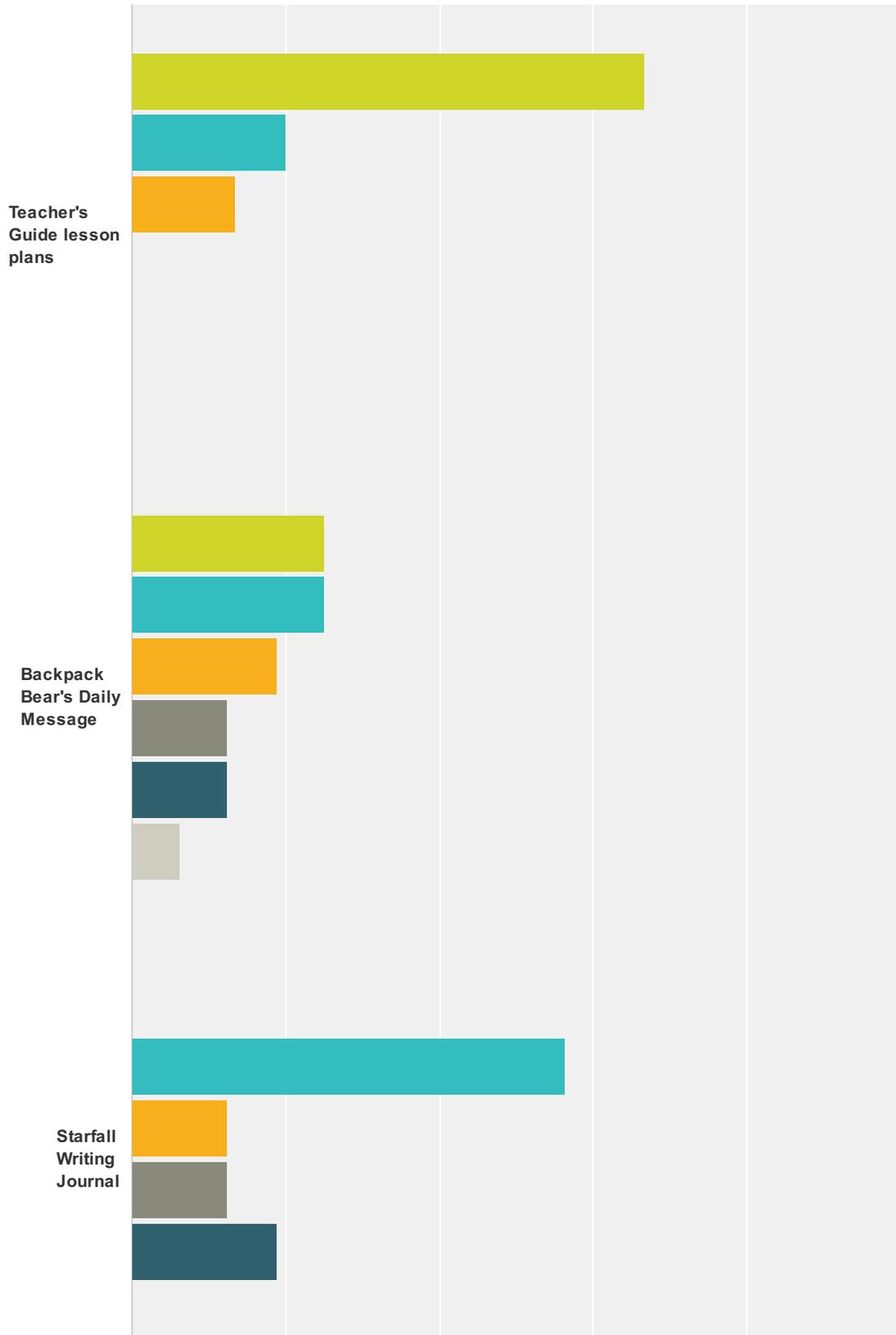
Other (please specify):	12.50%	2
Total Respondents: 16		

Q10 Which, if any, of the Starfall materials did you find difficult to integrate in your classroom? Please explain.

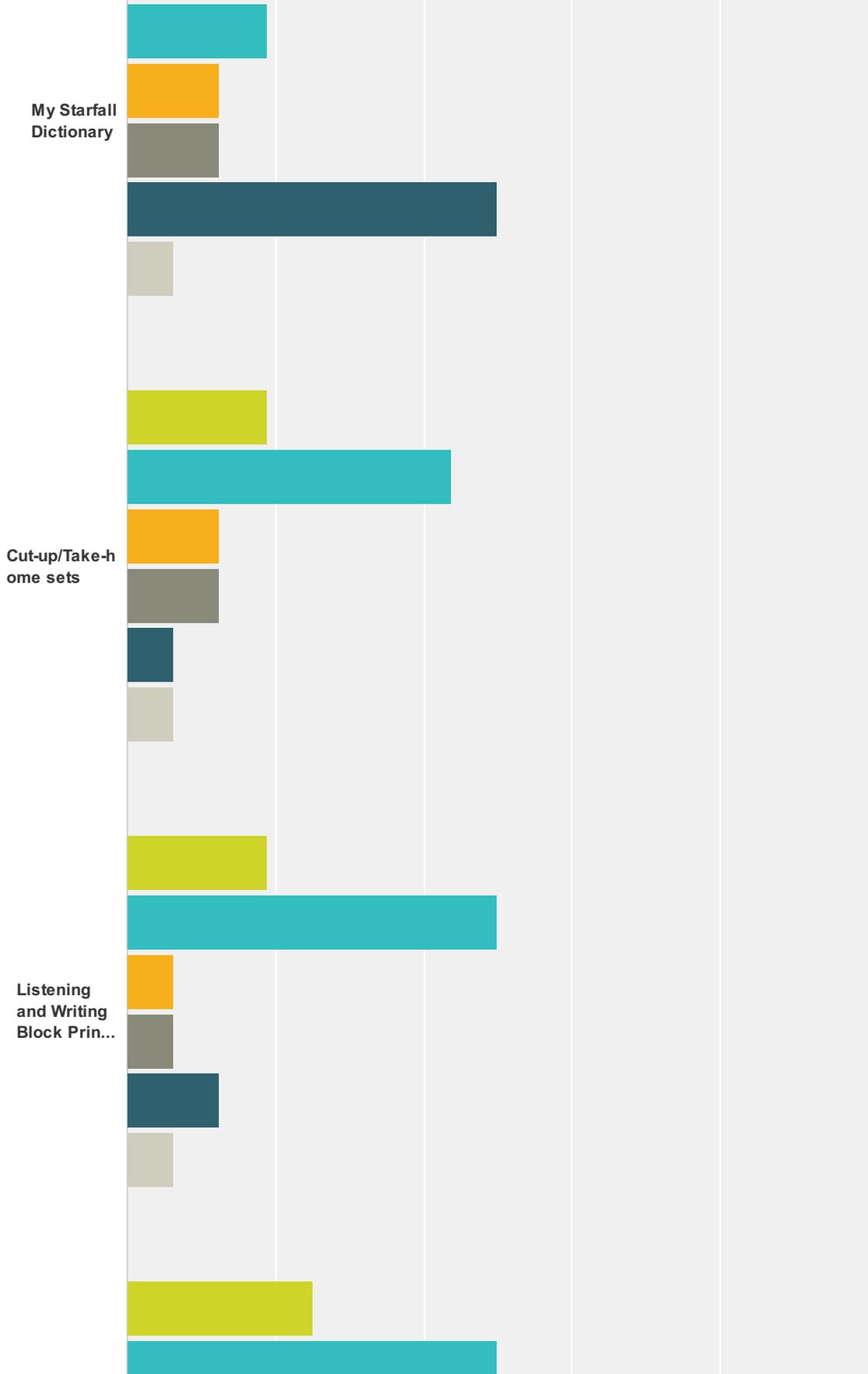
Answered: 10 Skipped: 6

Q11 How often did you use/incorporate the following Starfall materials/components in your instruction during the 2012-13 school year?

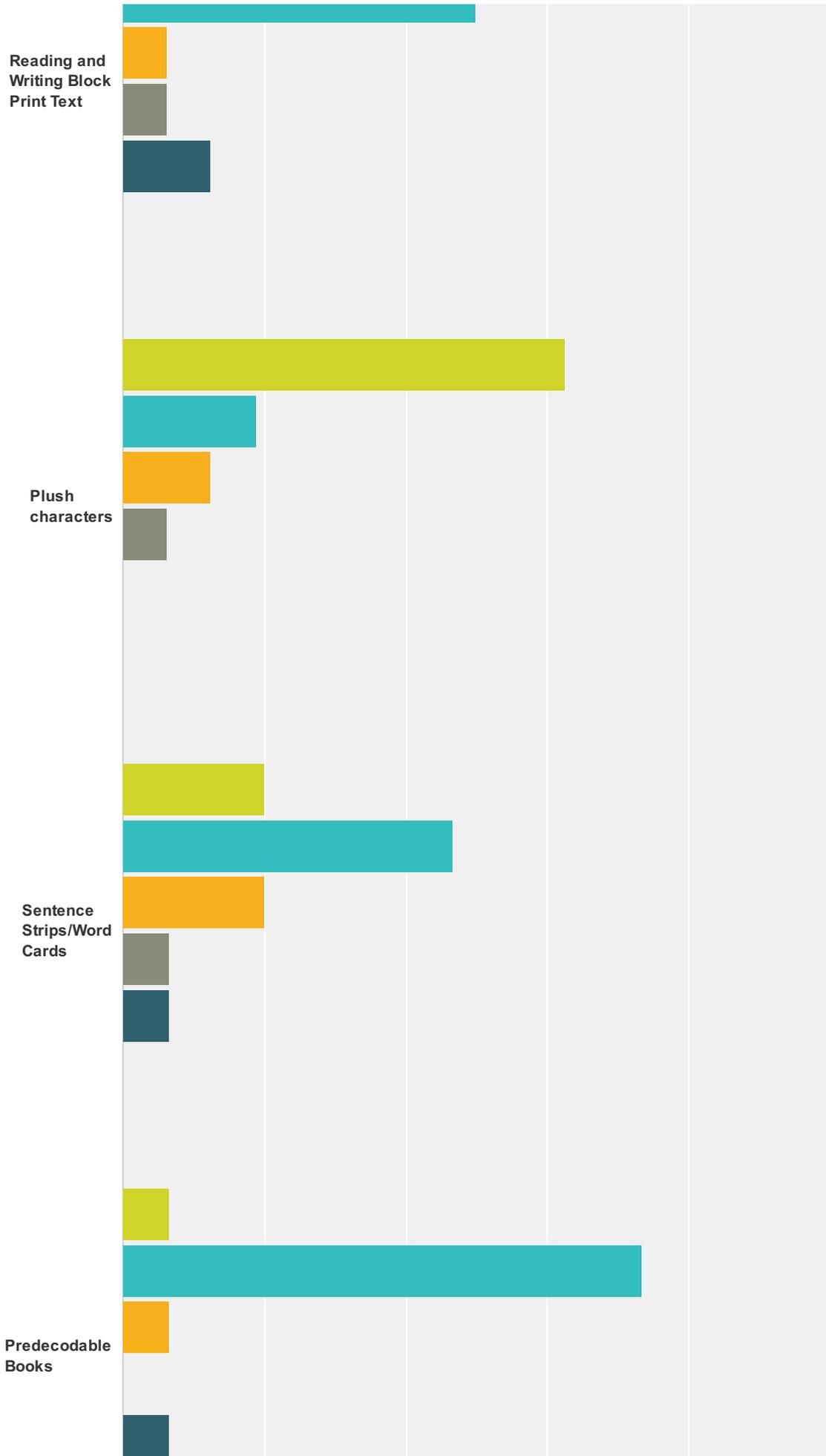
Answered: 16 Skipped: 0



Starfall Teacher Survey



Starfall Teacher Survey

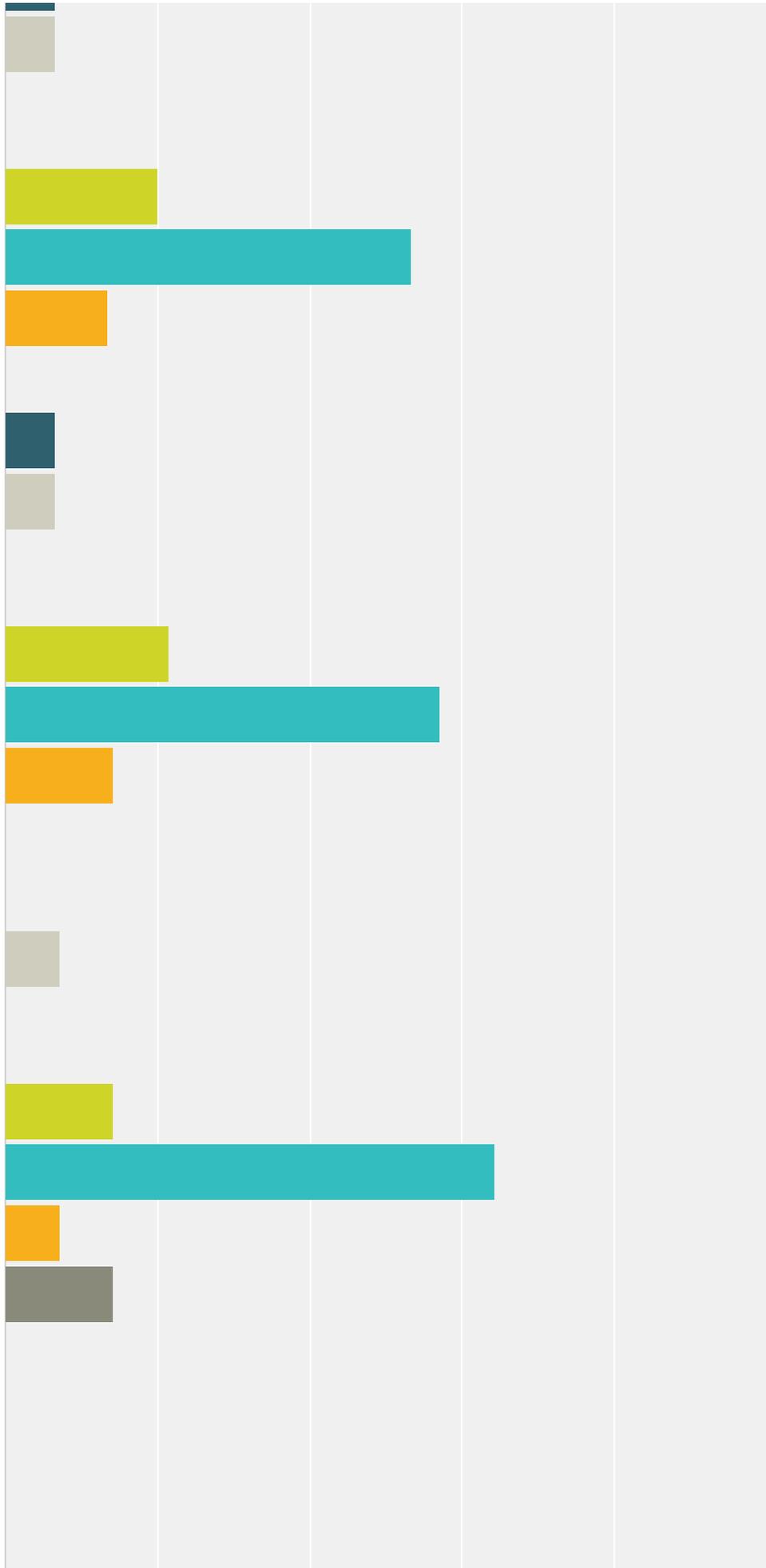


Starfall Teacher Survey

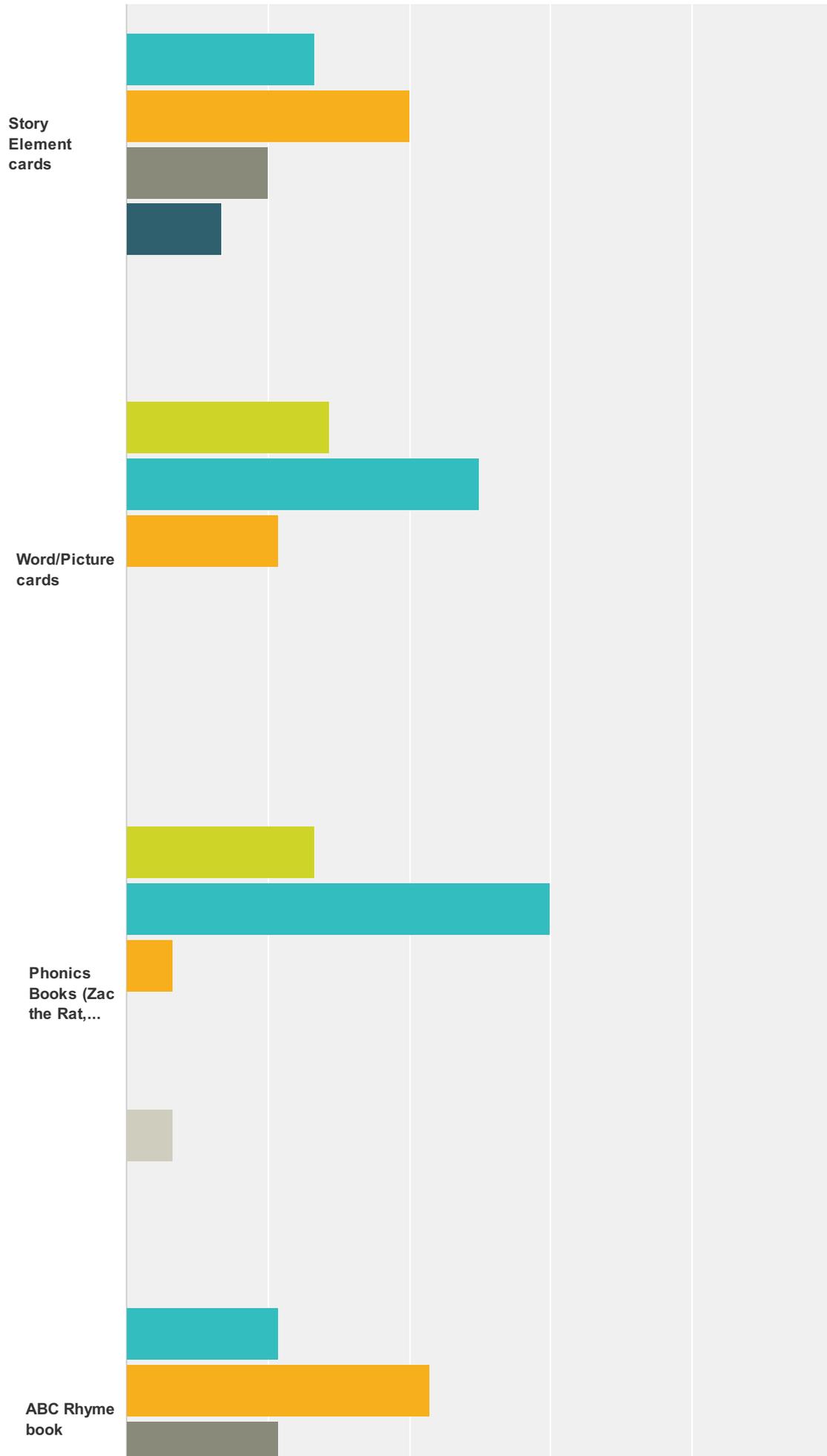
Box set of
decodable
Learn to R...

Box set of
short vowel
books

Sound-spellin
g
instructio...



Starfall Teacher Survey

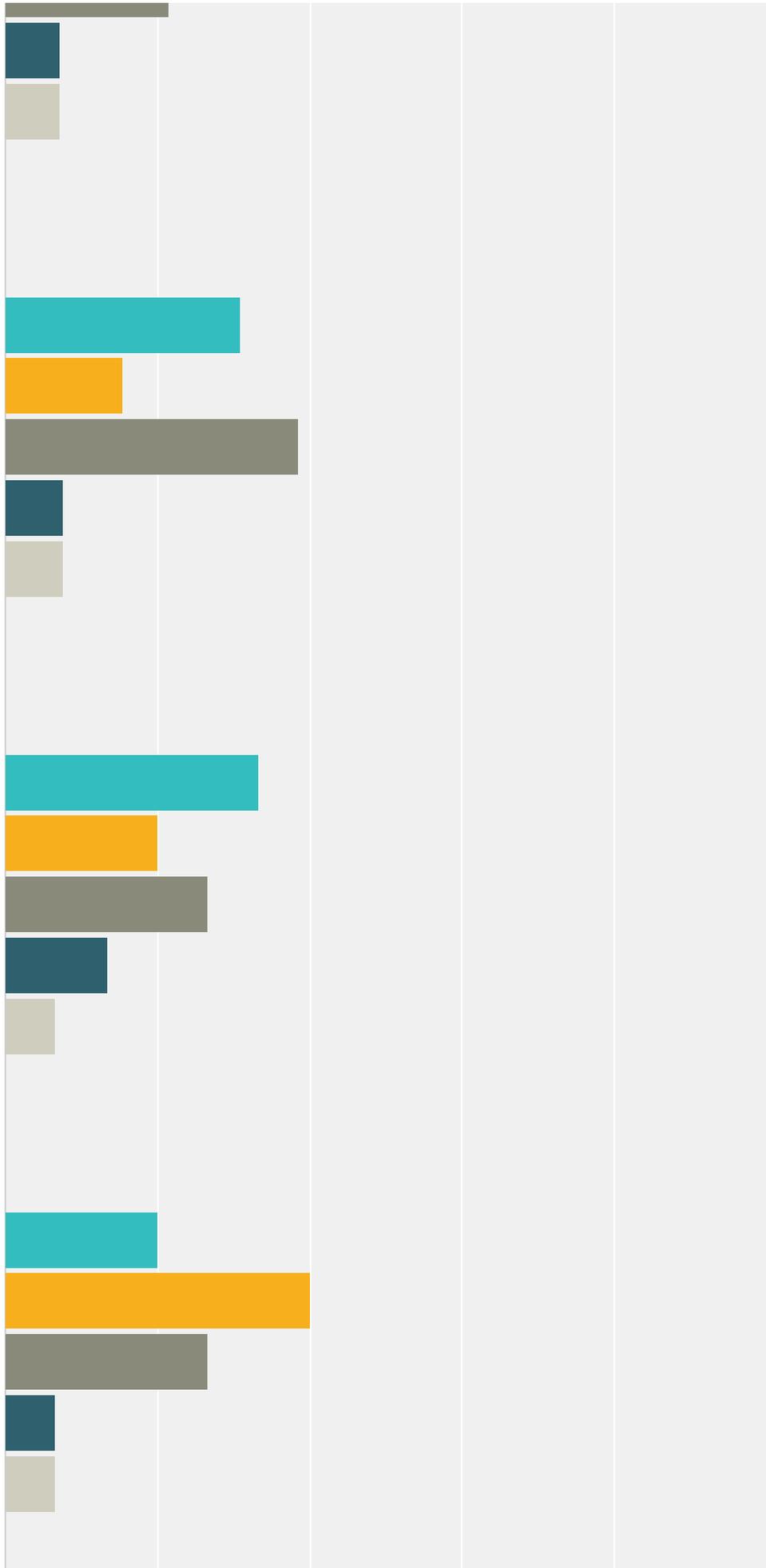


Starfall Teacher Survey

Plan and
Animal
Kingdom
books

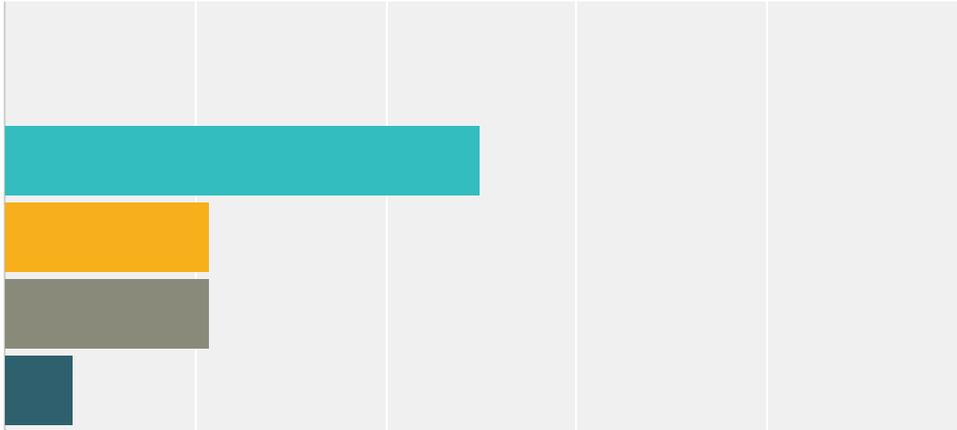
"I'm
Reading"
sets
(Margaret...

Starfall
Read Aloud
Books (Ani...

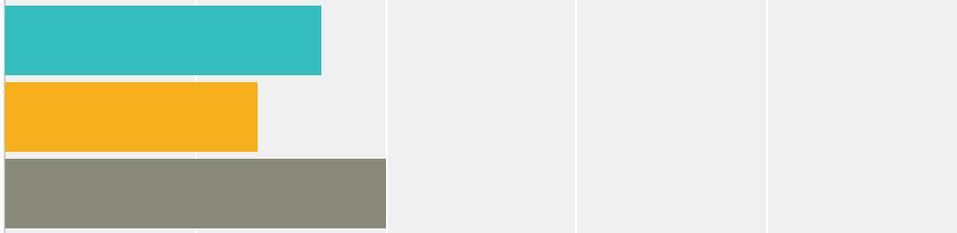


Starfall Teacher Survey

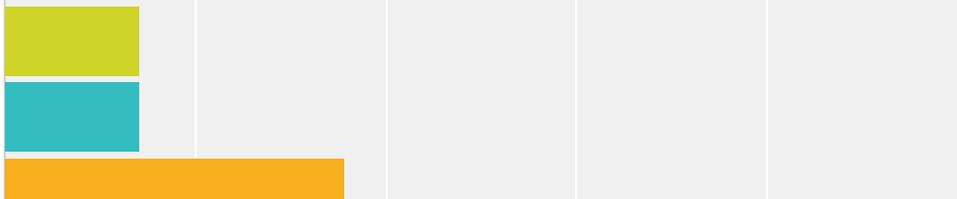
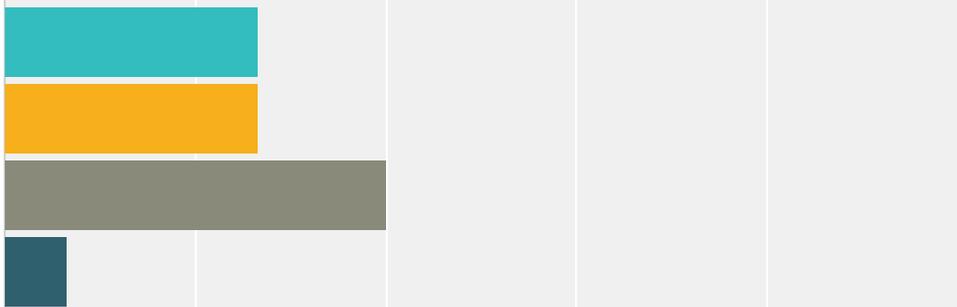
Recommended literature books for...



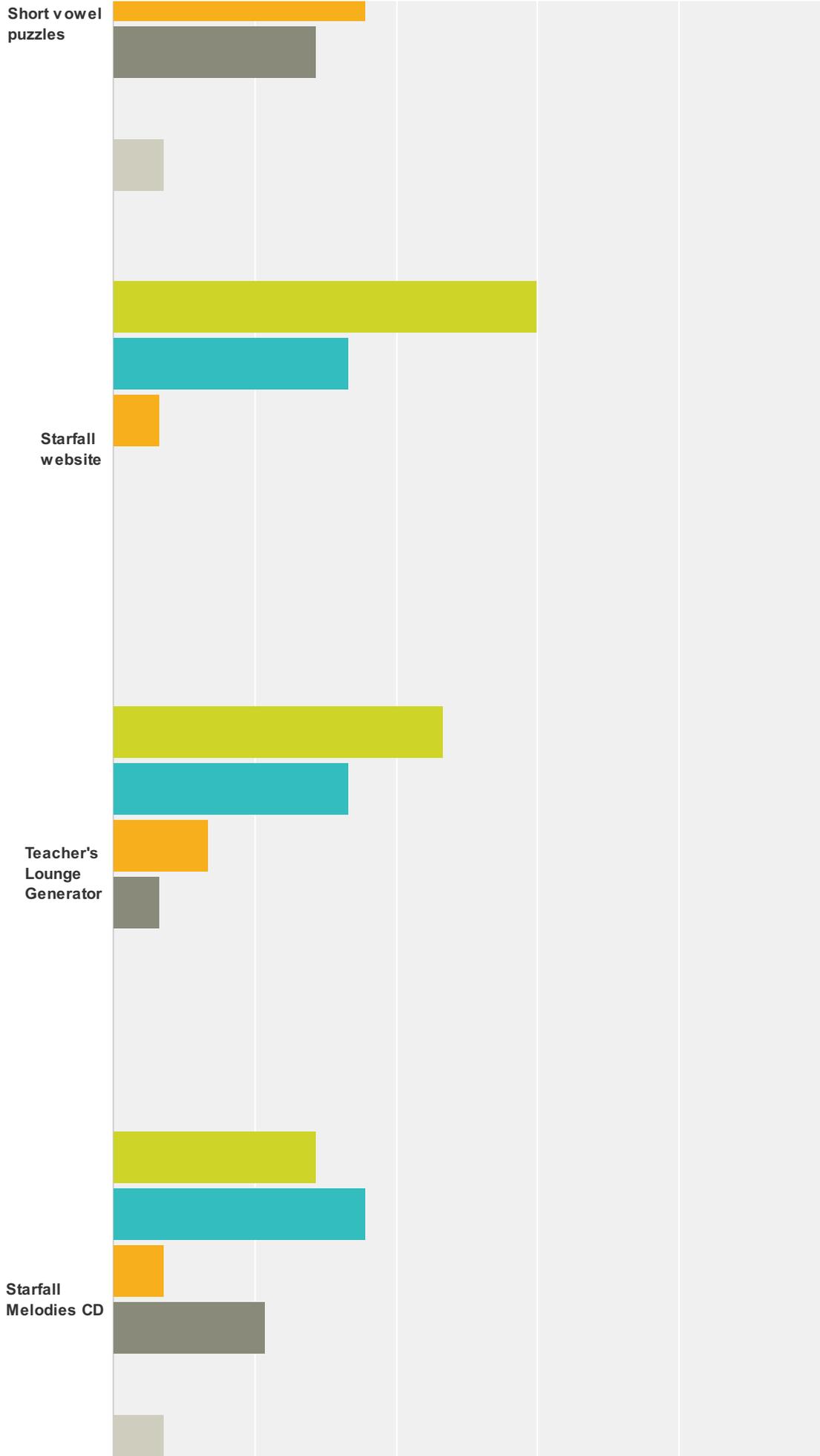
Starfall Speedway game



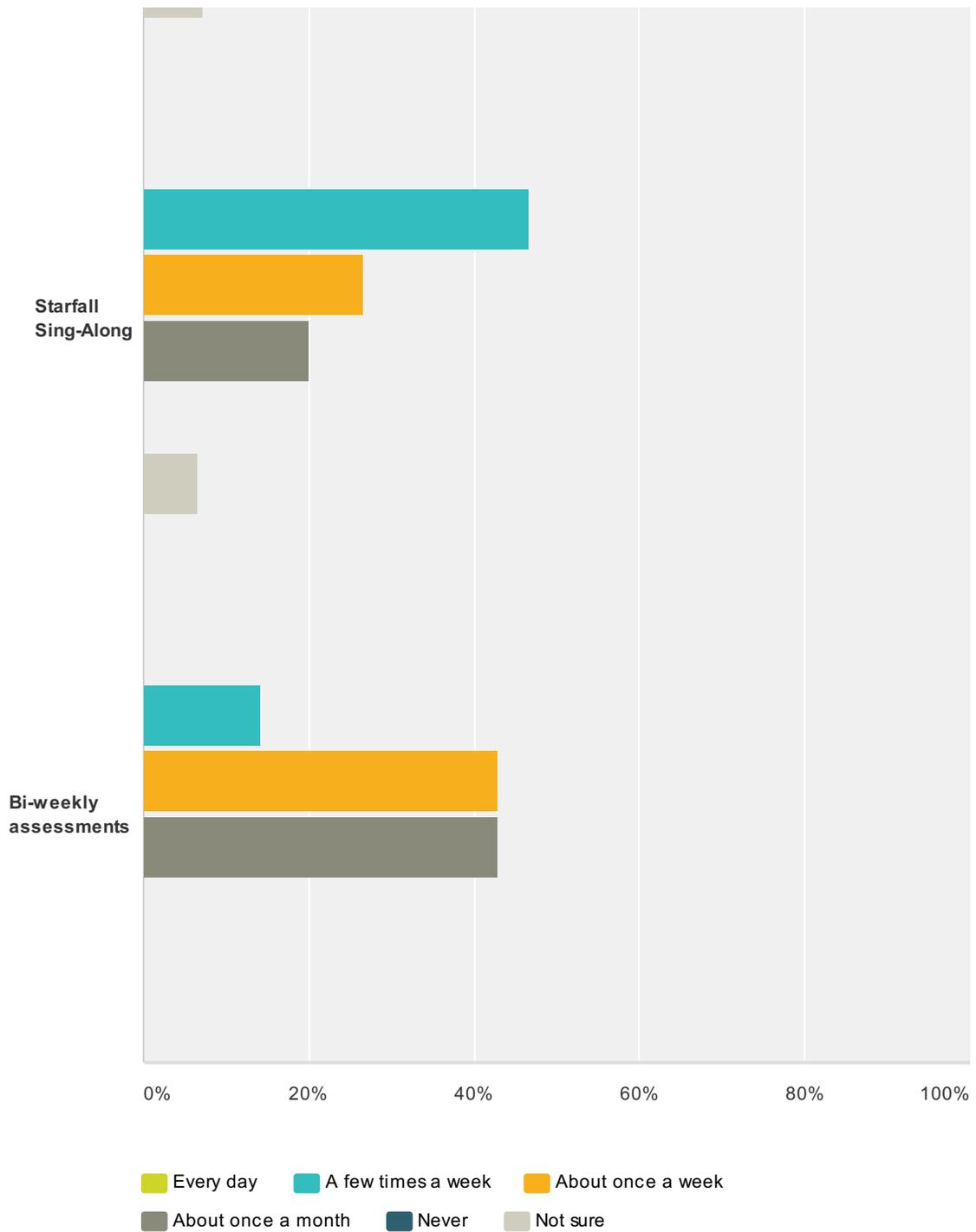
Alphabet Avenue game



Starfall Teacher Survey



Starfall Teacher Survey



	Every day	A few times a week	About once a week	About once a month	Never	Not sure	Total
Teacher's Guide lesson plans	66.67% 10	20% 3	13.33% 2	0% 0	0% 0	0% 0	15
Backpack Bear's Daily Message	25% 4	25% 4	18.75% 3	12.50% 2	12.50% 2	6.25% 1	16
Starfall Writing Journal	0% 0	56.25% 9	12.50% 2	12.50% 2	18.75% 3	0% 0	16
My Starfall Dictionary	0% 0	18.75% 3	12.50% 2	12.50% 2	50% 8	6.25% 1	16

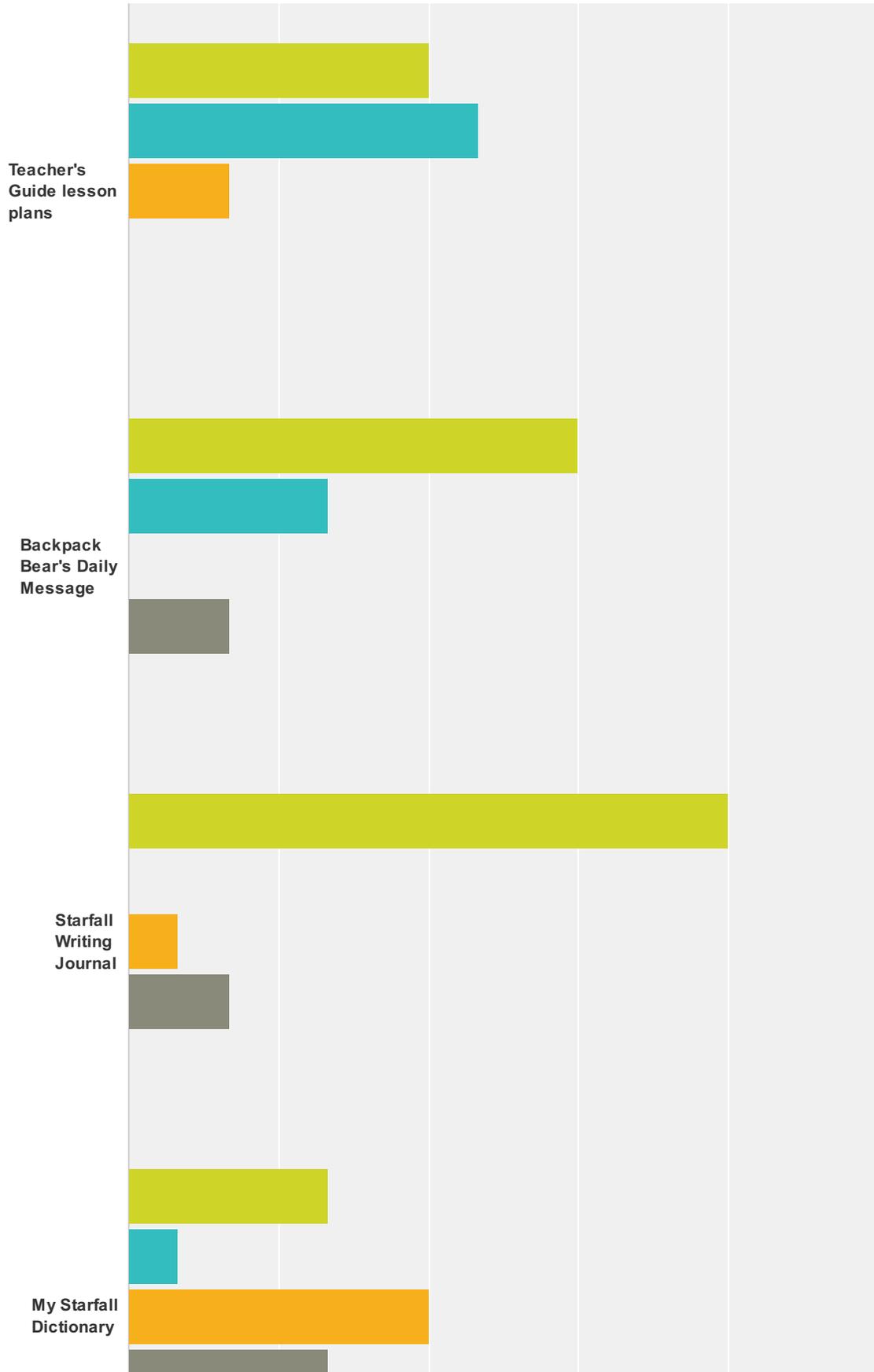
Out-of-Take-home sets	18.75%	43.75%	12.50%	12.50%	6.25%	6.25%
-----------------------	--------	--------	--------	--------	-------	-------

Starfall Teacher Survey

Setup/Item/Item sets	18.75%	50%	12.50%	12.50%	12.50%	6.25%	16
	3	7	2	2	1	1	
Listening and Writing Block Print Text	18.75%	50%	6.25%	6.25%	12.50%	6.25%	
	3	8	1	1	2	1	16
Reading and Writing Block Print Text	25%	50%	6.25%	6.25%	12.50%	0%	
	4	8	1	1	2	0	16
Plush characters	62.50%	18.75%	12.50%	6.25%	0%	0%	
	10	3	2	1	0	0	16
Sentence Strips/Word Cards	20%	46.67%	20%	6.67%	6.67%	0%	
	3	7	3	1	1	0	15
Predecodable Books	6.67%	73.33%	6.67%	0%	6.67%	6.67%	
	1	11	1	0	1	1	15
Box set of decodable Learn to Read books	20%	53.33%	13.33%	0%	6.67%	6.67%	
	3	8	2	0	1	1	15
Box set of short vowel books	21.43%	57.14%	14.29%	0%	0%	7.14%	
	3	8	2	0	0	1	14
Sound-spelling instructional cards	14.29%	64.29%	7.14%	14.29%	0%	0%	
	2	9	1	2	0	0	14
Story Element cards	0%	26.67%	40%	20%	13.33%	0%	
	0	4	6	3	2	0	15
Word/Picture cards	28.57%	50%	21.43%	0%	0%	0%	
	4	7	3	0	0	0	14
Phonics Books (Zac the Rat, etc.)	26.67%	60%	6.67%	0%	0%	6.67%	
	4	9	1	0	0	1	15
ABC Rhyme book	0%	21.43%	42.86%	21.43%	7.14%	7.14%	
	0	3	6	3	1	1	14
Plan and Animal Kingdom books	0%	30.77%	15.38%	38.46%	7.69%	7.69%	
	0	4	2	5	1	1	13
"I'm Reading" sets (Margaret Hillert)	0%	33.33%	20%	26.67%	13.33%	6.67%	
	0	5	3	4	2	1	15
Starfall Read Aloud Books (Animal Kingdom, etc.)	0%	20%	40%	26.67%	6.67%	6.67%	
	0	3	6	4	1	1	15
Recommended literature books for read aloud	0%	50%	21.43%	21.43%	7.14%	0%	
	0	7	3	3	1	0	14
Starfall Speedway game	0%	33.33%	26.67%	40%	0%	0%	
	0	5	4	6	0	0	15
Alphabet Avenue game	0%	26.67%	26.67%	40%	6.67%	0%	
	0	4	4	6	1	0	15
Short vowel puzzles	14.29%	14.29%	35.71%	28.57%	0%	7.14%	
	2	2	5	4	0	1	14
Starfall website	60%	33.33%	6.67%	0%	0%	0%	
	9	5	1	0	0	0	15
Teacher's Lounge Generator	46.67%	33.33%	13.33%	6.67%	0%	0%	
	7	5	2	1	0	0	15
Starfall Melodies CD	28.57%	35.71%	7.14%	21.43%	0%	7.14%	
	4	5	1	3	0	1	14
Starfall Sing-Along	0%	46.67%	26.67%	20%	0%	6.67%	
	0	7	4	3	0	1	15
Bi-weekly assessments	0%	14.29%	42.86%	42.86%	0%	0%	
	0	2	6	6	0	0	14

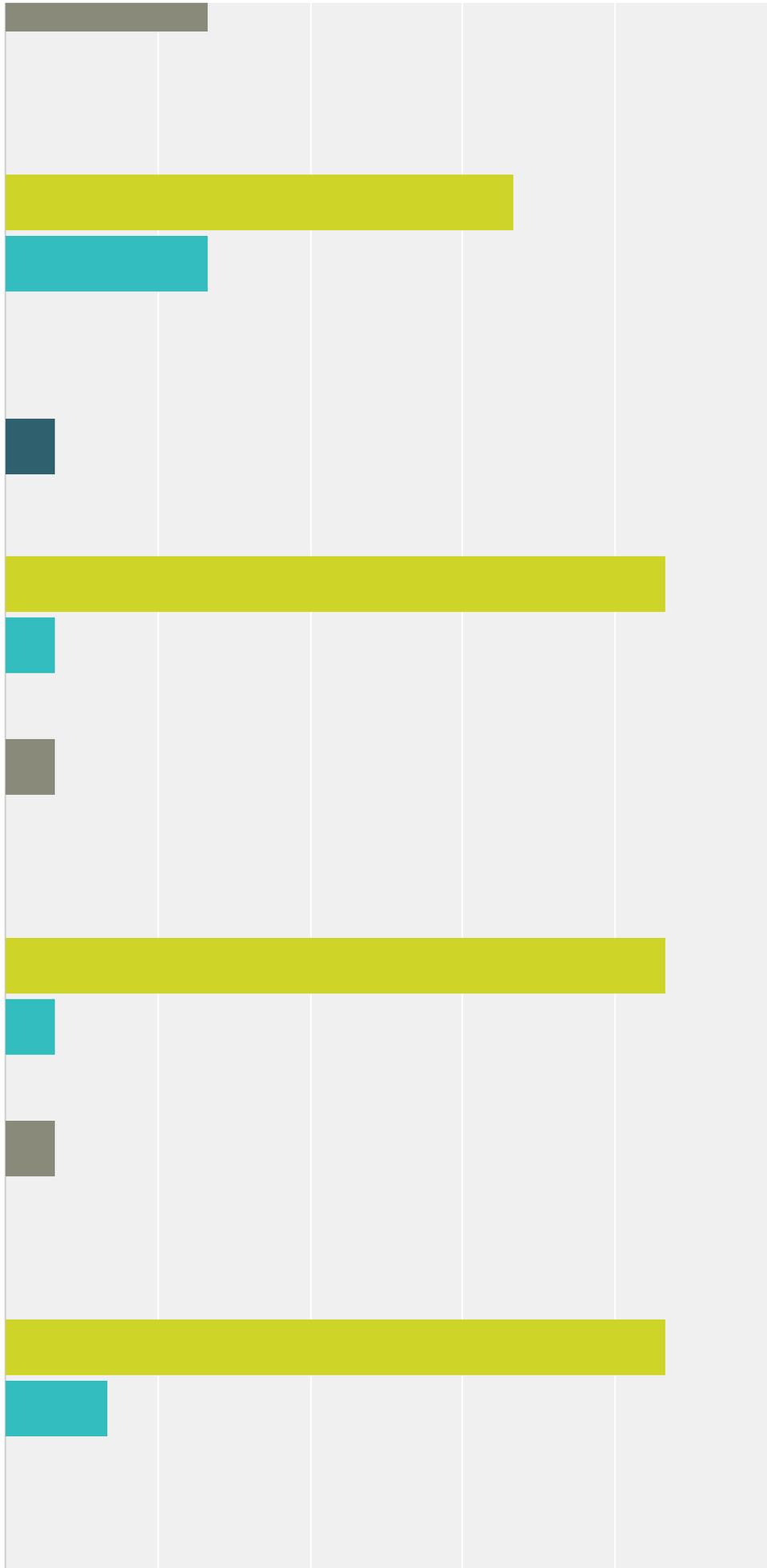
Q12 How easy was it for you to use the following Starfall materials?

Answered: 15 Skipped: 1



Starfall Teacher Survey

Cut-up/Take-home sets

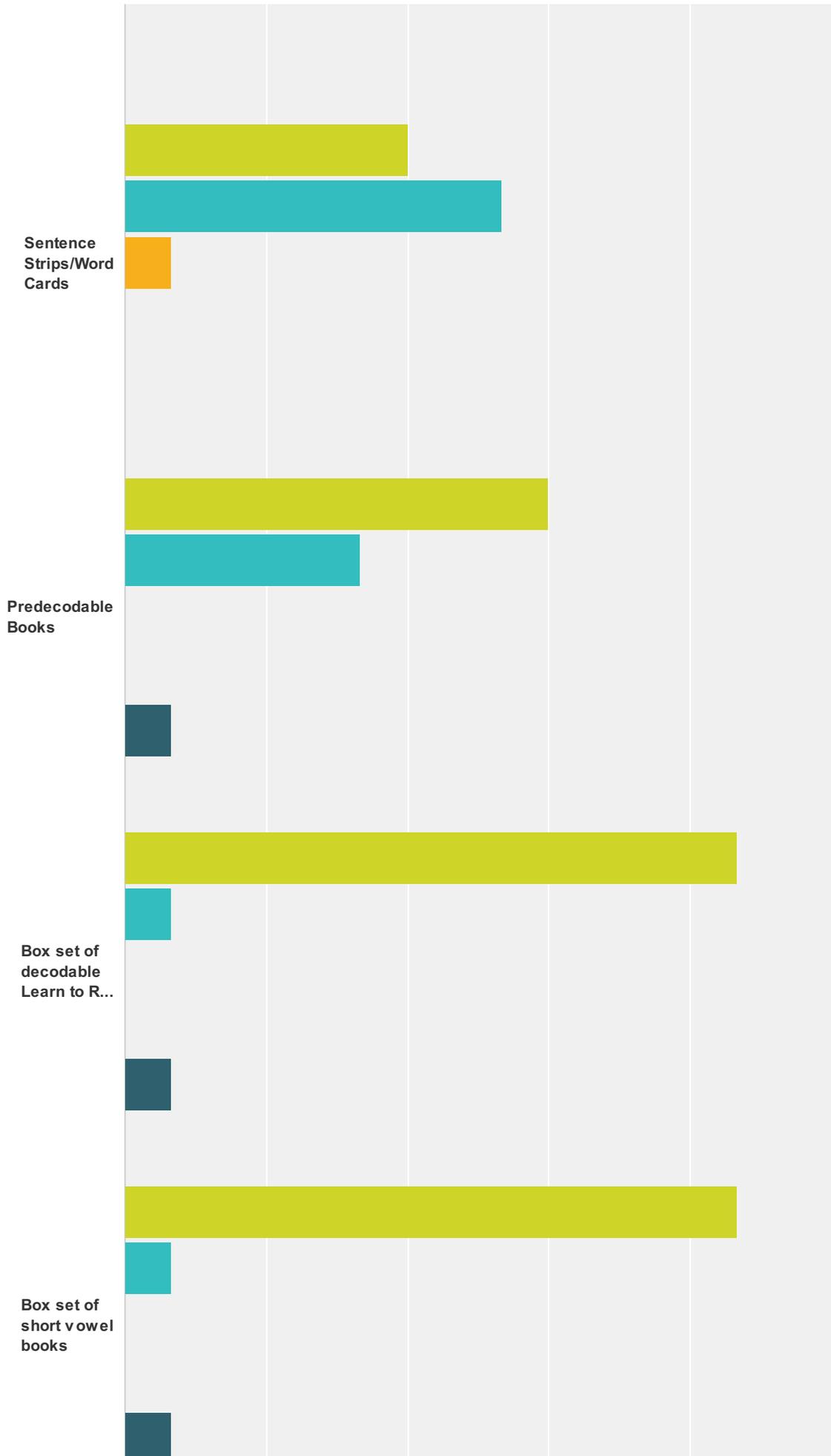


Listening and Writing Block Prin...

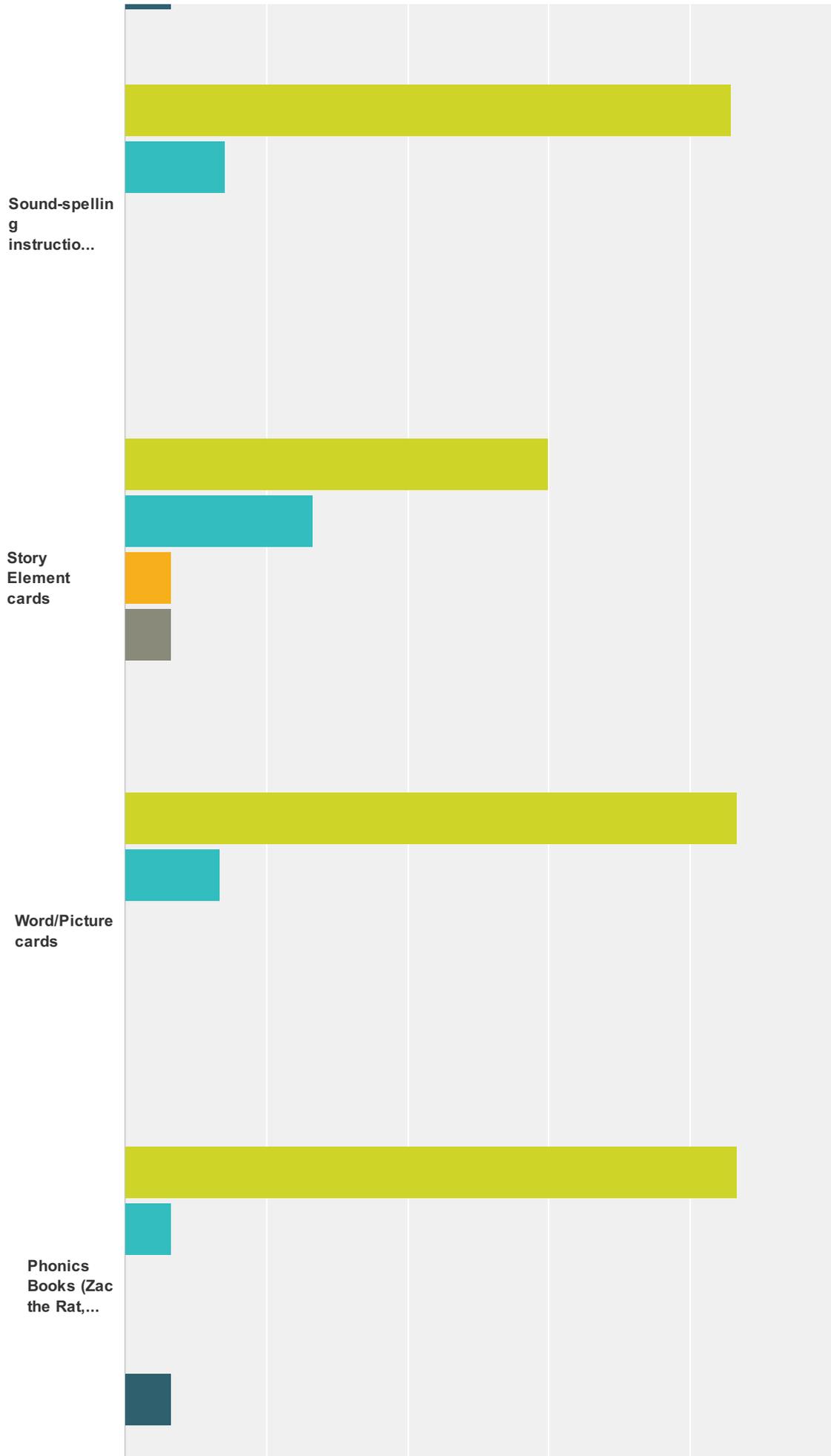
Reading and Writing Block Print Text

Plush characters

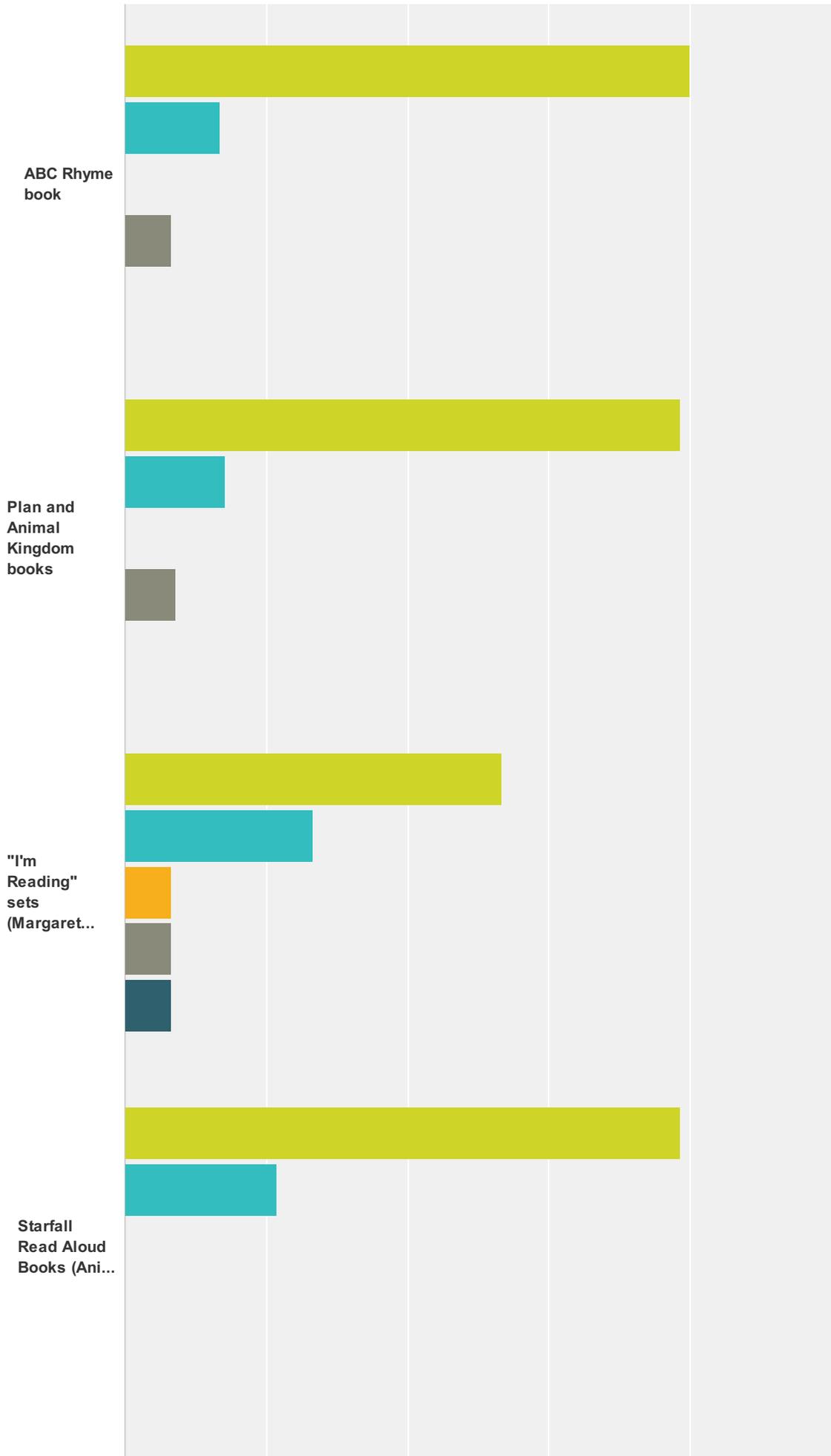
Starfall Teacher Survey



Starfall Teacher Survey



Starfall Teacher Survey



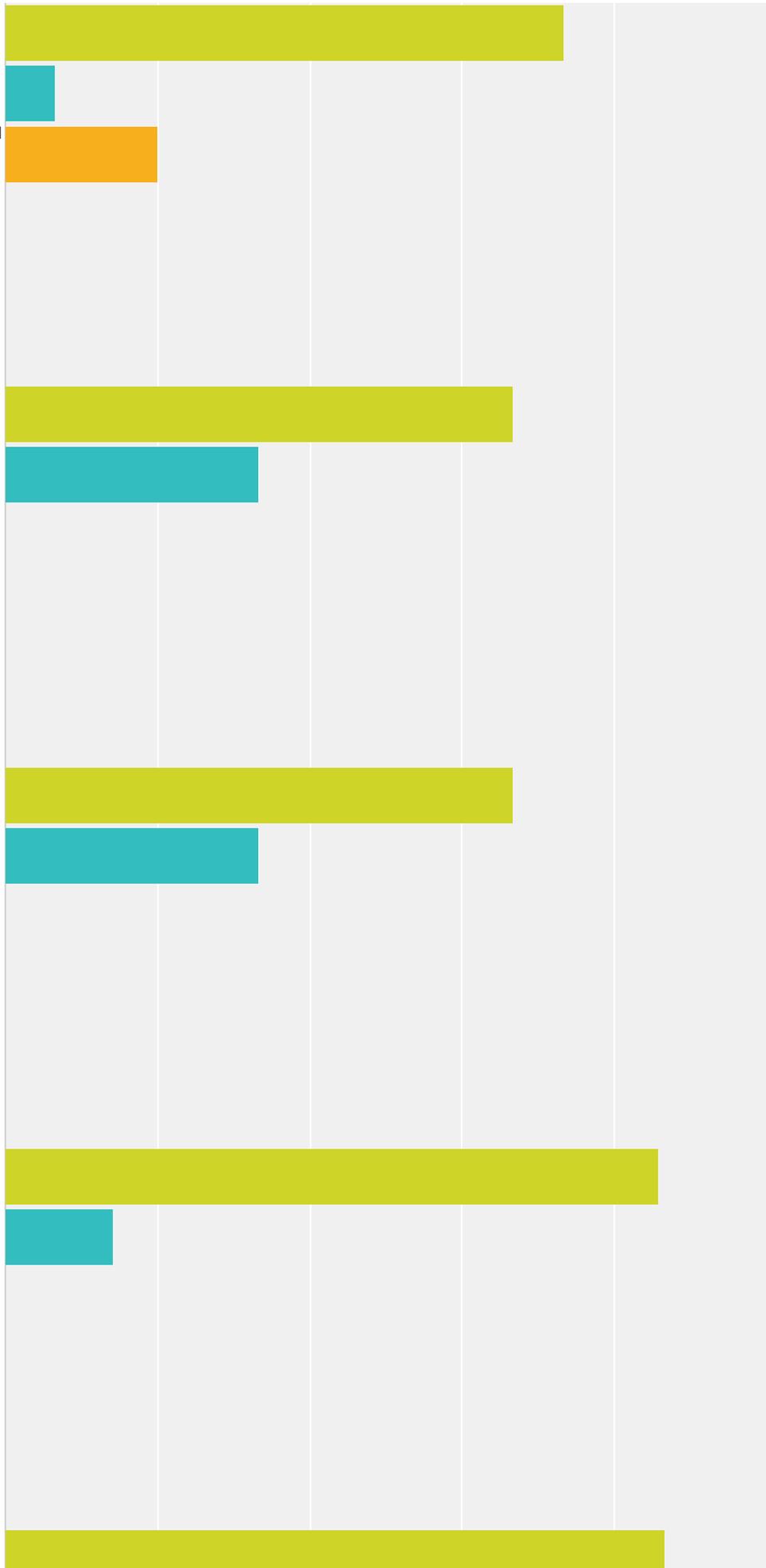
Starfall Teacher Survey

Recommended literature books for...

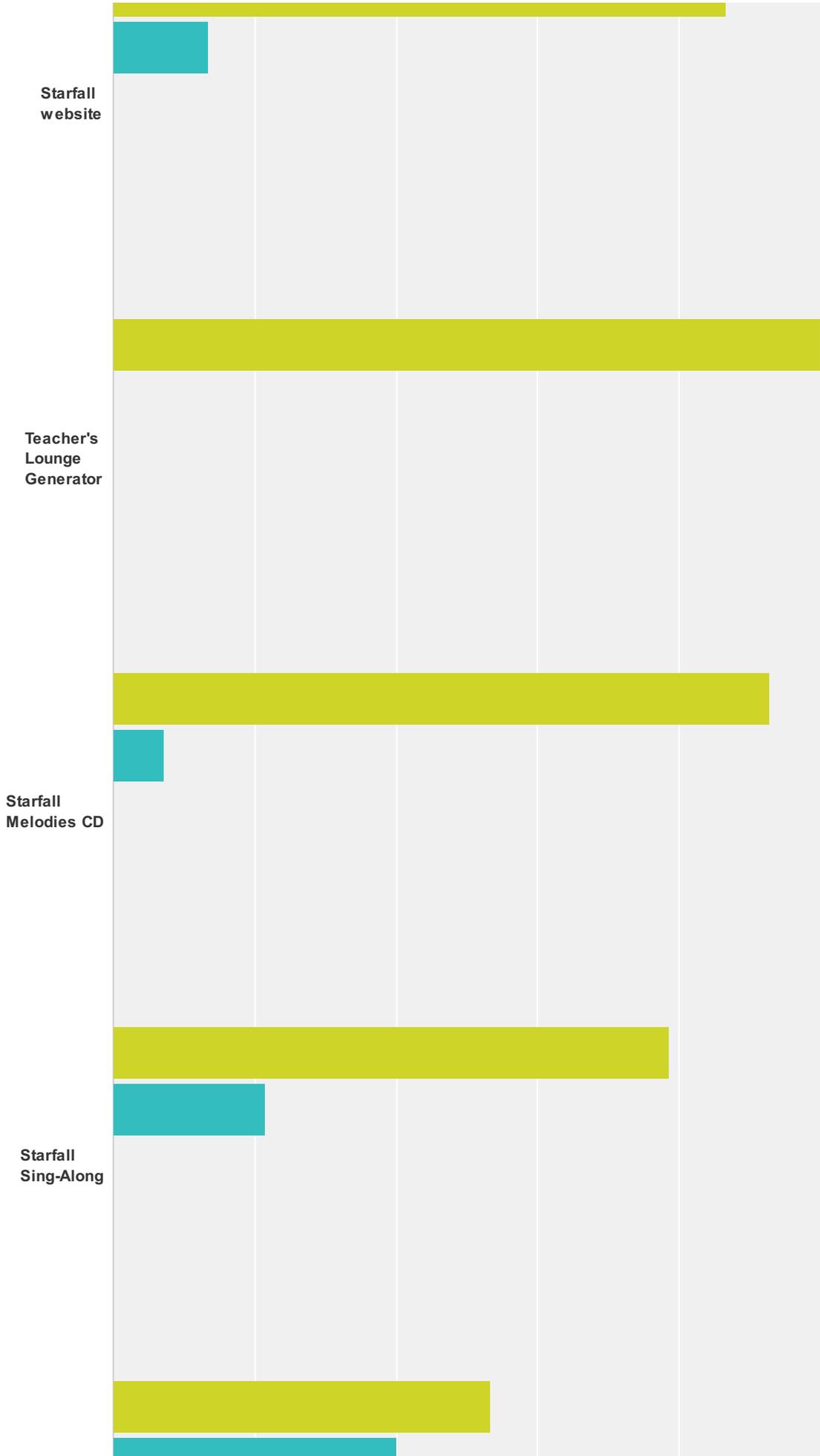
Starfall Speedway game

Alphabet Avenue game

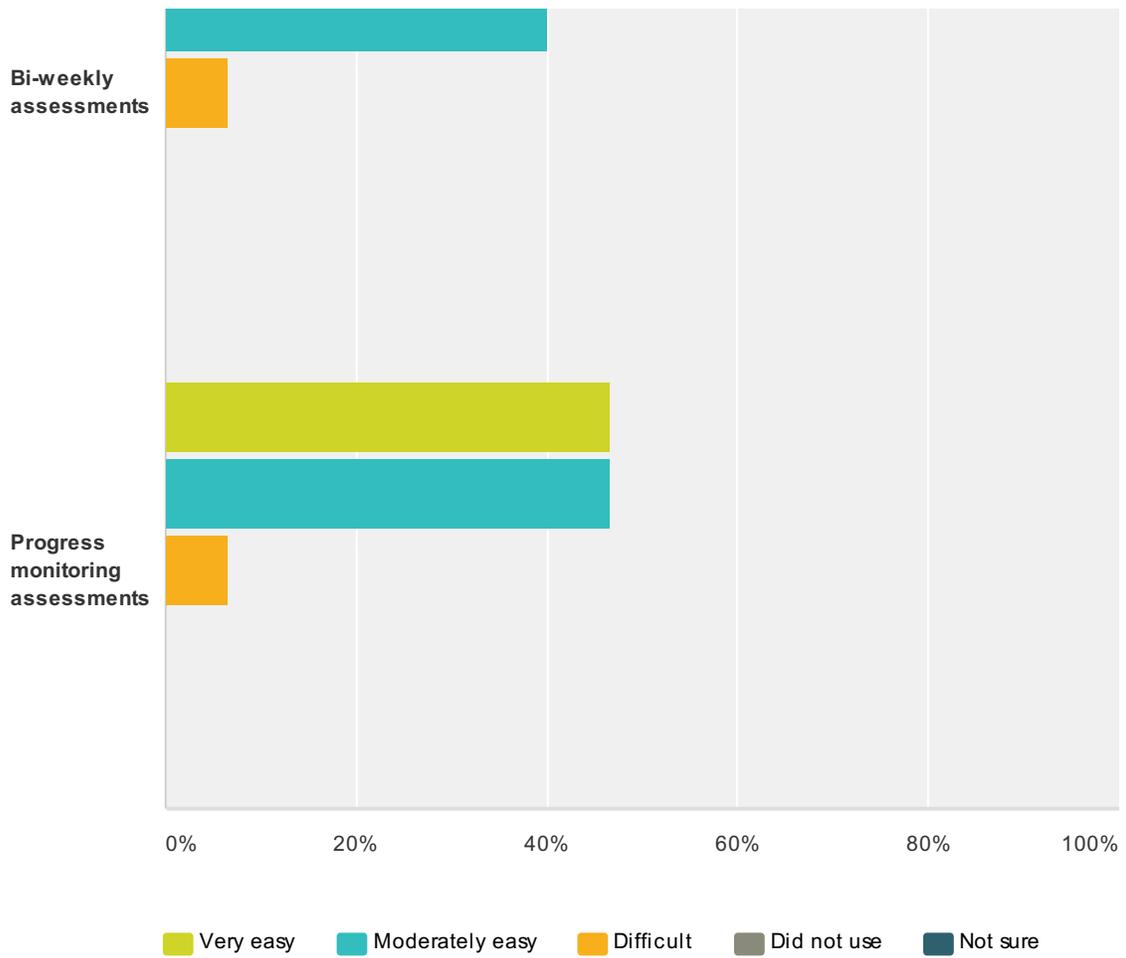
Short vowel puzzles



Starfall Teacher Survey



Starfall Teacher Survey



	Very easy	Moderately easy	Difficult	Did not use	Not sure	Total
Teacher's Guide lesson plans	40% 6	46.67% 7	13.33% 2	0% 0	0% 0	15
Backpack Bear's Daily Message	60% 9	26.67% 4	0% 0	13.33% 2	0% 0	15
Starfall Writing Journal	80% 12	0% 0	6.67% 1	13.33% 2	0% 0	15
My Starfall Dictionary	26.67% 4	6.67% 1	40% 6	26.67% 4	0% 0	15
Cut-up/Take-home sets	66.67% 10	26.67% 4	0% 0	0% 0	6.67% 1	15
Listening and Writing Block Print Text	86.67% 13	6.67% 1	0% 0	6.67% 1	0% 0	15
Reading and Writing Block Print Text	86.67% 13	6.67% 1	0% 0	6.67% 1	0% 0	15
Plush characters	86.67% 13	13.33% 2	0% 0	0% 0	0% 0	15
Sentence Strips/Word Cards	40% 6	53.33% 8	6.67% 1	0% 0	0% 0	15
Predecodable Books	60% 9	33.33% 5	0% 0	0% 0	6.67% 1	15
Box set of decodable Learn to Read books	86.67% 13	6.67% 1	0% 0	0% 0	6.67% 1	15
Box set of short vowel books	86.67%	6.67%	0%	0%	6.67%	

Starfall Teacher Survey

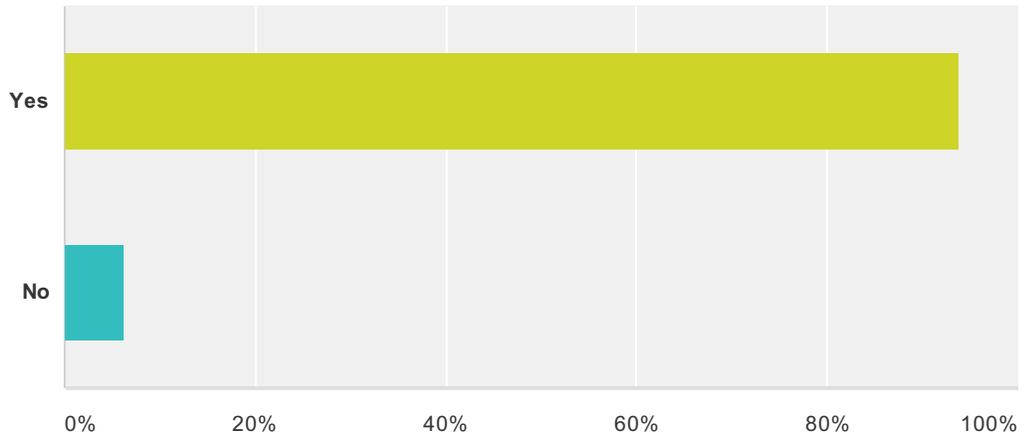
Box set of short vowel books	86.67% 13	6.67% 1	0% 0	0% 0	6.67% 1	15
Sound-spelling instructional cards	85.71% 12	14.29% 2	0% 0	0% 0	0% 0	14
Story Element cards	60% 9	26.67% 4	6.67% 1	6.67% 1	0% 0	15
Word/Picture cards	86.67% 13	13.33% 2	0% 0	0% 0	0% 0	15
Phonics Books (Zac the Rat, etc.)	86.67% 13	6.67% 1	0% 0	0% 0	6.67% 1	15
ABC Rhyme book	80% 12	13.33% 2	0% 0	6.67% 1	0% 0	15
Plan and Animal Kingdom books	78.57% 11	14.29% 2	0% 0	7.14% 1	0% 0	14
"I'm Reading" sets (Margaret Hillert)	53.33% 8	26.67% 4	6.67% 1	6.67% 1	6.67% 1	15
Starfall Read Aloud Books (Animal Kingdom, etc.)	78.57% 11	21.43% 3	0% 0	0% 0	0% 0	14
Recommended literature books for read aloud	73.33% 11	6.67% 1	20% 3	0% 0	0% 0	15
Starfall Speedway game	66.67% 10	33.33% 5	0% 0	0% 0	0% 0	15
Alphabet Avenue game	66.67% 10	33.33% 5	0% 0	0% 0	0% 0	15
Short vowel puzzles	85.71% 12	14.29% 2	0% 0	0% 0	0% 0	14
Starfall website	86.67% 13	13.33% 2	0% 0	0% 0	0% 0	15
Teacher's Lounge Generator	100% 15	0% 0	0% 0	0% 0	0% 0	15
Starfall Melodies CD	92.86% 13	7.14% 1	0% 0	0% 0	0% 0	14
Starfall Sing-Along	78.57% 11	21.43% 3	0% 0	0% 0	0% 0	14
Bi-weekly assessments	53.33% 8	40% 6	6.67% 1	0% 0	0% 0	15
Progress monitoring assessments	46.67% 7	46.67% 7	6.67% 1	0% 0	0% 0	15

Q13 Please explain why it was difficult to use the materials you rated as "difficult" in the preceding question.

Answered: 9 Skipped: 7

Q14 Did you supplement your literacy lessons with materials outside of Starfall?

Answered: 16 Skipped: 0



Answer Choices	Responses
Yes	93.75% 15
No	6.25% 1
Total	16

Q15 If yes, please indicate the materials you used and why you opted to use them.

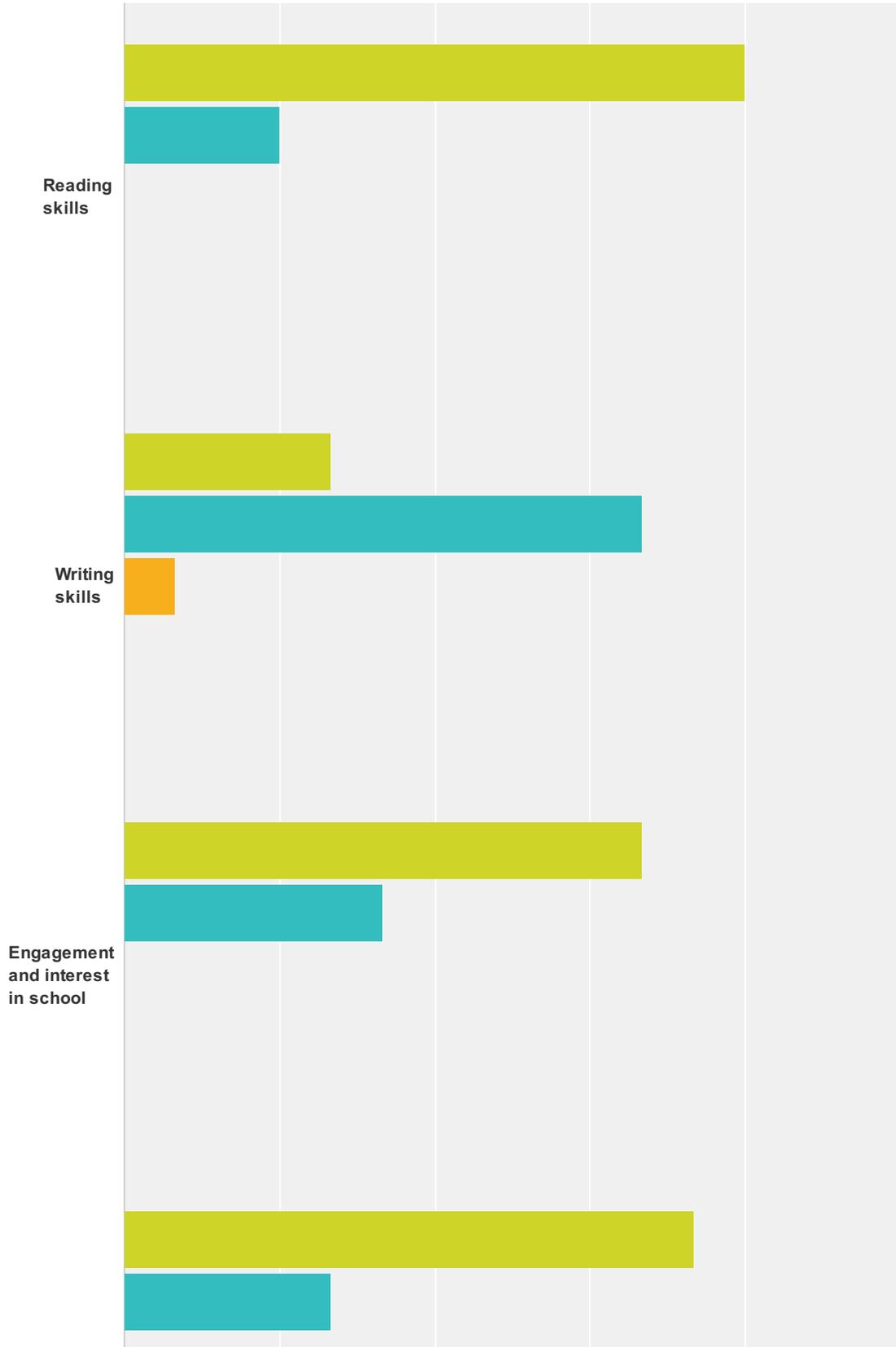
Answered: 13 Skipped: 3

Q16 In what ways, if any, did Starfall impact your teaching?

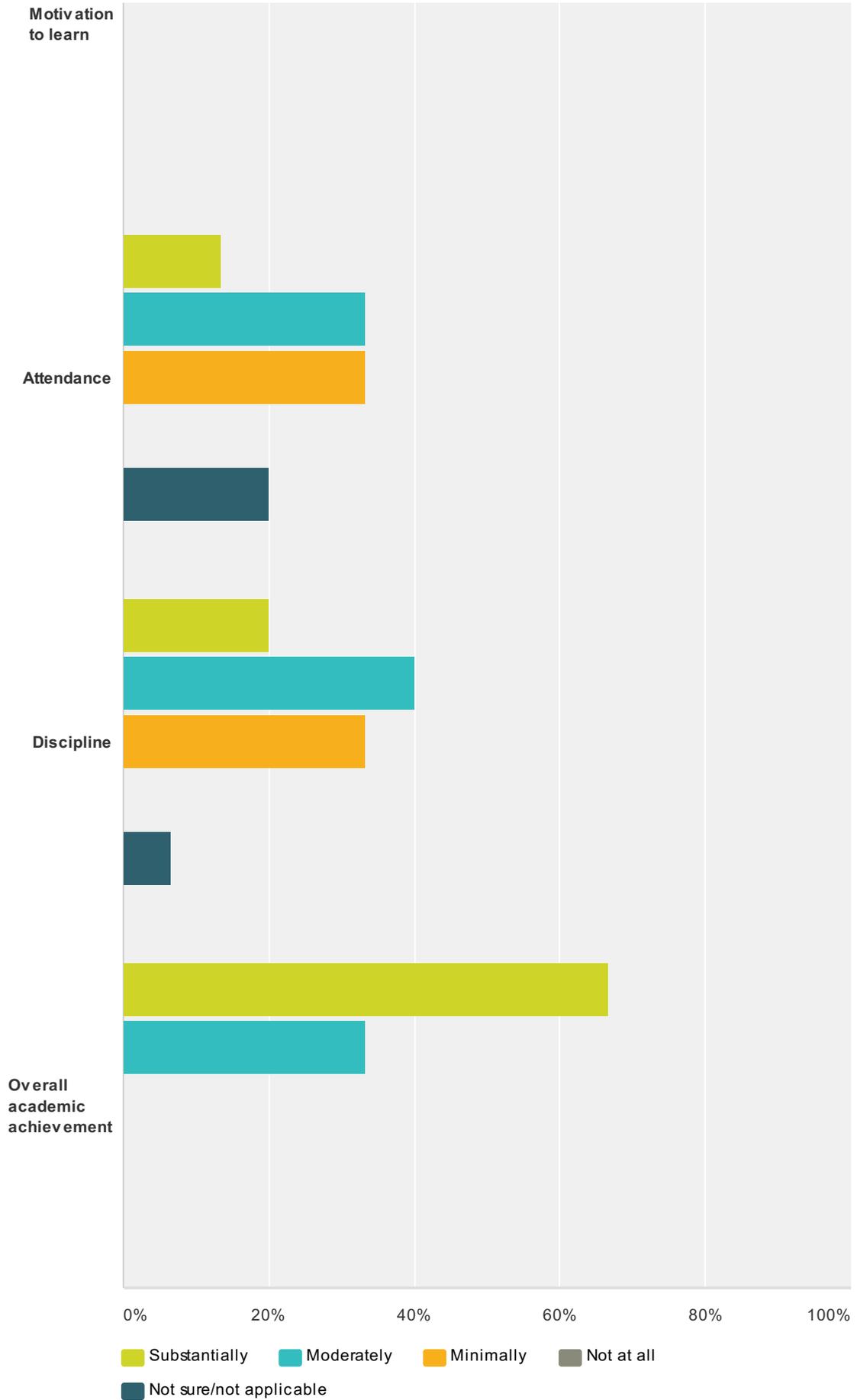
Answered: 12 Skipped: 4

Q17 From what you have observed, to what extent do you think Starfall has had an impact on students in the following areas?

Answered: 15 Skipped: 1



Starfall Teacher Survey



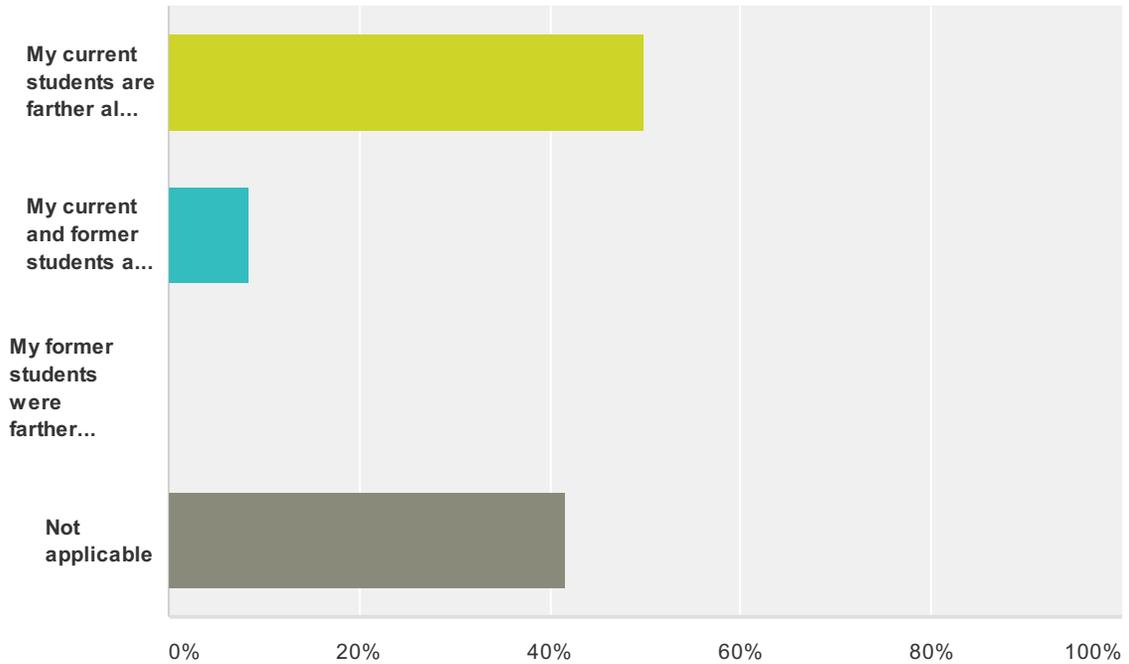
	Substantially	Moderately	Minimally	Not at all	Not sure/not applicable	Total
--	---------------	------------	-----------	------------	-------------------------	-------

Starfall Teacher Survey

Reading skills	80% 12	20% 3	0% 0	0% 0	0% 0	15
Writing skills	26.67% 4	66.67% 10	6.67% 1	0% 0	0% 0	15
Engagement and interest in school	66.67% 10	33.33% 5	0% 0	0% 0	0% 0	15
Motivation to learn	73.33% 11	26.67% 4	0% 0	0% 0	0% 0	15
Attendance	13.33% 2	33.33% 5	33.33% 5	0% 0	20% 3	15
Discipline	20% 3	40% 6	33.33% 5	0% 0	6.67% 1	15
Overall academic achievement	66.67% 10	33.33% 5	0% 0	0% 0	0% 0	15

Q18 (For Sopris Elementary and Basalt Elementary teachers only) In comparison to your students last year, how do your current (2012-13) students compare academically?

Answered: 12 Skipped: 4

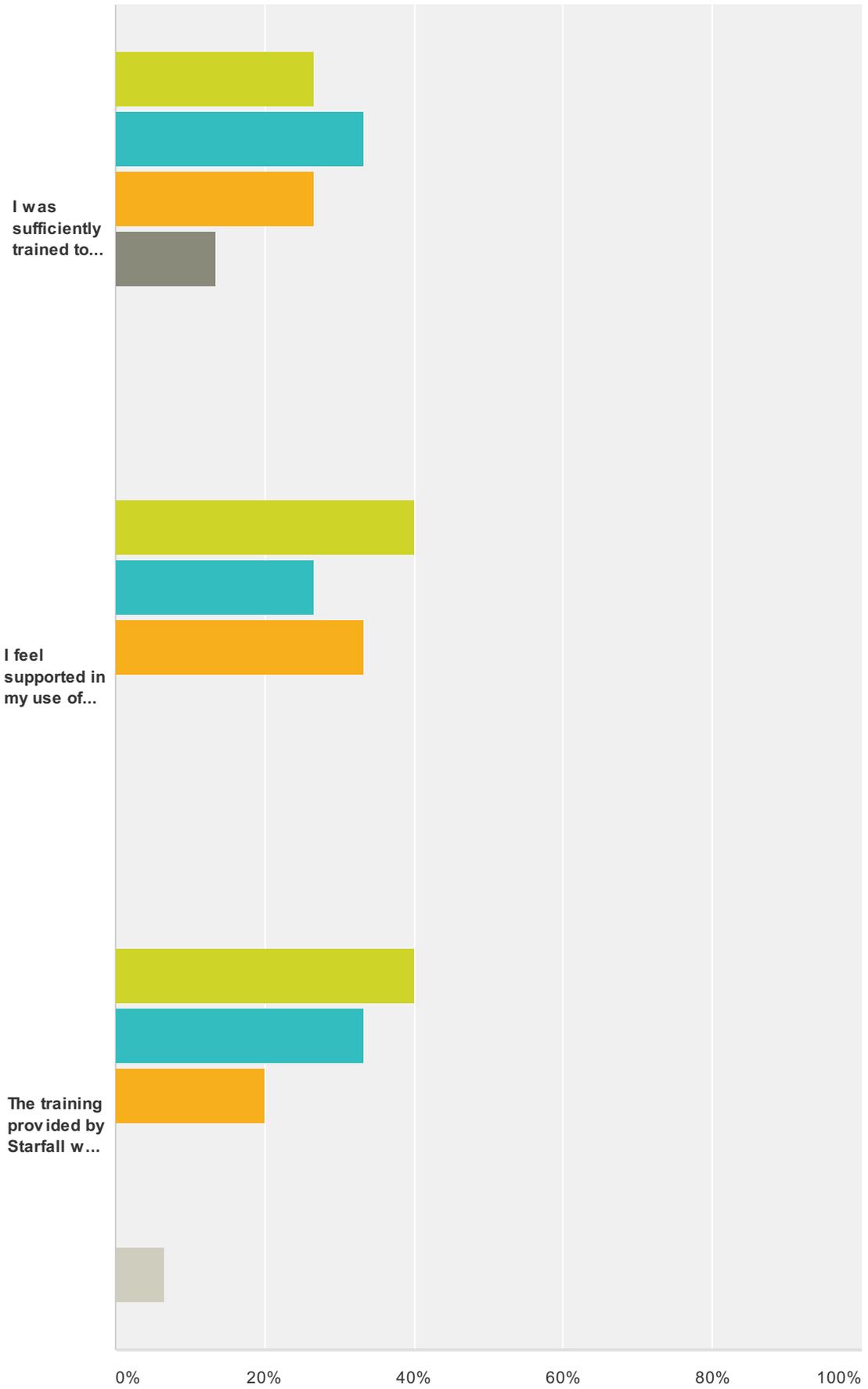


Answer Choices	Responses	
My current students are farther along academically	50%	6
My current and former students are academically comparable	8.33%	1
My former students were farther academically	0%	0
Not applicable	41.67%	5
Total		12

Q19 Please indicate how much you agree with the following statements.

Answered: 15 Skipped: 1

Starfall Teacher Survey



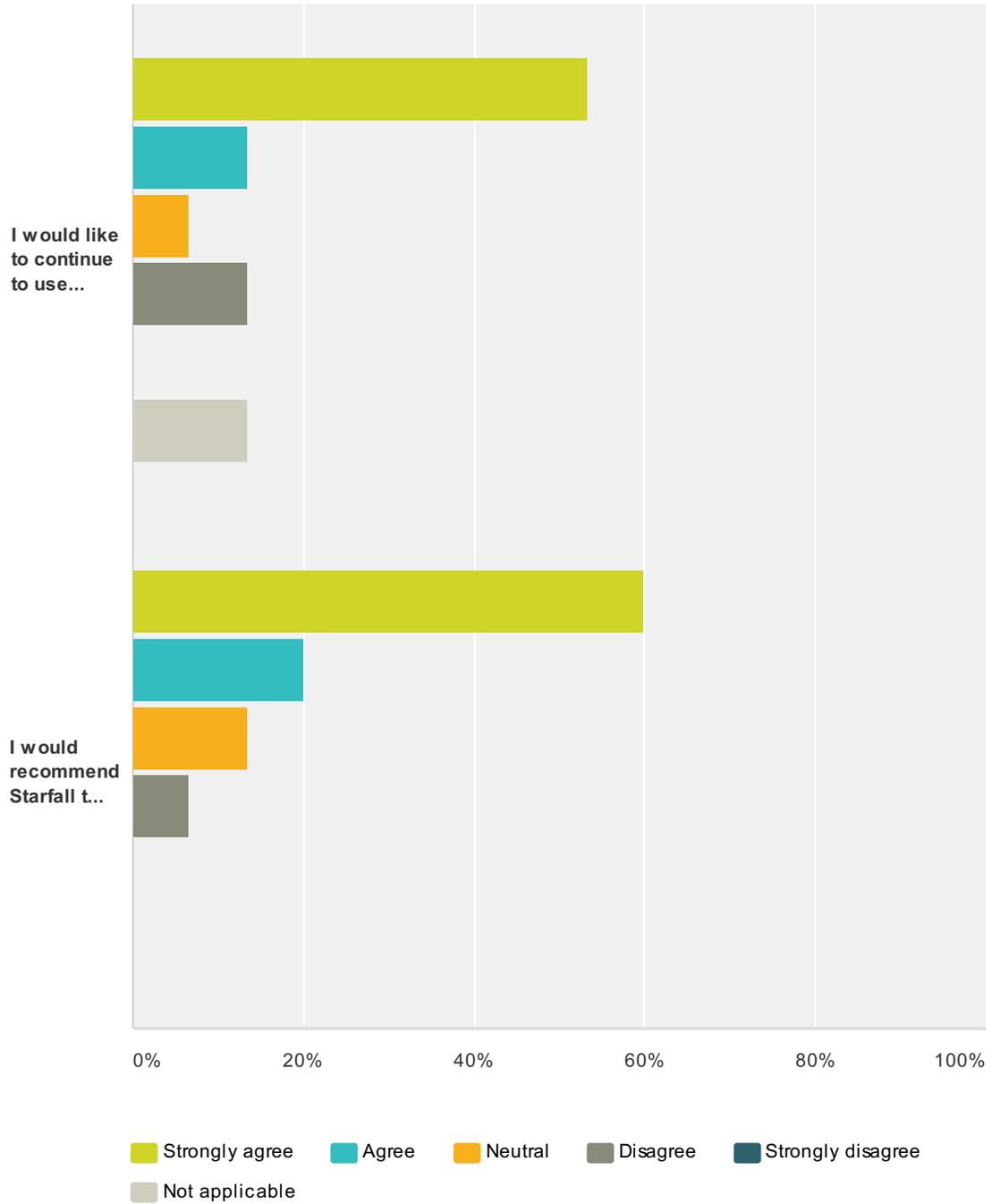
Strongly agree Agree Neutral Disagree Strongly disagree
Not applicable

Starfall Teacher Survey

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not applicable	Total
I was sufficiently trained to use Starfall in the classroom	26.67% 4	33.33% 5	26.67% 4	13.33% 2	0% 0	0% 0	15
I feel supported in my use of Starfall	40% 6	26.67% 4	33.33% 5	0% 0	0% 0	0% 0	15
The training provided by Starfall was relevant to my work	40% 6	33.33% 5	20% 3	0% 0	0% 0	6.67% 1	15

Q20 Please indicate how much you agree with the following statements.

Answered: 15 Skipped: 1



	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Not applicable	Total
I would like to continue to use Starfall with my students next year	53.33% 8	13.33% 2	6.67% 1	13.33% 2	0% 0	13.33% 2	15
I would recommend Starfall to other teachers	60% 9	20% 3	13.33% 2	6.67% 1	0% 0	0% 0	15

Q21 What are the most effective aspects of the Starfall curriculum?

Answered: 10 Skipped: 6

Q22 What challenges, if any, did you experience with Starfall curriculum implementation?

Answered: 11 Skipped: 5

Group Summary Statistics and Achievement Analysis Results

A. 2012-13 Cross-sectional Analyses (same year – different schools)

Proportion of students by proficiency level on the spring 2013 DRA 2

Group	Spring 2013 DRA 2 Level ¹	Treatment Group		Total	Yates Chi	p
		Non-Starfall	Starfall			
Not Limited English Proficient	Below proficient	39 46.4%	39 24.4%	78 32.0%	11.325	0.001
	At or above proficient	45 53.6%	121 75.6%	166 68.0%		
	Total	84	160	244		
Limited English Proficient	Below proficient	74 92.5%	71 66.4%	145 77.5%	16.497	<0.001
	At or above proficient	6 7.5%	36 33.6%	42 22.5%		
	Total	80	107	187		
Female	Below proficient	44 59.5%	55 43.3%	99 49.3%	4.881	0.027
	At or above proficient	30 40.5%	72 56.7%	102 50.7%		
	Total	74	127	201		
Male	Below proficient	69 76.7%	55 39.3%	124 53.9%	29.322	<0.001
	At or above proficient	21 23.3%	85 60.7%	106 46.1%		
	Total	90	140	230		
Total	Below proficient	113 68.9%	110 41.2%	223 51.7%	30.129	<0.001
	At or above proficient	51 31.1%	157 58.8%	208 48.3%		
	Total	164	267	431		

¹ A score of 4 or higher on the spring administration of the DRA 2 is considered proficient.

Group Summary Statistics and Achievement Analysis Results

B. 2012-13 Cross-sectional Analyses (same year – different schools)

School Year 2012-13 Summary Statistics by School

Variable / Group		Crystal River (0)		Sopris (1)		Basalt (1) ^{Error!} Bookmark not defined.		Glenwood Springs (2)		Total District	
		N	%	N	%	N	%	N	%	N	%
Gender	Male	63	57.8	64	58.2	62	51.7	41	44.6	230	53.4
	Female	46	42.2	46	41.8	58	48.3	51	55.4	201	46.6
Special Ed Status	Not Spec Ed	105	96.3	102	92.7	111	92.5	91	98.9	409	94.9
	Spec Ed	4	3.7	8	7.3	9	7.5	1	1.1	22	5.1
Section 504 Status	Not Sect 504	109	100.0	110	100.0	120	100.0	91	98.9	430	99.8
	Sect 504	0	0.0	0	0.0	0	0.0	1	1.1	1	0.2
Title I Status	Not Title I	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Title I	109	100.0	110	100.0	120	100.0	92	100.0	431	100.0
Limited English Proficiency	Not LEP	56	51.4	71	64.5	67	55.8	50	54.3	244	56.6
	LEP	53	48.6	39	36.6	53	44.2	42	45.7	187	43.4
Race / Ethnicity	Anglo/White	46	42.2	64	68.2	49	40.8	39	42.4	198	45.9
	Hispanic	56	51.4	42	38.2	69	57.5	48	52.2	215	49.9
	Other	7	6.4	4	3.6	2	1.7	5	5.4	18	4.2
2012-13 Average Daily Attendance		85.49		90.56		87.33		84.09		87.00	
Mean 2013 DRA 2 Score*		3.02		4.92		3.52		5.11		4.09	
Total N		109		110		120		92		431	

* $F(3, 427) = 10.494, p < 0.001, \eta^2 = 0.069$, Scheffe: Glenwood Springs > Basalt, Glenwood Springs > Crystal River, Sopris > Basalt, Sopris > Crystal River

¹ Includes 55 students from Basalt not receiving Starfall instruction.

Group Summary Statistics and Achievement Analysis Results

C. 2012-13 Cross-sectional Analyses (same year – different schools)

School Year 2012-2013 Summary Statistics by Starfall Implementation

Variable / Group		No Starfall ¹		1 st year Starfall		2 nd year Starfall		Total	
		N	%	N	%	N	%	N	%
Gender	Female	74	45.1	76	43.4	51	55.4	201	46.6
	Male	90	54.9	99	56.6	41	44.6	230	53.4
Special Education Status	Not Special Ed	159	97.0	159	90.9	91	98.9	409	94.9
	Special Ed	5	3.0	16	9.1	1	1.1	22	5.1
Section 504 Status	Not Section 504	164	100.0	175	100.0	91	98.9	430	99.8
	Section 504	0	0.0	0	0.0	1	1.1	1	0.2
Title I Status	Not Title I	0	0.0	0	0.0	0	0	0	0.0
	Title I	164	100.0	175	100.0	92	100.0	431	100.0
Limited English Proficiency	Not LEP	84	51.2	110	62.9	50	54.3	244	56.6
	LEP	80	48.8	65	37.1	42	45.7	187	43.4
Race / Ethnicity	Anglo/White	70	42.7	89	50.9	39	42.4	198	45.9
	Hispanic	86	52.4	81	46.3	48	52.2	215	49.9
	Other	8	4.9	5	2.9	5	5.4	18	4.2
Average Daily Attendance		85.96		89.49		84.09		87.00	
Mean spring 2013 DRA 2 Score*		3.09		4.49		5.11		4.09	
Total N		164		175		92		431	

* $F(2, 428) = 13.323, p < 0.001, \eta^2 = 0.059$, Scheffe: 2nd year > None, 1st year > None

¹ Includes 55 students from Basalt not receiving Starfall instruction.

Group Summary Statistics and Achievement Analysis Results

D. 2012-13 Cross-sectional Analyses (same year – different schools)

Multiple Linear Regression - School Year 2012-2013

Variable	Beta	Change in r^2	t	p	Translation
LEP Status	-2.264	0.239	-6.330	<0.001	Limited English proficient students associated with poorer performance on spring 2013 DRA 2
Starfall years	0.993	0.046	5.586	<0.001	More years of Starfall Kindergarten Curriculum implementation associated with better performance on spring 2013 DRA 2
Race / Ethnicity	-1.171	0.026	-3.749	<0.001	Hispanic students associated with poorer performance than Anglo/ White students on spring 2013 DRA 2
Special Education Status	-1.732	0.011	-2.847	0.005	Non-special education students associated with better performance on spring 2013 DRA 2
2012-13 Average Daily Attendance	0.033	0.009	2.426	0.016	Students with higher average daily attendance associated with better performance on spring 2013 DRA 2
Constant	3.341		2.520	0.012	

Model $r^2 = 0.332$, Cohen's $f^2 = 0.497$

<i>Excluded Variables</i>	t	p
Section 504 Status	0.111	0.912
Gender	0.371	0.710

Group Summary Statistics and Achievement Analysis Results

E. Historical Cross-sectional Analyses (different year – same schools)

Proportion of students by proficiency level on the spring DRA 2 for Glenwood Springs

Group	Spring DRA 2 Level ¹	Glenwood Springs			Yates Chi	p
		Baseline	2012-13	Total		
Not Limited English Proficient	Below proficient	12 24.5%	11 22.0%	23 23.2%	0.003	0.956
	At or above proficient	37 75.5%	39 78.0%	76 76.8%		
	Total	49	50	99		
Limited English Proficient	Below proficient	32 76.2%	19 45.2%	51 60.7%	7.187	0.007
	At or above proficient	10 23.8%	23 54.8%	33 39.3%		
	Total	42	42	84		
Female	Below proficient	16 41.0%	21 41.2%	37 41.1%	0.000	1.000
	At or above proficient	23 59.0%	30 58.8%	53 58.9%		
	Total	39	51	90		
Male	Below proficient	28 53.8%	9 22.0%	37 39.8%	8.449	0.004
	At or above proficient	24 46.2%	32 78.0%	56 60.2%		
	Total	52	41	93		
Total	Below proficient	44 48.4%	30 32.6%	74 40.4%	4.077	0.043
	At or above proficient	47 51.6%	62 67.4%	109 59.6%		
	Total	91	92	183		

¹ A score of 4 or higher on the spring administration of the DRA 2 is considered proficient.

Group Summary Statistics and Achievement Analysis Results

F. Historical Cross-sectional Analyses (different year – same schools)

Proportion of students by proficiency level on the spring DRA 2 for Sopris and Basalt

Group	Spring DRA 2 Level ¹	Sopris and Basalt ²			Yates Chi	p
		Baseline	2012-13	Total		
Not LEP	Below proficient	44 36.7%	28 25.5%	72 31.3%	2.854	0.091
	At or above proficient	76 63.3%	82 74.5%	158 68.7%		
	Total	120	110	230		
LEP	Below proficient	87 90.6%	52 80.0%	139 86.3%	2.863	0.091
	At or above proficient	9 9.4%	13 20.0%	22 13.7%		
	Total	96	65	161		
Female	Below proficient	57 58.2%	34 44.7%	91 52.3%	2.578	0.108
	At or above proficient	41 41.8%	42 55.3%	83 47.7%		
	Total	98	76	174		
Male	Below proficient	74 62.7%	46 46.5%	120 55.3%	5.110	0.024
	At or above proficient	44 37.3%	53 53.5%	97 44.7%		
	Total	118	99	217		
Total	Below proficient	131 60.6%	80 45.7%	211 54.0%	8.088	0.004
	At or above proficient	85 39.4%	95 54.3%	180 46.0%		
	Total	216	175	391		

¹ A score of 4 or higher on the spring administration of the DRA 2 is considered proficient.

² Approximately half (N=65) of the students in Basalt received Starfall instruction in 2012-13.

G. Historical Cross-sectional Analyses (different year – same schools)

Proportion of students by proficiency level on the spring DRA 2 for Crystal River and Basalt

Group	Spring DRA 2 Level ¹	Crystal River and Basalt ²			Yates Chi	p
		Baseline	2012-13	Total		
Total	Below proficient	135 65.9%	113 68.9%	248 67.2%	0.258	0.611
	At or above proficient	70 34.1%	51 31.1%	121 32.8%		
	Total	205	164	369		

¹ A score of 4 or higher on the spring administration of the DRA 2 is considered proficient.

² Approximately half (N=55) of the students in Basalt *did not* receive Starfall instruction in 2012-13.

Group Summary Statistics and Achievement Analysis Results

H. Historical Cross-sectional Analyses (different year – same schools)

Comparison between baseline* and 2012-13 school years

	Crystal River		Sopris		Basalt		Glenwood Springs		Total District	
	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2010-11	2012-13	2010-11 2011-12	2012-13
N	91	109	102	110	114	65	91	92	398	376
Mean DRA 2	3.02	2.84	3.61	4.92	3.34	3.75	4.75	5.11	3.62	4.21
<i>t</i>	0.420		2.836		0.821		0.781		2.559	
<i>df</i>	198		210		106		181		750	
<i>p</i>	0.675		0.005		0.414		0.436		0.011	

* The baseline school year for Glenwood Springs is 2010-11

I. Historical Cross-sectional Analyses (different year – same schools)

Matched Comparison of 2010-11 Glenwood Springs to 2012-13 Starfall / Glenwood Springs

Structure of Matched Sample														
Ratio of Starfall to Comparison Students	1:0	10:1	6:1	4:1	3:1	2:1	1:1	1:2	1:5	1:6	1:7	0:1	Total Cases*	
Number of Matched Sets	7	1	1	2	2	6	33	4	2	3	1	3		
Starfall N	7	10	6	8	6	12	33	4	2	3	1	0	92	
Comparison N	0	1	1	2	2	6	33	8	10	18	7	3	91	

Mean effect: 0.763, $t(54) = 1.585$, $p = 0.059$

J. Historical Cross-sectional Analyses (different year – same schools)

Matched Comparison of 2011-12 Sopris to 2012-13 Starfall / Sopris

Structure of Matched Sample														
Ratio of Starfall to Comparison Students	1:0	6:1	5:1	4:1	3:1	2:1	1:1	1:2	1:3	1:4	1:5	1:6	1:7	Total Cases*
Number of Matched Sets	12	1	5	2	1	4	30	8	4	3	1	1	1	
Starfall N	12	6	25	8	3	8	30	8	4	3	1	1	1	110
Comparison N	0	1	5	2	1	4	30	16	12	12	5	6	7	101

Mean effect: 1.265, $t(60) = 2.292$, $p = 0.013$

K. Historical Cross-sectional Analyses (different year – same schools)

Matched Comparison of 2011-12 Basalt to 2012-13 Starfall / Basalt

Structure of Matched Sample															
Ratio of Starfall to Comparison Students	1:0	5:1	4:1	3:1	2:1	1:1	1:2	1:3	1:4	1:5	1:6	1:7	1:10	0:1	Total Cases*
Number of Matched Sets	10	1	2	1	1	18	6	1	4	3	2	1	2	6	
Starfall N	10	5	8	3	2	18	6	1	4	3	2	1	2	0	65
Comparison N	0	1	2	1	1	18	12	3	16	15	12	7	20	6	114

Mean effect: 1.199, $t(41) = 1.845$, $p = 0.036$