Student Outlook Survey:

Attitudes Toward Learning
Initial Research

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PURSUING EDUCATIONAL EXCELLENCE

SYLVAN RESEARCH INSTITUTE

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Attitudes Toward Learning
Initial Research

Presented to
Sylvan Research Institute

Rockman et al is an independent evaluation, research, and consulting firm focusing on studies of education, technology, and media. Rockman works with preschool, K-12, postsecondary, and adult educational institutions in formal education. It also works with broadly educational projects having a wide community or consumer audience. In addition to research on core education initiatives, such as school reform, school technology, online learning, and teacher professional development, the company conducts research and evaluation for television and radio series, children's video programs, websites and social media initiatives, and museum programs and partnerships.

The staff of Rockman et al includes researchers with advanced degrees in education, cognitive science, communications research, child development, research design, educational technology, psychology, and the humanities. Since 1990, Rockman et al has conducted hundreds of evaluations and research studies and has often served as the external evaluator for grant-funded projects supported by foundations, state and federal agencies, and private industry.

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OVERVIEW

A growing body of research suggests that to succeed in school, children need not only academic skills and knowledge, but also to be engaged in learning, confident in their abilities, and willing to persevere at even difficult tasks. They need what a Consortium on Chicago School Research (CCSR) review of the literature on noncognitive factors that shape students' performance calls an "academic mindset" (Teaching Adolescents to Become Learners, Farrington et al., 2012).

In 2011, in partnership with Sylvan Learning, Rockman et al. began a study of how the Sylvan experience might affect students' development of this mindset. Specifically, Rockman looked at how the Sylvan experience, enhanced by the integration of the new SylvanSync™ digital teaching platform, affected mindset. The study was based on some of the same premises as over two decades of research on students' attitudes toward learning. Bandura, Pintrich, and others studying self-efficacy, self-regulation, and social learning theory have long maintained that students' attitudes and interactions with their learning environment are inextricably linked to their academic performance (Bandura, 1986, 1993; Pintrich, 1989; Pintrich & De Groot, 1990). A point underscored by the CCSR review is that students' attitudes are not fixed traits; they are "malleable." As the title of their review suggests, students can be taught how to become learners.

A key part of our study, and the focus of this paper, was the development of a Student Outlook Survey designed to see if and how students' attitudes change as they progress through a Sylvan program.

Sylvan has traditionally offered students a learning experience tailored to their individual needs: A personal learning plan identifies both needs and strengths, and one-on-one instruction from trained teachers helps students build the skills and confidence they need to achieve mastery. Introducing iPads with SylvanSync™ certainly had the potential to make learning more fun for students, but early beta testing with tablets also indicated that the motivational impact went beyond the allure of a new device. Parents said that using the tablets made their children feel "more confident in their skills" and "more in control of their learning." Teachers described students as more "proactive" and "independent," and as more eager to start their Sylvan sessions and more engaged throughout (Rockman, 2011). Comments such as these suggested changes in motivation, self-confidence, and self-regulation—all of which invited further study.

Sylvan teachers also reported positive changes afforded by the digital teaching platform. No longer required to sort and locate materials and update records as required in traditional paper-based programs, they found they lost less time to transitions, which meant more time for instruction and interaction with students. It meant they could take advantage of students' eagerness to dive into sessions, and, with immediate, digitally-generated feedback, adjust instruction to target specific learning needs.

Collecting attitudinal data through a student survey could tell us how the new learning experience affected students' attitudes. Collecting it alongside performance data could help us understand the link between the two, and whether Sylvan could not only give students the academic boost they needed but also help them develop the noncognitive skills needed for continued success in school.

DEVELOPMENT AND PILOT OF THE STUDENT OUTLOOK SURVEY

The background work that went into the development of the Student Outlook Survey included a systematic review of the literature and instruments used and validated by other researchers. Using these resources as a starting point, we initially created two sets of scales: one on self-concept, which included academic self-confidence, school engagement/participation, self-efficacy, and valuing school; and another on learning strategies, which included self-regulation and effort regulation, with some items adapted from the Motivated Strategies for Learning Questionnaire (Pintrich et al., 1991). We drafted similar sets of items for three individual surveys—one for the youngest students (kindergarten–grade 3); one for upper-elementary students (grades 4–6); and one for secondary students (grades 7–12). The response options typically included a three-point scale for younger children—represented by happy/sad faces for each option—and a five-point scale for older ones.

Results from a Fall 2010 pilot of the surveys with approximately 240 K-12 students enrolled in Sylvan Centers around the country suggested that the surveys ranged too broadly. Reliability testing showed reasonable internal consistency, but levels varied across scales. Feedback from Sylvan partners and center directors also suggested we shorten the instruments to improve administration. In modifying the surveys, we focused more on factors that seemed most pertinent to the Sylvan learning experience and outcomes that could realistically be affected by Sylvan tutoring. Because Sylvan tutoring sessions are shorter than a school day and the learning environment different, we dropped, for example, certain items related to learning strategies or behaviors. Because the hope is that the engagement and motivation fostered by Sylvan will spill over into school, we chose to keep the items clustered around School Engagement even though they pertain more to the school setting than the Sylvan experience.

We also honed terms to ensure that survey items were unambiguous, were capturing what we intended, and that students, teachers, center directors, and parents could easily interpret questions and findings. For convenience of administration and analysis, we also combined the two surveys for younger students, creating one instrument for students in grades K–5, and a somewhat longer one for those in grades 6–12, and switched to four-point scales for all surveys.

The revised Student Outlook Surveys included three sets of factors or scales for both age groups—Academic Self-Confidence, School Engagement, and Academic Perseverance—and one additional scale, Valuing School, for older students. The discussion below summarizes the research base for each scale and lists the items on the two surveys. There is, admittedly, in our scales as in the literature, some overlap in the attitudes and self-perceptions that contribute to students' performance or predict their academic success. This is largely because of their inter-connectedness: students' confidence that they can succeed at tasks is tied to their sense of competence, which in turn affects the effort they put forth, a factor itself influenced by the degree to which students value a task. The factor analysis conducted as part of the survey development shows how we derived the final scales and confirmed the relationships between the variables. (See Page 5.)

Survey Scales

1. Academic Self-Confidence

Numerous studies have highlighted students' self-perceptions of competence as a key component in their academic success. According to the research, including Bandura's foundational research on self-efficacy, a strong sense of academic self-confidence can enhance student performance, regardless of prior high achievement or confirmed cognitive ability. What is important is that students not feel that their ability or capacity for learning is fixed, but that, with effort, they can gain skills and knowledge and improve ability (Bandura, 1986,1993).

Academic self-confidence items, K-5

- I am a good student.
- Homework is easy for me.
- It is easy to get good grades in school.
- I understand what we are learning in school as well as other students.

Academic self-confidence items, 6-12

- I am a good student.
- My homework or independent schoolwork is usually pretty easy for me.
- It is easy for me to get good grades in school.
- I understand the material in my classes just as well as other students.
- I will be able to go as far in school as I want to go.
- I can learn new things if I try.

A sense of self-efficacy among students, or the perception that they have the ability to complete tasks, is also an indicator that they will seek out challenges, remain resilient in the face of failure, and take the long view rather than be stymied by occasional setbacks. A large body of research on expectancy-value theory also links the effort students invest in or expend on a task to their confidence that they can complete it successfully (Dweck & Elliott, 1983; Eccles, 1983; Eccles & Wigfield, 1995; Wigfield & Eccles, 2002; Wigfield, 1994).

Farrington and colleagues suggest that the degree to which students feel they belong with their school peers also affects their academic mindset and confidence that they can succeed (Farrington et al., 2012).

School engagement items, K-5

- I like school.
- I participate a lot in class.
- I like learning new things in school.
- I feel like I'm important at my school.

School engagement items, 6-12

- I like school.
- I participate a lot in class.
- I like learning new things in school.
- I feel like I matter at school.

2. School Engagement

Broadly and simply defined, school engagement refers a positive attitude toward school and learning, and is captured in the item, "I like school." Researchers have also linked engagement in learning—indicated, for example, by participation in class—to students' perceptions of their own ability: if students think they can succeed, they are more likely to be actively engaged (Pintrich, 1989). Pintrich and others have also consistently found that higher expectations and perceptions of competence are correlated with more frequently reported use of the cognitive and metacognitive strategies that lead students to try new things (Paris and Oka, 1986; Pintrich, 2000; Pintrich & De Groot, 1992).

As with academic self-confidence, Farrington et al. also tie school engagement to a sense of belonging in a classroom community (Farrington et al., 2012).

Academic perseverance items, K-5

- I keep doing schoolwork even if I'm bored.
- I keep doing schoolwork even if it is hard.
- I keep doing schoolwork even if I don't like it.

3. Academic Perseverance

Students' success in school may be affected not only by their sense of competence but also by their perseverance. Farrington et al., who distinguish perseverance from the collection of factors that define an academic mindset, refer to this as "grit" or "academic tenacity" (Farrington et al., 2012, pp. 21-27). The research suggests considerable interplay between the two: students will persevere if they think they can succeed, and more likely succeed if they stick with a task.

Academic perseverance items, 6-12

- When I study, I set goals for myself.
- If I can't do something the first time, I keep trying until I can.
- When something is hard for me to do, I usually give up.
- I keep doing schoolwork even if I'm bored.
- I keep doing schoolwork even if it is hard.
- I keep doing schoolwork even if I don't like it.

Perseverance can also involve metacognitive strategies related to goal-setting and self-regulation of effort. Students may devote effort to a task not because it brings immediate gratification but because they believe they eventually can succeed and that, with effort, their competence can grow (Eccles, 1983; Shell, Murphy, & Bruning, 1989; Pintrich, 1989; Pintrich & DeGroot, 1990a; Pintrich and Schrauben, 1992).

4. Valuing School (Grade 6-12 Survey only)

Especially for older students, valuing school and having high academic aspirations can be important determinants of future academic success. According to the research, and expectancy-value theory, students' expectations and a sense that the work they do has value for them are important factors in achievement. Conversely, not valuing school is related to a host of difficulties, including dropping out and drug use. An important point stressed by researchers is the relationship between perseverance and valuing school (Eccles, 1983; Eccles et al., 1993). As with other factors related to school success, it is not only about a "grit scale," and "stick-with-it-ness," but also about seeing the next step, or looking "beyond short-term concerns to longer-term or higher-order goals" (Farrington et al., 2012; Duckworth, 2009).

Valuing school items, 6-12

- Doing well at school is important to me.
- The things I am learning in school will be useful in college or a job.
- I think it's important to go to college.
- I need to do well in school to accomplish my goals.

SURVEY ADMINISTRATION

The refined Student Outlook Survey was administered in 2012 to 425 students in Sylvan Centers across the country that were implementing the digital teaching platform. As noted above, the survey for students in kindergarten through fifth grade varied slightly, in wording and in the numbers of items included, from those completed by students in grades six through twelve. Younger students (K–5) answered a brief set of questions about academic self-confidence, engagement, and effort. (Teachers read questions to non-readers.) Older students' surveys (6–12) included additional questions designed to explore these scales or constructs, and the value students place on school. Surveys for both grade bands included a cluster of four to five items for each construct. For each item, students were asked whether the statements or items described them or the extent to which they agreed with the statement.

Factor Analysis

To understand the pattern of correlations between the noncognitive factors, and to determine how well our cluster of factors accounted for the variance in the data, we conducted a factor analysis with the survey data set. In addition to determining whether we were reliably tapping into attitudes, a factor analysis could also help us reduce the number of factors we would eventually explore in relation to academic performance.

Results from the factor analysis indicated that each scale or set of clustered questions hung together well based on research standards. Generally a correlation coefficient or Alpha value of .7 or higher indicates that the variables identified are represented by a particular factor or explain sufficient variance. For the K-5 survey for students, Alphas were .53, Academic Self-Confidence; .68, School Engagement; and .78, Academic Perseverance. For the 6-12 students, Alpha values were .75, Academic Self-Confidence; .68, School Engagement; .79, Academic Perseverance; and .68, Valuing School. (See Appendix, pp. 10-13, for the analysis results.)

Survey Findings

The findings shared here are based on matched samples of students who completed both pre- and post-session surveys between February and July 2012. Students filled out pre- surveys when they started a SylvanSync reading or math program and post- surveys after they had completed at least 24 sessions. The actual range in numbers of sessions completed when post- surveys were completed was between 24 and 50. There were 265 students in the K–6 sample, and 160 in the 6–12 sample. The bullets refer to aggregated results because patterns were very similar regardless of whether students were enrolled in reading or math programs.

Results showed small but positive pre to post gains in attitudes in all construct categories across both grade bands and in both content areas. Pre- survey means were relatively high—averaging around 3.1 on a 4-point scale for both younger and older students—but responses showed increases, some of which were statistically significant. (See Figures 1 and 2.)

Figure 1. Pre to Post Gains on Student Outlook Survey Scales: K-5th Grade

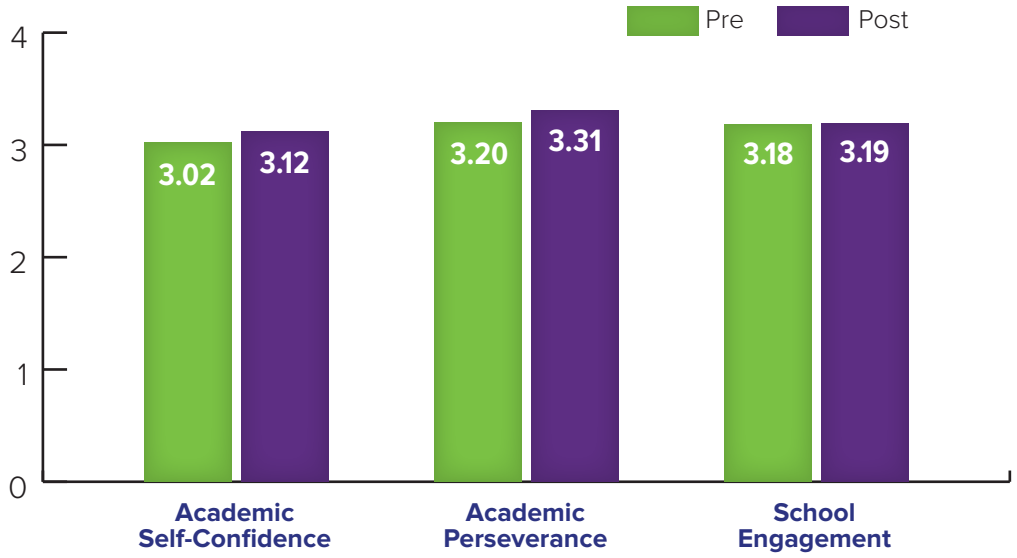
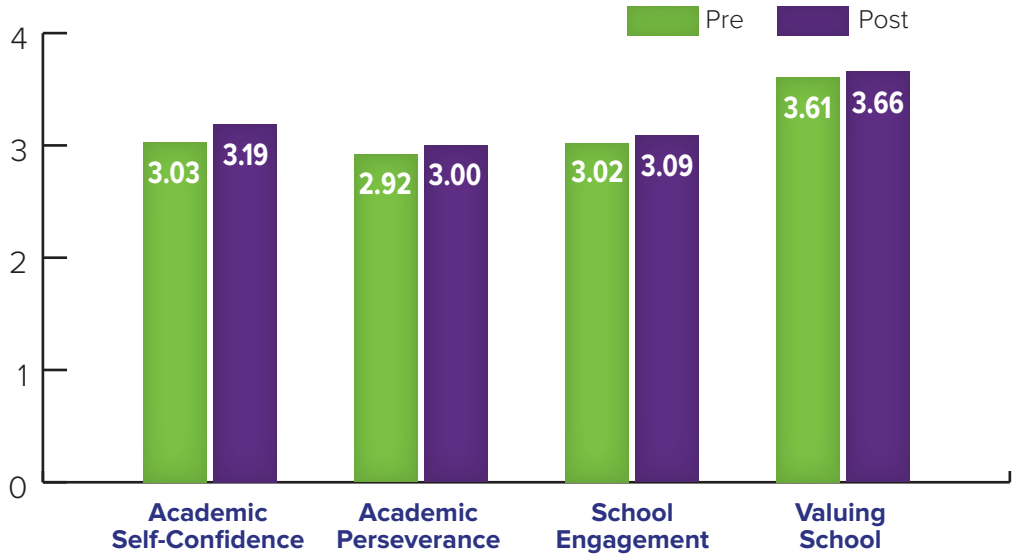


Figure 2. Pre to Post Gains on Student Outlook Survey Scales: 6th - 12th Grade



The biggest gain was in academic self-confidence among students in grades 6-12, with an increase in the mean from 3.03 to 3.19. Younger students also showed gains, from M=3.02 to M=3.12. Both gains were statistically significant: p=.003 for 6-12, and p=.050 for K-5. (See also Tables 1 and 2; shading indicates statistically significant gains.)

The gains in academic perseverance among younger students—from M=3.2 to M=3.31—approached significance (p=.090). (See Figure 1 and Table 1.)

Table 1. Student Outlook Survey Means and Significance for K-5 Students (N=265)

Survey Scale	Pre	Post	Significance
Academic Self-Confidence	3.02	3.12	p=.050
Academic Perseverance	3.20	3.31	p=.090
School Engagement	3.18	3.19	p=.751

Table 2. Student Outlook Survey Means and Significance for 6-12 Students (N=160)

Survey Scale	Pre	Post	Significance
Academic Self-Confidence	3.03	3.19	p=.003
Academic Perseverance	2.92	3.00	p=.266
School Engagement	3.02	3.09	p=.294
Valuing School	3.61	3.66	p=.296

Disaggregating data by content area or enrollment group (reading or math) showed similar patterns or gains, and some changes in statistical significance:

- Among K-5 students, the gains were no longer significant when broken down by content area (gain on Academic Self-Confidence: p= .11 for reading and p= .15 for math; gain on Academic Perseverance: p= .14 for reading and p= .44 for math).
- However, among 6-12 students, slightly more significance emerged when data were broken down by content area: the pre to post difference for Academic Self-Confidence remained statistically significant for reading (p=.02) and marginally significant for math (p=.06). A marginally significant pre to post gain on the school engagement score was also identified for the reading sample (p= .09).

NEXT STEPS

In repeated rounds of survey administration, we will continue to refine the survey and validate the attitudinal scales. The new Sylvan data systems and wider implementation of the digital teaching platform will give us the opportunity to look at changes in students' attitudes with a much larger sample. Perhaps more importantly, we will be able to pose two additional critical questions, the most important of which is the following: What is the relationship between attitudinal factors and students' performance? In exploring that question, we can look at where the links are strongest, or how they vary by grade, age, subject, gender, initial proficiency, or number of sessions.

There are other important steps to take beyond the data analysis, and those involve applying research to practice and exploring the implications of the research. With data on attitudes and possible links between attitudes and performance, we can, with Sylvan, focus on the actual learning environment and learning experience, and on the roles teachers play in helping students develop an academic mindset. We can also explore how parents' use of MySylvan, the online activities portal, might affect both learning and attitudes beyond the Sylvan tutoring experience. If, as we probe the data, we discover that attendance or density

of sessions matters a great deal, center directors can use that information when discussing learning plans and expectations with parents. Any links between students' attitudes and their academic learning progressions can also be the topic of discussions with schools, and ultimately be the foundation for stronger partnerships among all those committed to helping students succeed.

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APPENDIX

FACTOR ANALYSIS FOR THE STUDENT OUTLOOK SURVEY

SOS FACTOR ANALYSIS, K – 5 SURVEY

Factor 1 (School Engagement) Alpha=.68

I like school.

I am a good student.**

I participate a lot in class.

I like learning new things in school.

I feel like I'm important at school.

Factor 2 (Academic Perseverance) Alpha=.78

I keep doing schoolwork even if I am bored.

I keep doing schoolwork even if it is hard.

I keep doing schoolwork even if I don't like it.

Factor 3 (Academic Self-Confidence) Alpha=.53

Homework is easy for me.

It is easy to get good grades in school.

I understand what we are learning in school as much as my friends.

**It appears that K-5 students may be interpreting this item as meaning that they do what is expected of them as a student (participating) rather than that they are really smart or a student who gets good grades (which would be more aligned with factor 2).

	Component		
	1	2	3
I like school.	.610	.051	.150
Homework is easy for me.	-.091	-.102	.755
It is easy to get good grades in school.	.005	.046	.780
I understand what we are learning in school as much as my friends.	.195	-.004	.514
I am a good student	.511	-.051	.053
I participate a lot in class.	.530	-.057	.061
I like learning new things in school.	.740	-.072	-.091
I feel like I am important at school.	.811	.039	-.094
I keep doing schoolwork even if I am bored.	.029	-.770	0.31
I keep doing schoolwork even if it is hard.	.016	-.832	.015
I keep doing schoolwork even if I don't like it.	-.007	-.866	-.027

SOS FACTOR ANALYSIS, 6 – 12 SURVEY

Factor 1 (Academic Perseverance) Alpha=.79

When I study, I set goals for myself.

If I can't do something the first time, I keep trying until I can.

When something is hard for me to do, I usually give up. (recoded)

I keep doing schoolwork even if I am bored.

I keep doing schoolwork even if it is hard.

I keep doing schoolwork even if I don't like it.

These items did not fit very well—even as a subscale

I try to figure it out on my own, when I'm confused about something we're learning in school. (recoded)

I ask my teacher for help, when I'm confused about something we're learning in school.

Factor 1 (Academic Self-Confidence) Alpha=.75

It is easy for me to get good grades in school.

I understand the material in my classes just as well as other students.

I am a good student. (also loads on the School Engagement scale)

My homework or independent schoolwork is usually pretty easy for me.

I will be able to go as far in school as I want to go.

I can learn new things if I try.

Factor 2 (Valuing School) Alpha=.68

Doing well at school is important to me.

The things I am learning in school will be useful in college or a job.

I think it is important to go to college.

I need to do well in school to accomplish my goals.

Factor 4 (School Engagement) Alpha=.68

I like school.

I participate a lot in class.

I like learning new things in school.

I feel like I matter at my school.

Pattern Matrix

	Component			
	1	2	3	4
It is easy for me to get good grades in school.	.043	-.060	**.737**	-.036
I understand the material in my classes just as well as other students.	.023	-.111	**.755**	-.009
I am a good student.	.088	.199	**.380**	**-.269**
I like school.	.082	.212	.231	**-.445**
I participate a lot in class.	.227	.015	.209	**-.381**
I like learning new things in school.	.185	.289	.160	**-.342**
I feel like I matter at my school.	-.054	.143	**.299**	**-.506**
My homework or independent schoolwork is usually pretty easy for me.	.222	-.105	**.670**	.081
I will be able to go as far in school as I want to go.	-.071	.237	**.557**	-.041
I can learn new things if I try.	-.008	**.385**	**.375**	.017
Doing well at school is important to me.	.194	**.631**	-.018	-.128
The things I am learning in school will be useful in college or a job.	.032	**.513**	.114	-.116
I think it is important to go to college.	-.040	**.780**	-.081	.041
I need to do well in school to accomplish my goals.	.042	**.817**	-.069	.086
I try to figure it out on my own, when I'm confused about something we're learning in school.	.122	.244	**.333**	**.563**
I ask my teacher for help, when I'm confused about something we're learning in school.	**.350**	.073	-.021	**-.443**
When I study, I set goals for myself.	**.415**	.168	.052	**-.251**
If I can't do something the first time, I keep trying until I can.	**.533**	.042	.190	-.115
When something is hard for me to do, I usually give up.	**-.538**	.191	-.102	.027
I keep doing schoolwork even if I am bored.	**.773**	.065	-.051	.090
I keep doing schoolwork even if it is hard.	**.827**	-.009	.064	.046
I keep doing schoolwork even if I don't like it.	**.792**	.191	-.136	.017

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 15 iterations.