SEI – Systems Level Measurement and Intervention

GCPS - Research & Evaluation

University of Georgia

October 7, 2015

Gwinnett County Public Schools

Background

- Check & Connect Mentor
- Student Engagement Instrument (SEI)
- Measurement and Application Research

- 25 years…
  - 13 years ago as mentor…
  - 9 years ago (SEI)…

Agenda

- **Check & Connect theory and the SEI**
  - Research undertaken and results
    - http://checkandconnect.umn.edu/research/engagement.html
- **Lessons learned**
  - Efficient movement of *data* to *information*
  - Stakeholder support
- **Predicting long-term outcomes**
  - Bivariate
  - Multivariate, multi-level

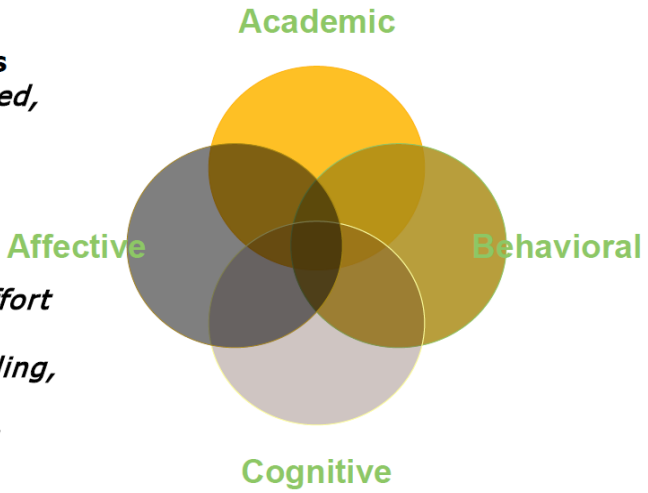
Check & Connect Theory and the SEI

- **Check & Connect theory and the SEI**
  - Research undertaken and results
    - http://checkandconnect.umn.edu/research/engagement.html

Engagement Theory

4 subtypes

- **Antidote to: students characterized as** ***bored, unmotivated, and uninvolved***
- ***"the student's psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote"***
- ***"Energy in action, the connection between person and activity"***



Dropping out is the most extreme form of disengagement

Christenson & Anderson, 2002; Newmann, 1992; Russell et al., 2005

student engagement instrument (sei) manual

Table 1: SEI Samples and Fit Statistics

Sample Characteristics		CFA Fit Statistics	
(A) N = 418 (SC - U.S.) N = 1,998 (MN - U.S.) 6th - 12th grade students > 300 students / grade 50.5% female 86% White, < 2% English Learners	1) Configural 2) Metric 3) Equal Residuals 4) Equal Covariances	= 6,081.53, df = 3,346, p < .001; **BIC** = 131,670; = 6,419.69, df = 3,520, p < .001; **BIC** = 130,670; = 6,906.03, df = 3,718, p < .001; **BIC** = 129,633; = 7,026.03, df = 3,778, p < .001; **BIC** = 129,291;	**CFI** = 0.91; **RMSEA** = 0.05 **CFI** = 0.91; **RMSEA** = 0.05 **CFI** = 0.90; **RMSEA** = 0.05 **CFI** = 0.90; **RMSEA** = 0.05
(B) N = 44,078 - Southeastern U.S. 6th - 9th grade students 49.4% female 34.9% White, 27.1% Black, 22.8% Hispanic, 10.6% Asian, 4.6% Other 11.7% SPED services 42.4% eligible for free/reduced price lunch	*N = 880 per group:* 1) Special Ed. 2) EBD/SLD 3) Low Achievement 4) Office Referrals 5) Dropout/Alt. School 6) English Learner 7) Free Lunch	= 2,332.46, df = 485; **CFI** = 0.96; **SRMR** = 0.52; = 2,466.93, df = 485; **CFI** = 0.97; **SRMR** = 0.53; = 2,762.31, df = 485; **CFI** = 0.95; **SRMR** = 0.64; = 2,852.77, df = 485; **CFI** = 0.95; **SRMR** = 0.65; = 2,632.63, df = 485; **CFI** = 0.95; **SRMR** = 0.64; = 3,131.02, df = 485; **CFI** = 0.95; **SRMR** = 0.60; = 2,647.34, df = 485; **CFI** = 0.95; **SRMR** = 0.59;	**RMSEA** = 0.067 **RMSEA** = 0.069 **RMSEA** = 0.075 **RMSEA** = 0.076 **RMSEA** = 0.075 **RMSEA** = 0.078 **RMSEA** = 0.072
(C) N = 2,495 - Finland 12-17 years of age 52.3% female Regular education school	1) First order 2) Second order	1) χ^2 = 1,669.81, df = 391; **CFI** = 0.95; **RMSEA** = 0.05 2) χ^2 = 1,971.59, df = 395; **CFI** = 0.94; **RMSEA** = 0.05	
(D) N = 1,528 - Portugal 12-21 years of age 51.8% female 77.9% Regular education school 22.1% vocational school	1) First order 2) Second order	1) χ^2 = 1,271.25, df = 356; **CFI** = 0.92; **RMSEA** = 0.04 2) χ^2 = 1,555.33, df = 364; **CFI** = 0.90; **RMSEA** = 0.04	

Table 2: SEI Samples (continued), Reliability Estimates, and Conclusions

Sample Characteristics	Reliability	Conclusions	Citation
(A) N = 418 (SC - U.S.) N = 1,998 (MN - U.S.) 6th - 12th grade students > 300 students / grade 50.5% female 86% White, < 2% English Learners	Raykov: 0.70 - 0.80	Evidence of invariance of the SEI factor structure across grades and gender	Betts et al., 2010
(B) N = 44,078 - Southeastern U.S. 6th - 9th grade students 49.4% female 34.9% White, 27.1% Black, 22.8% Hispanic, 10.6% Asian, 4.6% Other 11.7% SPED services 42.4% eligible for free/reduced lunch	Coefficient Alpha: 0.75 - 0.87	Evidence for the fit of the specified SEI factor structure to numerous subgroups of interest particularly in terms of those for whom engagement may be especially important	Lovelace et al., 2013a
(C) N = 2,495 - Finland 12-17 years of age 52.3% female Regular education school	Coefficient Alpha: 0.78 - 0.92	General evidence of cross-cultural stability of SEI factor structure*	Virtanen, Moreira, Dias, Oliveira, & Kuorelahti, 2013
(D) N = 1,528 - Portugal 12-21 years of age 51.8% female 77.9% Regular education school 22.1% vocational school	Coefficient Alpha: 0.59, 0.69 - 0.89	General evidence of cross-cultural stability of SEI factor structure*	Virtanen, Moreira, Dias, Oliveira, & Kuorelahti, 2013

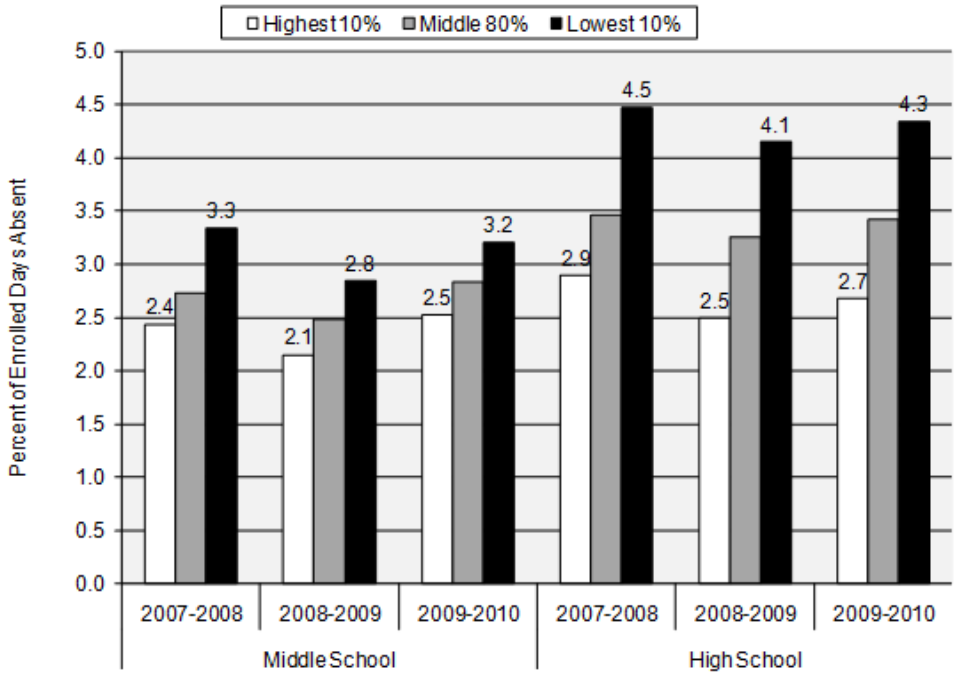


Figure 3. 2007-08 through 2009-10 percent of enrolled days absent by SEI group percentile for each academic year.

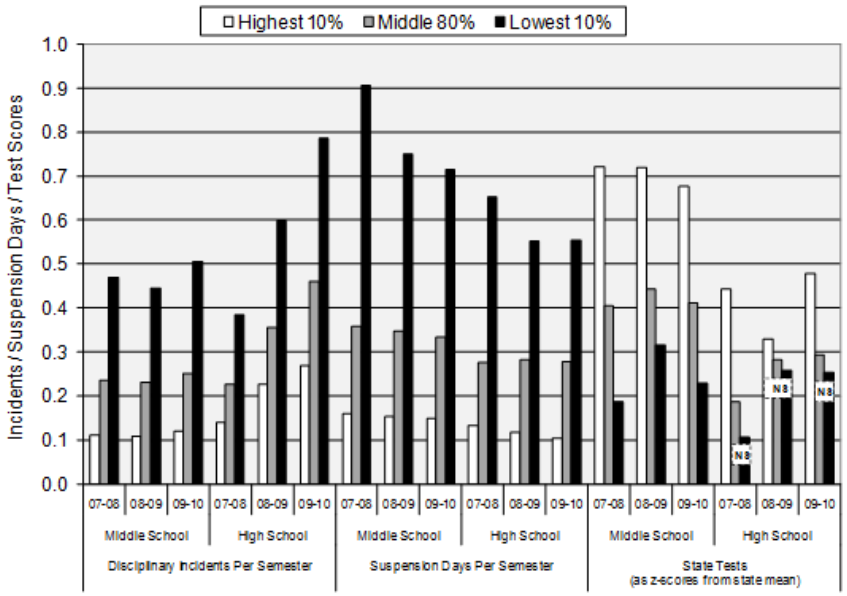


Figure 4. 2007-08 through 2009-10 comparison of disciplinary incidents, suspension days, and CRCT and GHSGT standardized scores by school level and SEI group percentile for each academic year.

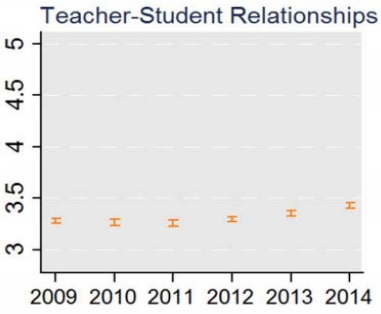
Lessons Learned

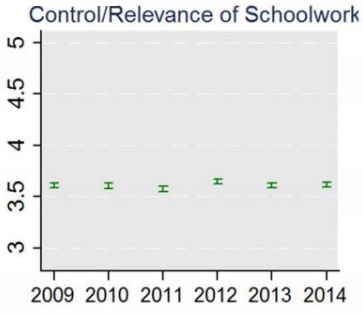
- **Lessons learned**
  - Efficient movement of *data* to *information*
  - Stakeholder support

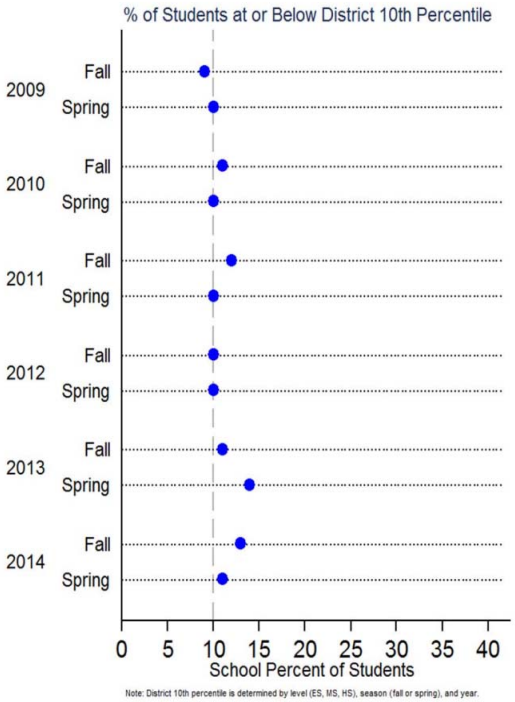
Meaning and ***Access***

http://bcove.me/jbwcoubh

Reports







From…

Figure 1 · Monitoring Sheet [top half]

Month _____ Student _____ ID _____

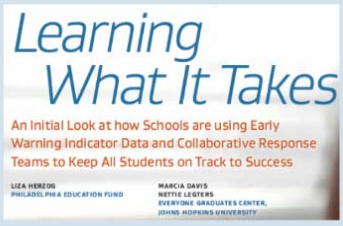
School _____ Monitor _____

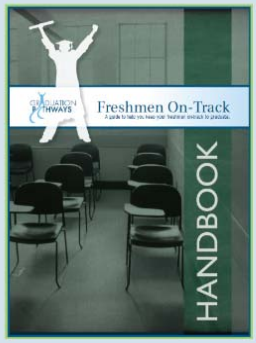
	M	Tu	W	Th	F	M	Tu	W	Th	F	M	Tu	W	Th	F	M	Tu	W	Th	F	M	Tu	W	Th	F	High risk for month? >
Check Tardy		✓	✓			✓	✓							✓		✓										✓
Skip																										
Absent											✓															
Behavior referral																										
Detention																										
In-school suspension																										
Out-of-school suspension								✓	✓								✓									✓

Failing classes/Behind in credits: 0 D's 0 F's 7 Classes passed out of 7 total ____ Credits earned out of ____ total

To…

Early-Warning and Intervention





Monitoring Paths, Grades 3-12:

ABC Report - School

(A) Attendance, (B) Behavior, (C) Course Performance

18 or more absences in the school year

≠

On-Time

(absent 10% or more of enrolled days)

Adapted from: http://new.every1graduates.org/wp-content/uploads/2012/04/Learning_what_it_Takes.pdf

Discipline Index

Behavior Rate (YTD)

	ISS Days	OSS Days
B	0	4

Current Year

Discipline Index

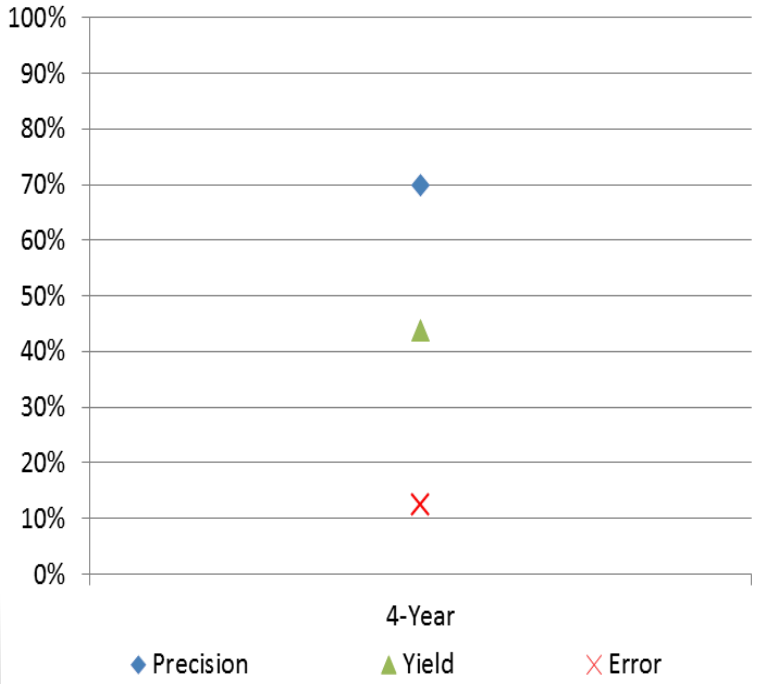
75 - 100

2014-15

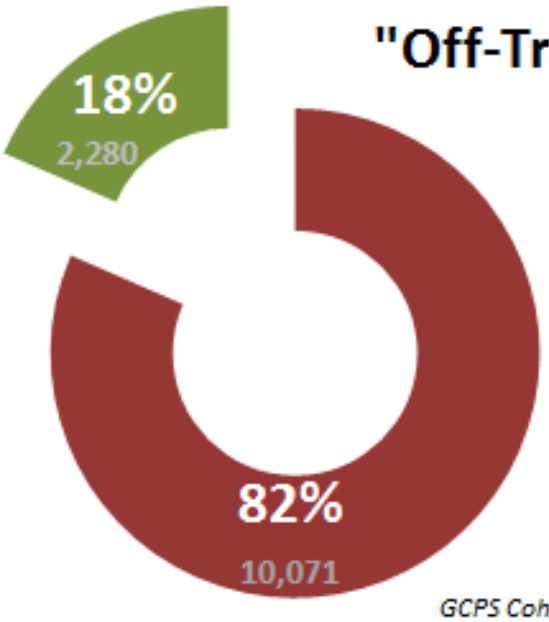
ISS Days	OSS Days	Discipline Index
16	4	75 - 100

Discipline Report →

Relationship Between Being in Top 25% of Discipline Concern Index in 9th Grade and Failure to Graduate On-Time:



What happens to students "Off-Track" after 9th Grade

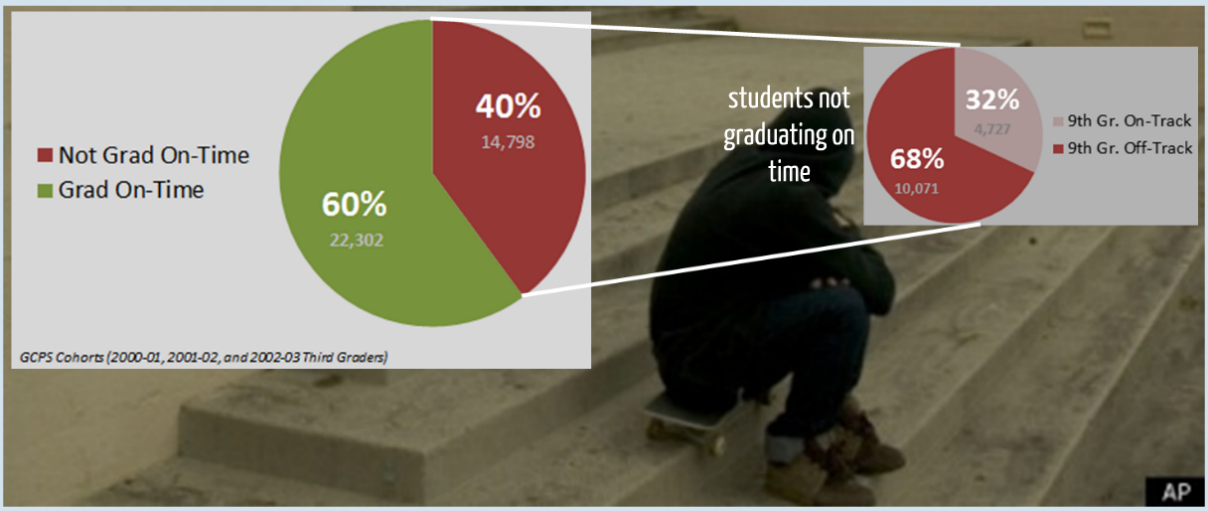


…8 out of 10 don't graduate on time

- Not Grad On-Time
- Grad On-Time

GCPS Cohorts (2000-01, 2001-02, and 2002-03 Third Graders)

"Off-Track" 9th graders represent a large portion of all students failing to graduate on time



...and we knew in 9th grade!!

RISK STATUS

NO RISK

Student is not at risk of being off track for on-time graduation on this risk factor

BUBBLE

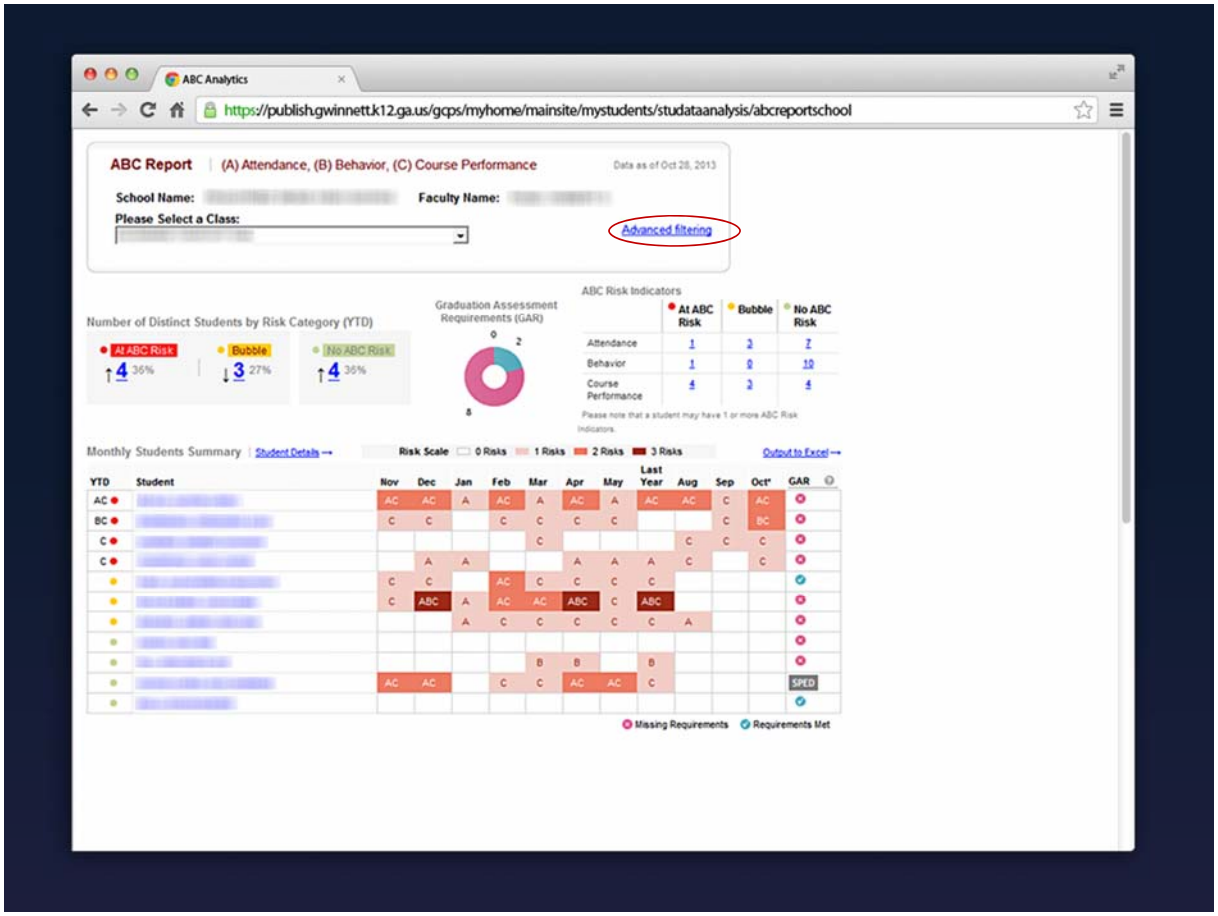
Students are on the threshold of the criteria for the risk factor

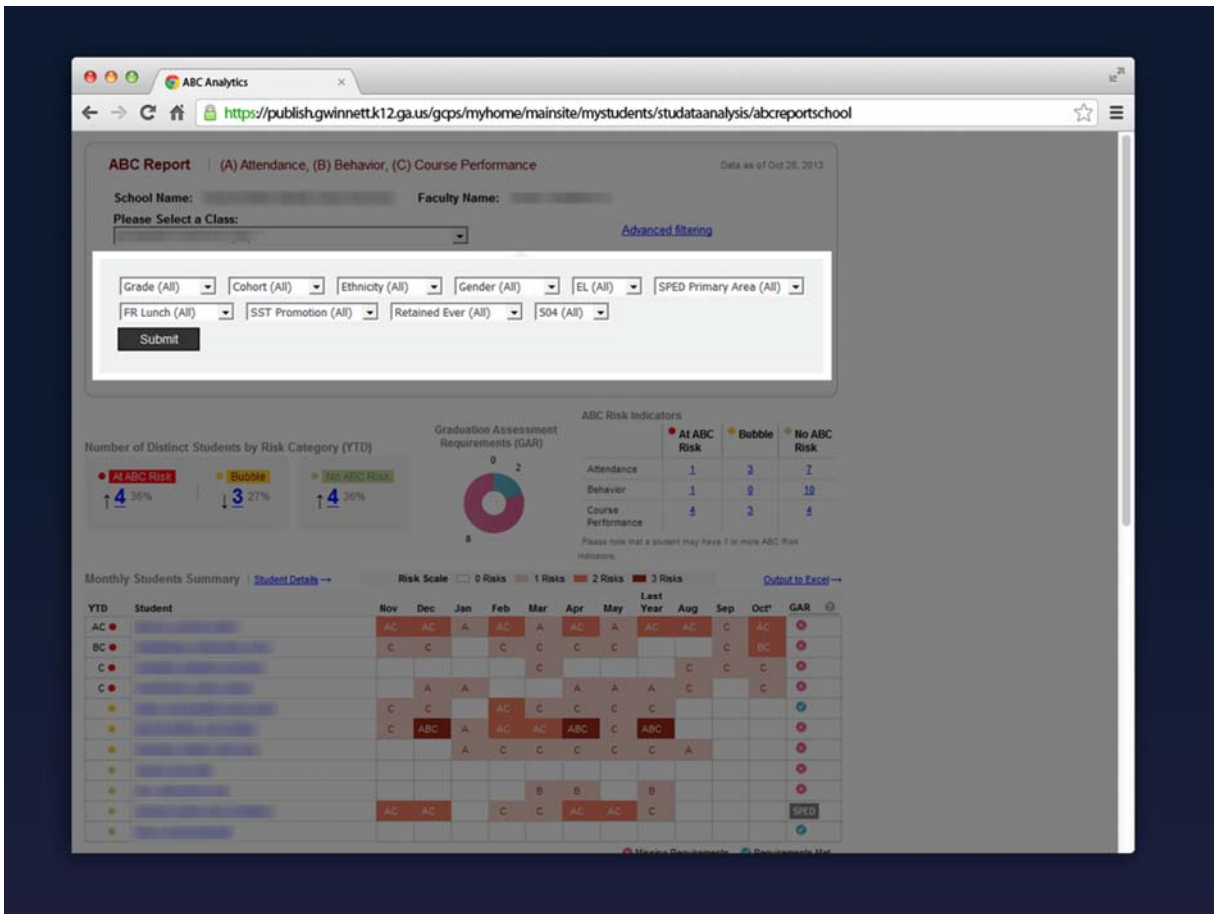
AT RISK

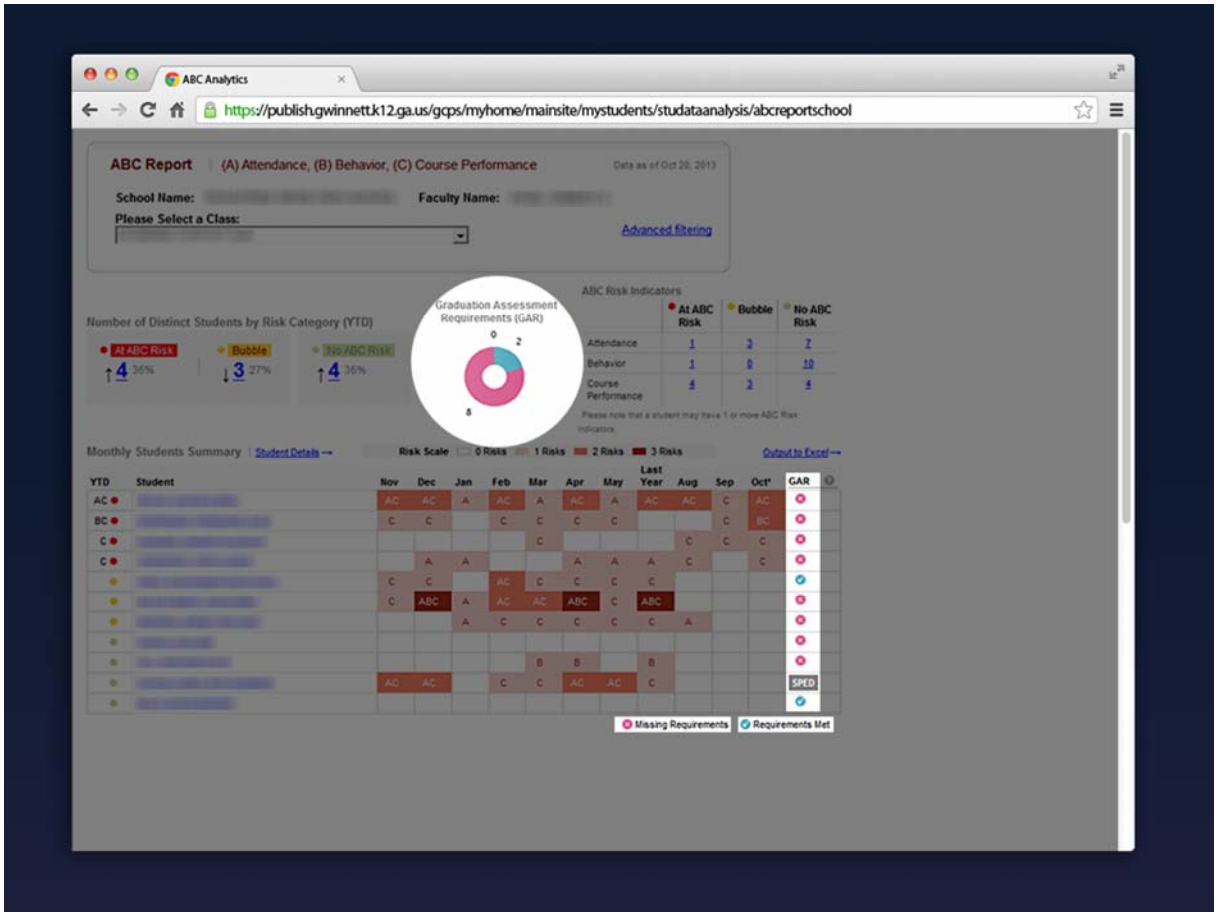
Student has one or more A,B,C. Student is very likely off track toward on-time graduation

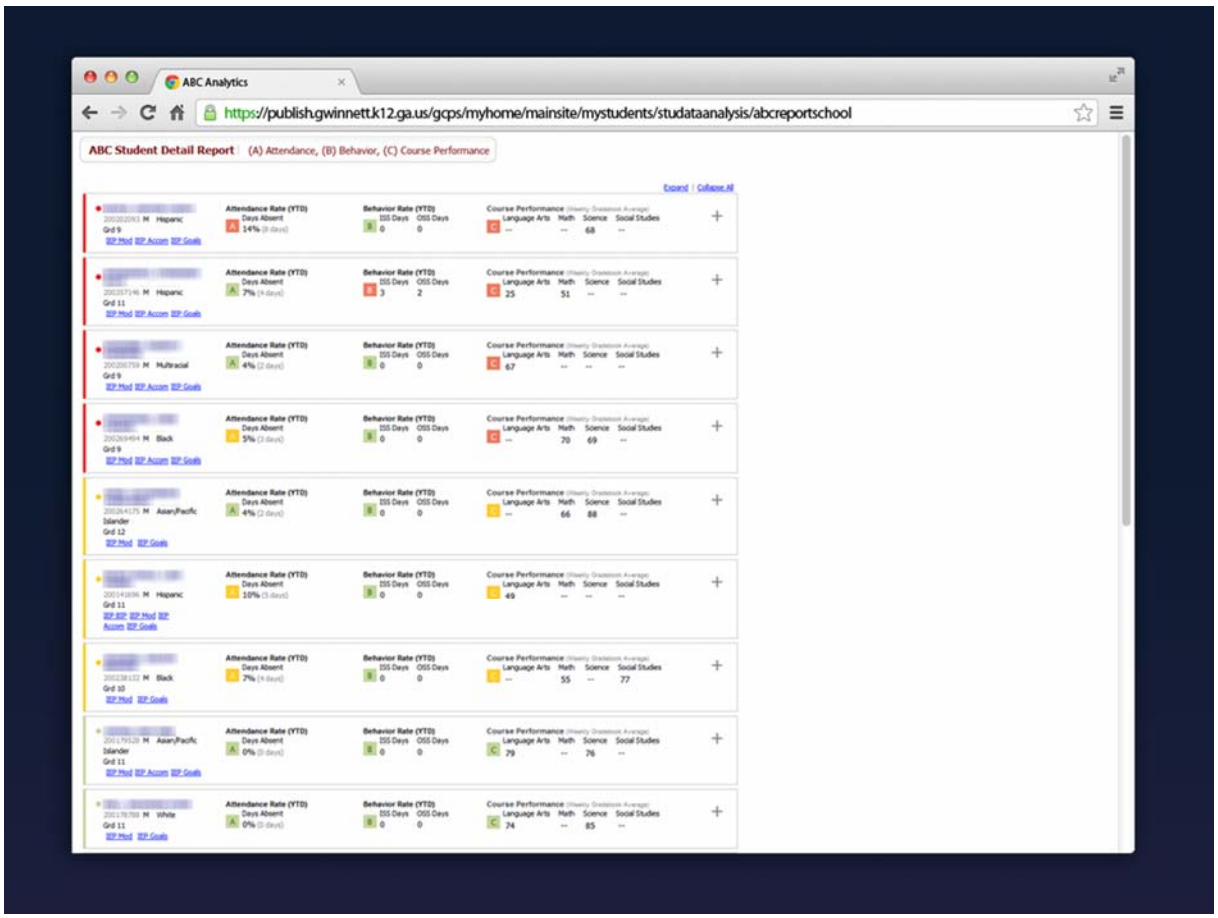
AT RISK INTENSITY

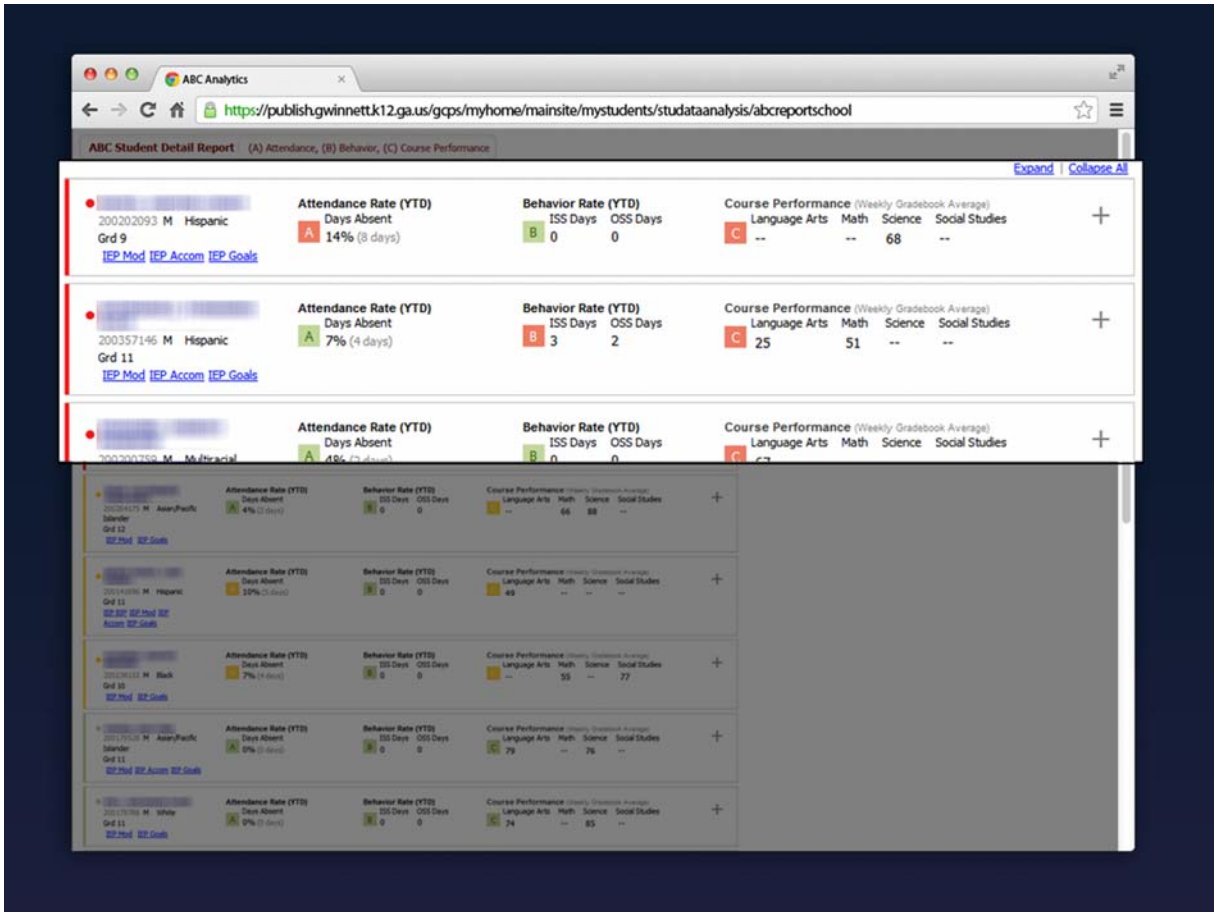
x1 x2 x3

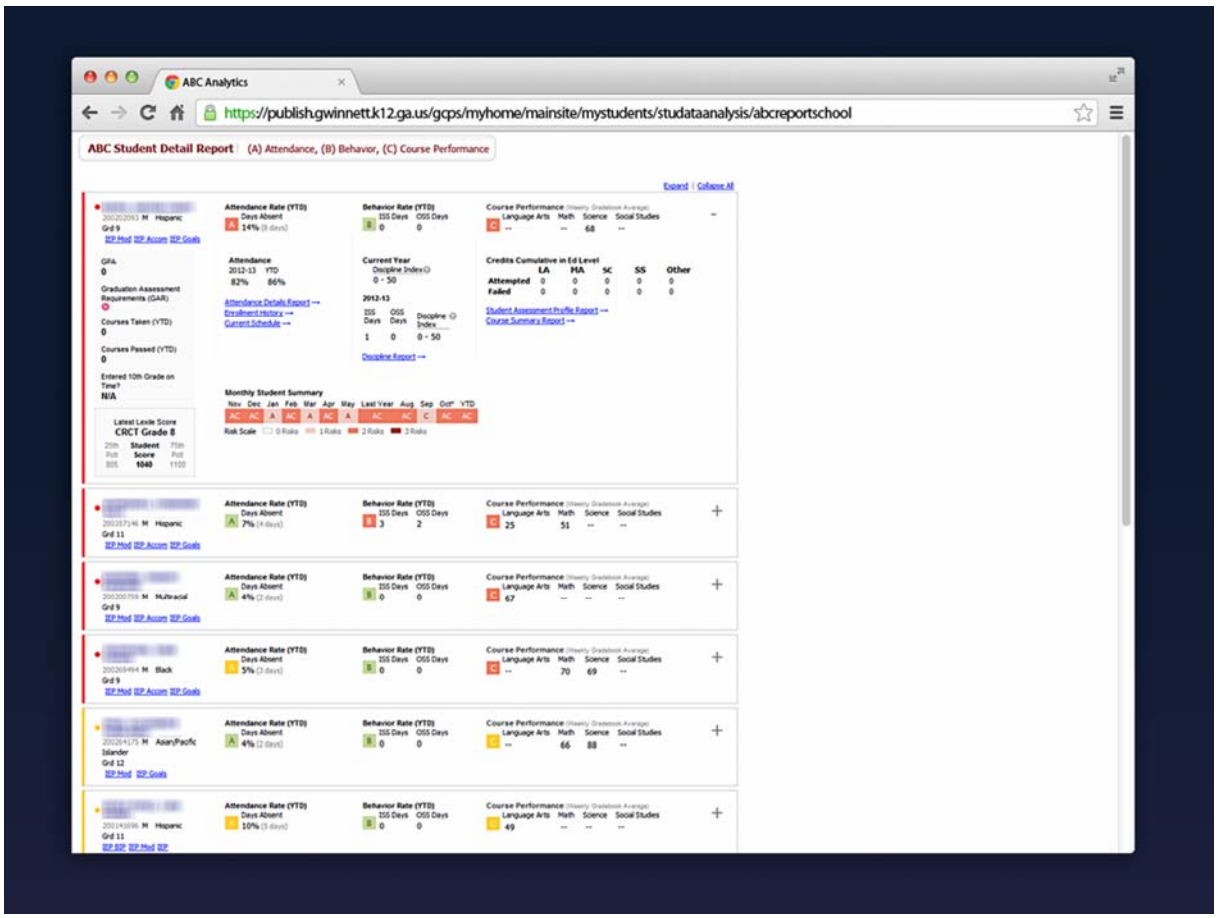

ABC Analytics
https://publish.gwinnett.k12.ga.us/gcps/myhome/mainsite/mystudents/studataanalysis/abcreportschool
ABC Report
(A) Attendance, (B) Behavior, (C) Course Performance
Data as of Oct 28, 2013
School Name:
Faculty Name:
Please Select a Class:
Advanced filtering
Number of Distinct Students by Risk Category (YTD)
At ABC Risk
Bubble
No ABC Risk
Graduation Assessment Requirements (GAR)
ABC Risk Indicators
At ABC Risk
Bubble
No ABC Risk
Attendance
Behavior
Course Performance
Monthly Students Summary
Student Details
Risk Scale
0 Risks
1 Risks
2 Risks
3 Risks
Output to Excel
YTD
Student
Nov
Dec
Jan
Feb
Mar
Apr
May
Last Year
Aug
Sep
Oct*
GAR
Missing Requirements
Requirements Met

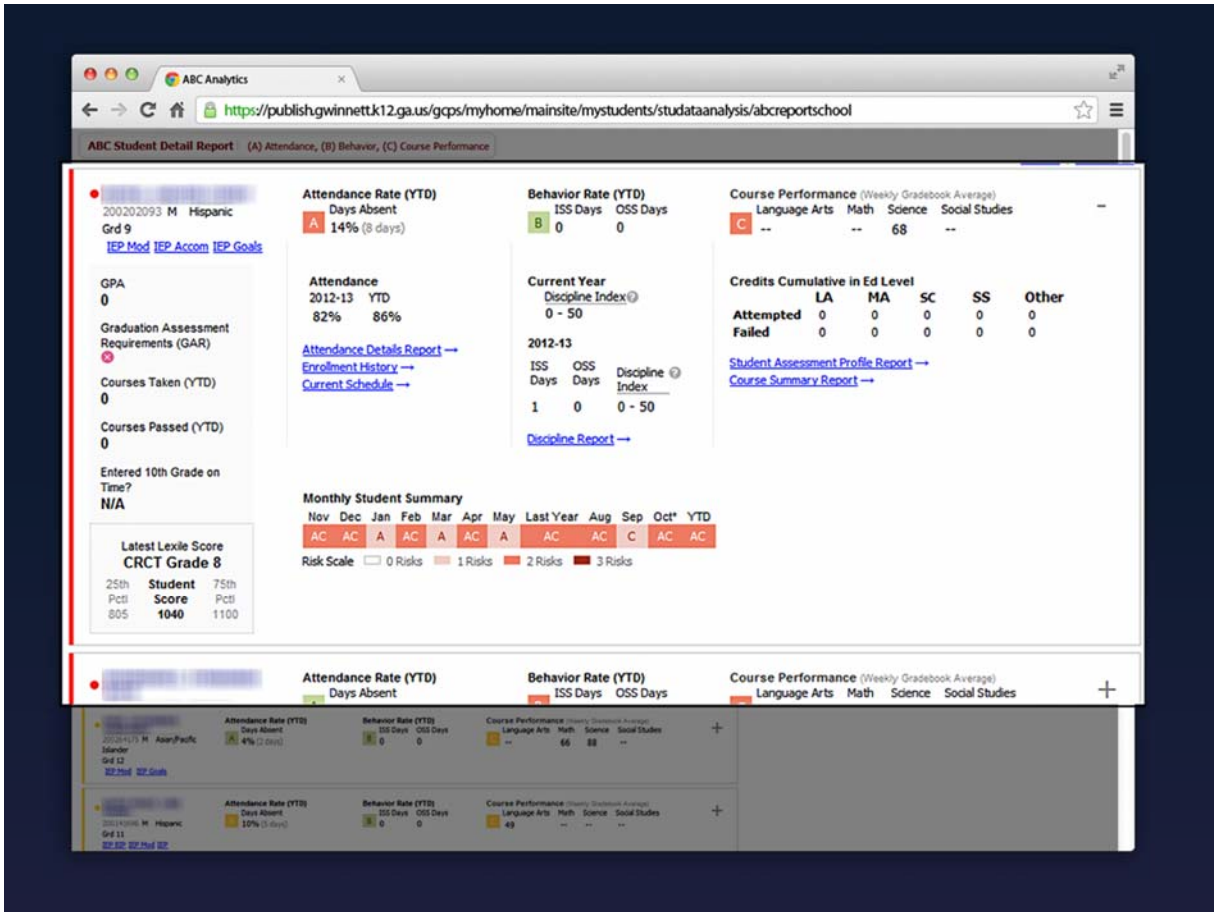

ABC Analytics
https://publish.gwinnett.k12.ga.us/gcps/myhome/mainsite/mystudents/studataanalysis/abcreportschool
ABC Report
(A) Attendance, (B) Behavior, (C) Course Performance
Data as of Oct 28, 2013
School Name:
Faculty Name:
Please Select a Class:
Advanced filtering
Grade (All)
Cohort (All)
Ethnicity (All)
Gender (All)
EL (All)
SPED Primary Area (All)
FR Lunch (All)
SST Promotion (All)
Retained Ever (All)
504 (All)
Submit
Number of Distinct Students by Risk Category (YTD)
Graduation Assessment Requirements (GAR)
ABC Risk Indicators
Monthly Students Summary
Risk Scale
Output to Excel


ABC Analytics
https://publish.gwinnett.k12.ga.us/gcps/myhome/mainsite/mystudents/studataanalysis/abcreportschool
ABC Report | (A) Attendance, (B) Behavior, (C) Course Performance
Data as of Oct 20, 2013
School Name:
Faculty Name:
Please Select a Class:
Advanced filtering
Number of Distinct Students by Risk Category (YTD)
At ABC Risk
4 36%
Bubble
3 27%
No ABC Risk
4 36%
Graduation Assessment Requirements (GAR)
ABC Risk Indicators
At ABC Risk
Bubble
No ABC Risk
Attendance 1 3 7
Behavior 1 0 10
Course Performance 4 3 4
Monthly Students Summary | Student Details
Risk Scale 0 Risks 1 Risks 2 Risks 3 Risks
Output to Excel
YTD
Student
Nov Dec Jan Feb Mar Apr May Last Year Aug Sep Oct* GAR
Missing Requirements
Requirements Met

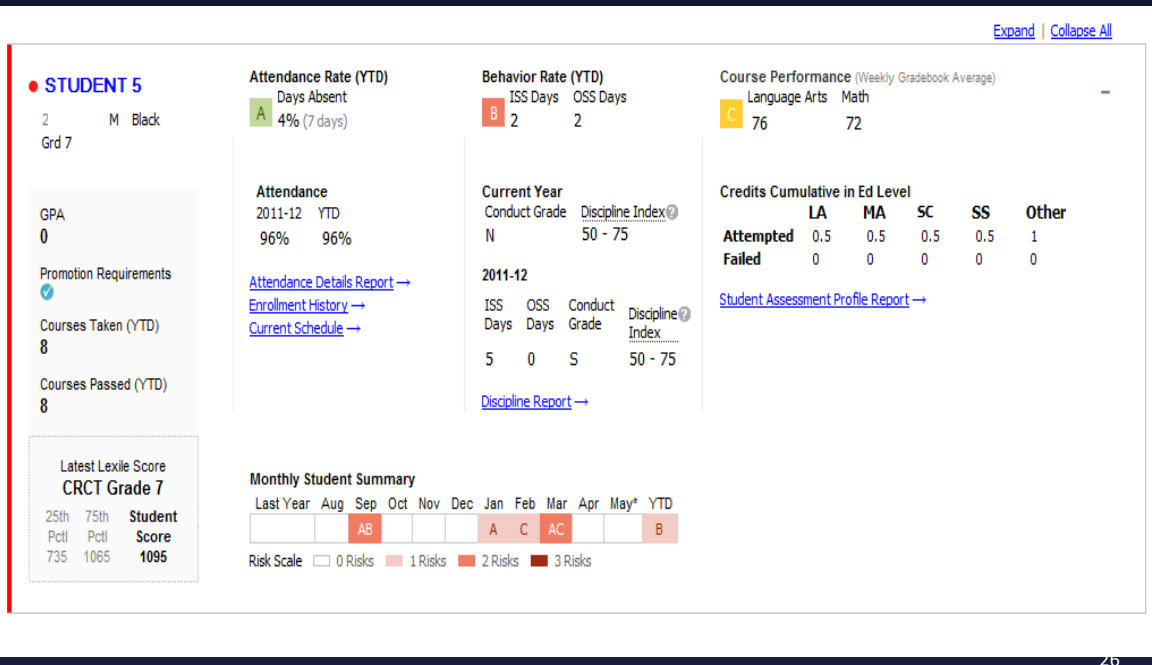

ABC Analytics
https://publish.gwinnett.k12.ga.us/gcps/myhome/mainsite/mystudents/studataanalysis/abcreportschool
ABC Student Detail Report | (A) Attendance, (B) Behavior, (C) Course Performance
Expand | Collapse All
Attendance Rate (YTD)
Behavior Rate (YTD)
Course Performance


ABC Analytics
https://publish.gwinnett.k12.ga.us/gcps/myhome/mainsite/mystudents/studataanalysis/abcreportschool
ABC Student Detail Report (A) Attendance, (B) Behavior, (C) Course Performance
Expand | Collapse All
200202093 M Hispanic
Grd 9
IEP Mod IEP Accom IEP Goals
Attendance Rate (YTD)
Days Absent
A 14% (8 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 0 0
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C -- -- 68 --
200357146 M Hispanic
Grd 11
IEP Mod IEP Accom IEP Goals
Attendance Rate (YTD)
Days Absent
A 7% (4 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 3 2
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C 25 51 -- --

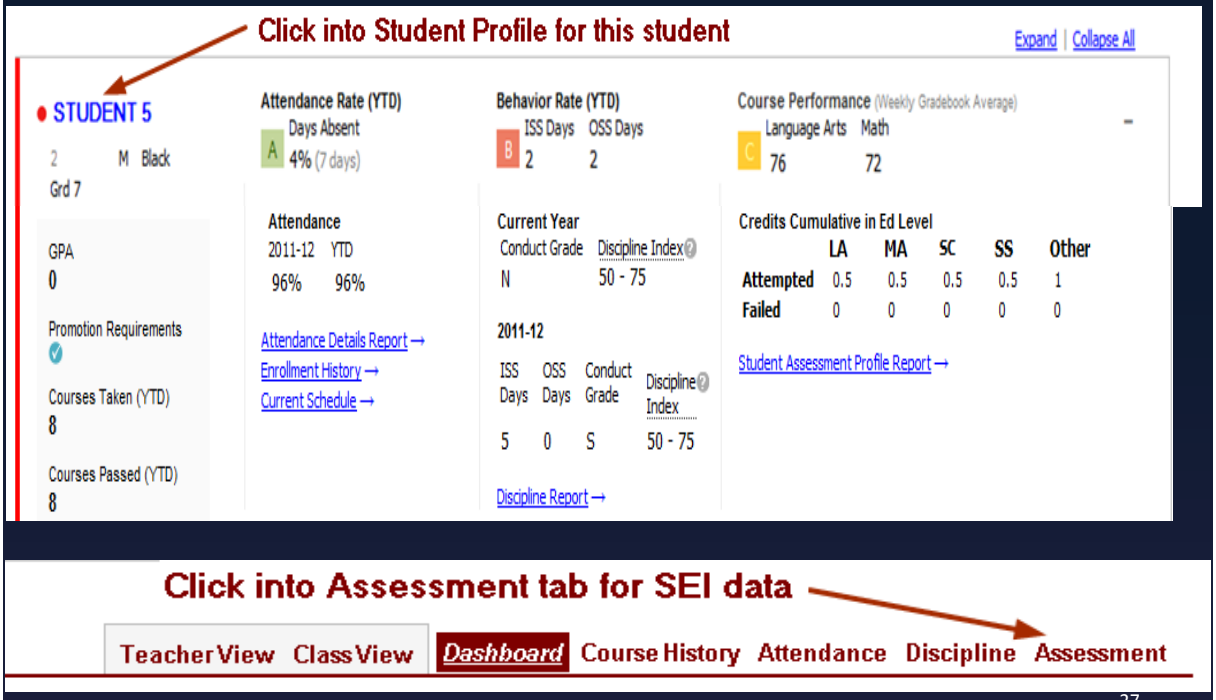

ABC Analytics
https://publish.gwinnett.k12.ga.us/gcps/myhome/mainsite/mystudents/studataanalysis/abcreportschool
ABC Student Detail Report (A) Attendance, (B) Behavior, (C) Course Performance
Expand | Collapse All
200202093 M Hispanic
Grd 9
IEP Mod IEP Accom IEP Goals
Attendance Rate (YTD)
Days Absent
A 14% (8 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 0 0
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C -- -- 68 --
GPA
0
Graduation Assessment Requirements (GAR)
Courses Taken (YTD)
0
Courses Passed (YTD)
0
Entered 10th Grade on Time?
N/A
Latest Lexile Score
CRCT Grade 8
Student Score
1040
Attendance
2012-13 YTD
82% 86%
Attendance Details Report
Enrollment History
Current Schedule
Current Year
Discipline Index
0 - 50
2012-13
ISS Days OSS Days Discipline Index
1 0 0 - 50
Discipline Report
Credits Cumulative in Ed Level
LA MA SC SS Other
Attempted 0 0 0 0 0
Failed 0 0 0 0 0
Student Assessment Profile Report
Course Summary Report
Monthly Student Summary
Nov Dec Jan Feb Mar Apr May Last Year Aug Sep Oct* YTD
AC AC A AC A AC A AC AC C AC AC
Risk Scale 0 Risks 1 Risk 2 Risks 3 Risks
200357146 M Hispanic
Grd 11
IEP Mod IEP Accom IEP Goals
Attendance Rate (YTD)
Days Absent
A 7% (4 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 3 2
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C 25 51 -- --
200200759 M Multiracial
Grd 9
IEP Mod IEP Accom IEP Goals
Attendance Rate (YTD)
Days Absent
A 4% (2 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 0 0
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C 67 -- -- --
200200494 M Black
Grd 9
IEP Mod IEP Accom IEP Goals
Attendance Rate (YTD)
Days Absent
A 5% (3 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 0 0
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C -- 70 69 --
200264175 M Asian/Pacific Islander
Grd 12
IEP Mod IEP Goals
Attendance Rate (YTD)
Days Absent
A 4% (2 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 0 0
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C -- 66 88 --
200143096 M Hispanic
Grd 11
IEP IEP IEP Mod IEP
Attendance Rate (YTD)
Days Absent
A 10% (3 days)
Behavior Rate (YTD)
ISS Days OSS Days
B 0 0
Course Performance (Weekly Gradebook Average)
Language Arts Math Science Social Studies
C 49 -- -- --



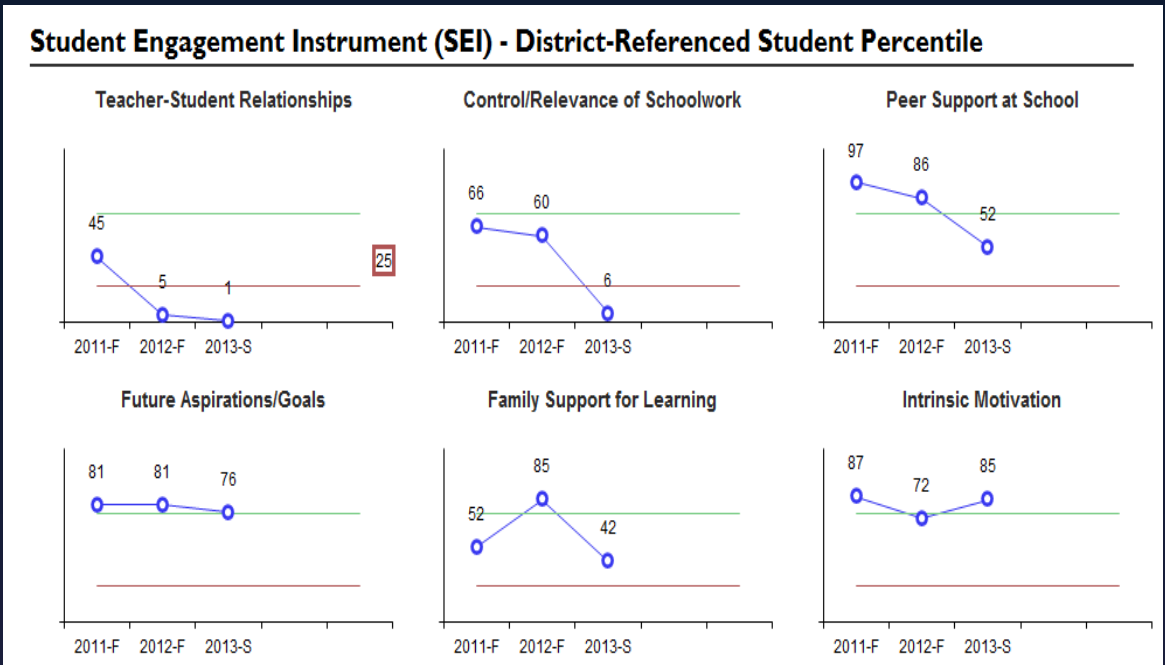
Single MS Student View



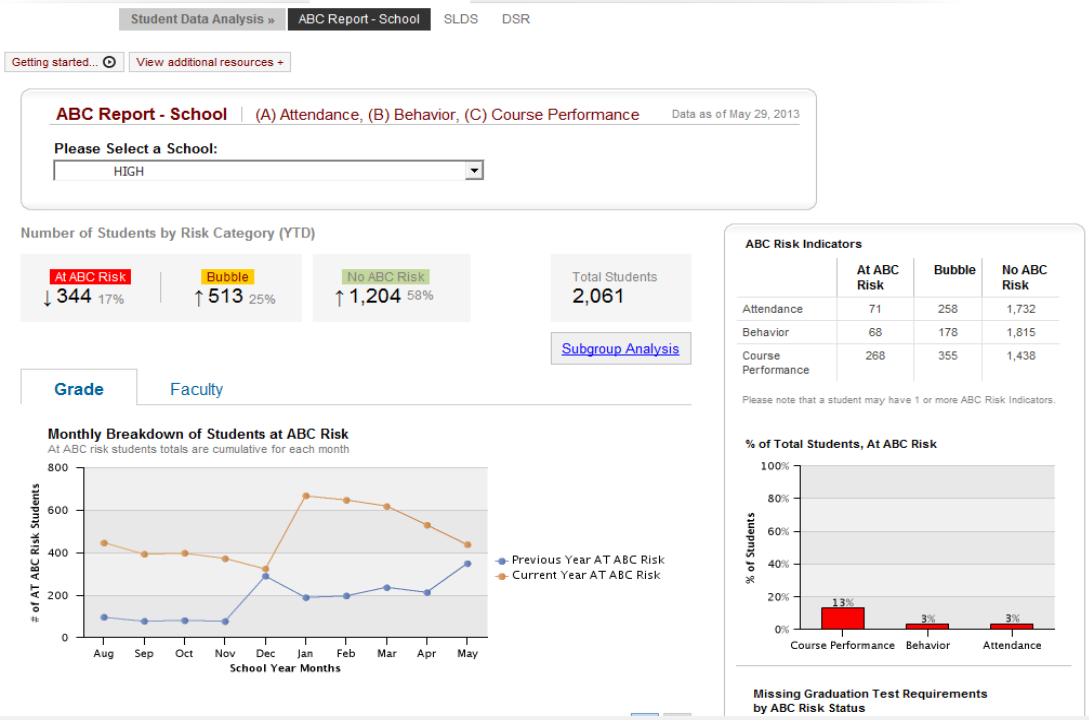
Single MS Student View – Perceptions



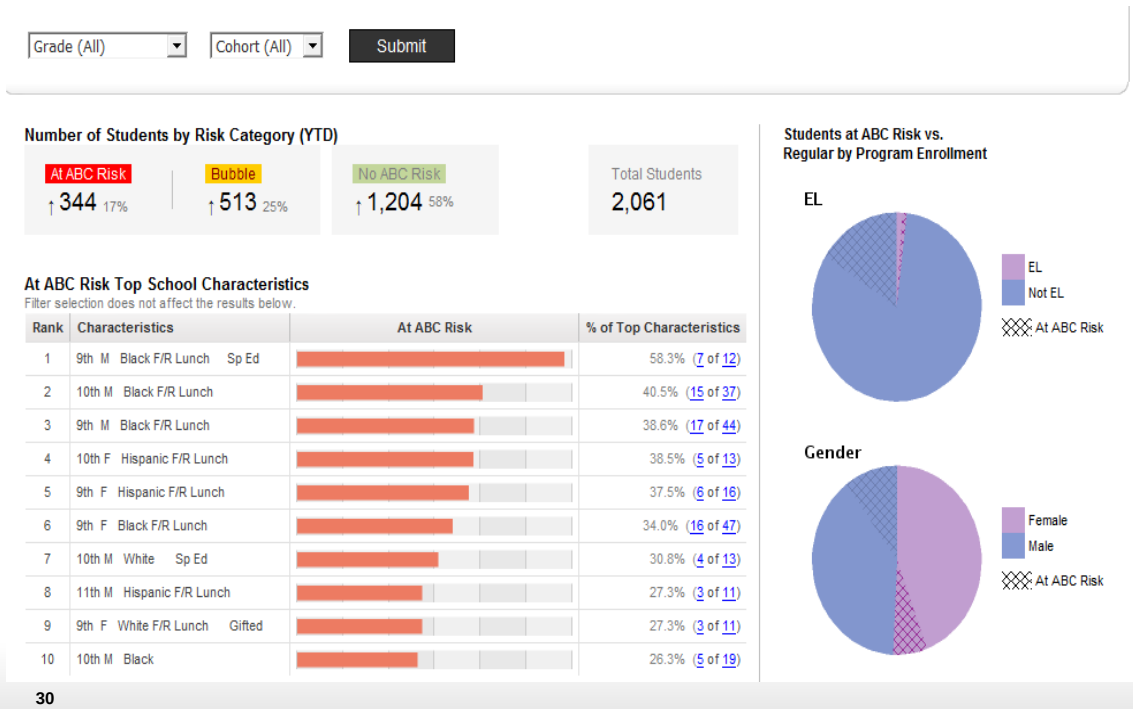
Single MS Student View – 3Cs



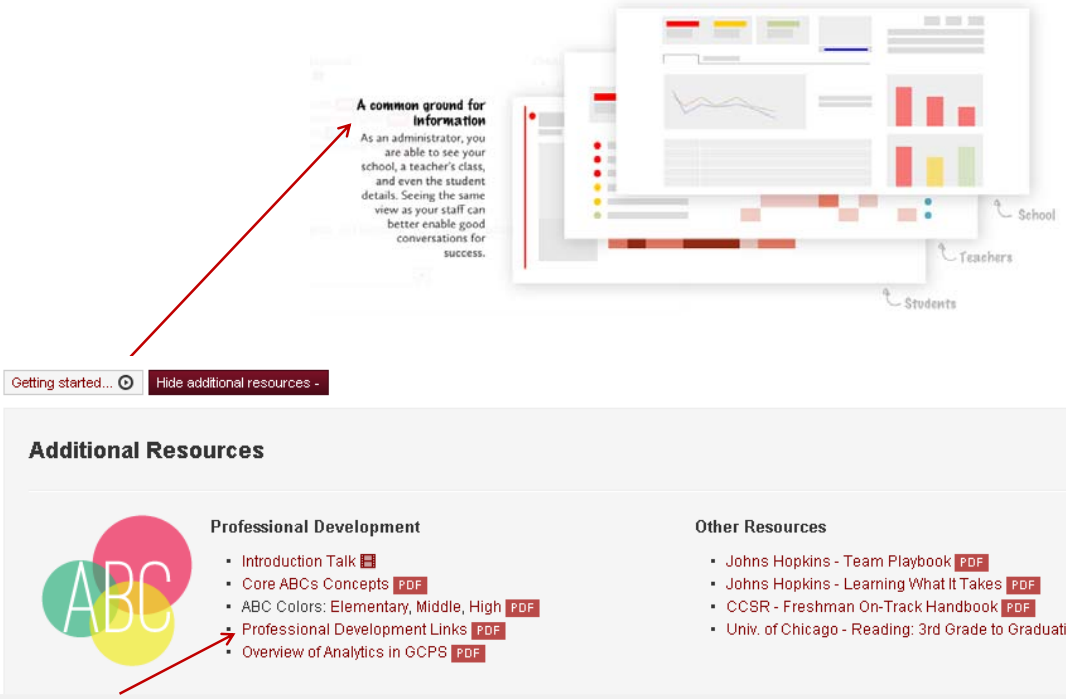
Admin View



Admin View



ABC Report: In-App Resources



ABC Report: In-App Resources

section of: "Professional Development Links"

topic	***resource: page(s)***
	[3]Freshman On-Track Handbook (**fot**) [1]Learning What It Takes (**lwt**) [2]Reading: 3rd Grade to Graduation (**rg**) [1]Team Playbook (**tp**)
creating a "focus" list of students	
indicators chosen for ABC Report	*fot: 1, 13 / lwt: 3 / rg: 1, 3 / tp: 6*
creating and interpreting the "focus" list	*lwt: 15-18*
putting together EWI teams	
building an interdisciplinary team	*fot: 11-12 / lwt: 4 / tp: 30-35*
roles on the team	*fot: 1 / lwt: 18-24 / tp: 57-60*

ABC Report: In-App Resources

section of: "Know Your ABCs"

Know Your ABCs – common practices

practices observed...

(from Davis, Herzog, & Legters, 2014 – Journal of Education for Students Placed at Risk (JESPAR) – Special Issue on addressing early warning indicators)
-examined practices across ES, MS, and HS in schools w/ 76-99% of students eligible for F/RL and minority status of 90-100% of students.

identifying students using data

- create a user-friendly, real-time data system to monitor students **(CHECK!** ✓ **)**
- determine how you will identify a list of "focus students" (teams added based on the ABCs but also when they knew of an acute crisis (e.g., family death) that placed a student at risk)
- some risks, like behaviors, can draw excessive attention; team members had to be careful to be more objective about risks; both level of risk and big changes were important signs

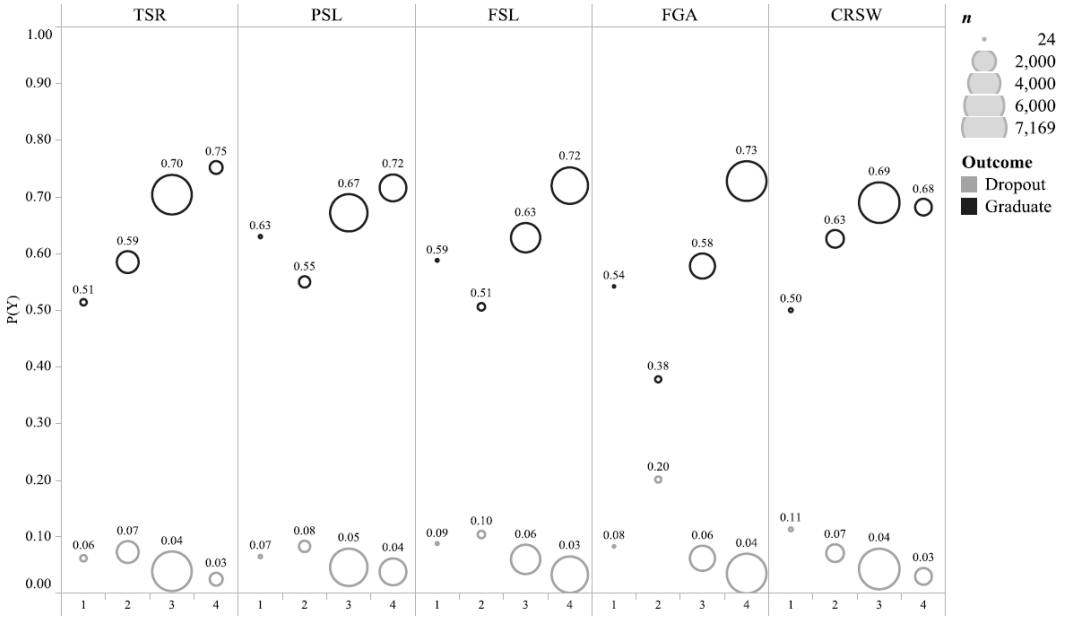
team meetings

- teams usually examine the data of just 6-8 focus-list students per meeting for about 4 minutes each
- meetings typically lasted from 30 to 60 minutes and usually held bi-weekly
- team meetings usually included a math, English, social studies, and science teacher as well as a staff member focused on early-warning interventions, and members from community-based resources; administrators or liaisons attended as able

Predicting Long-term outcomes

- Bivariate
- Multivariate, multi-level

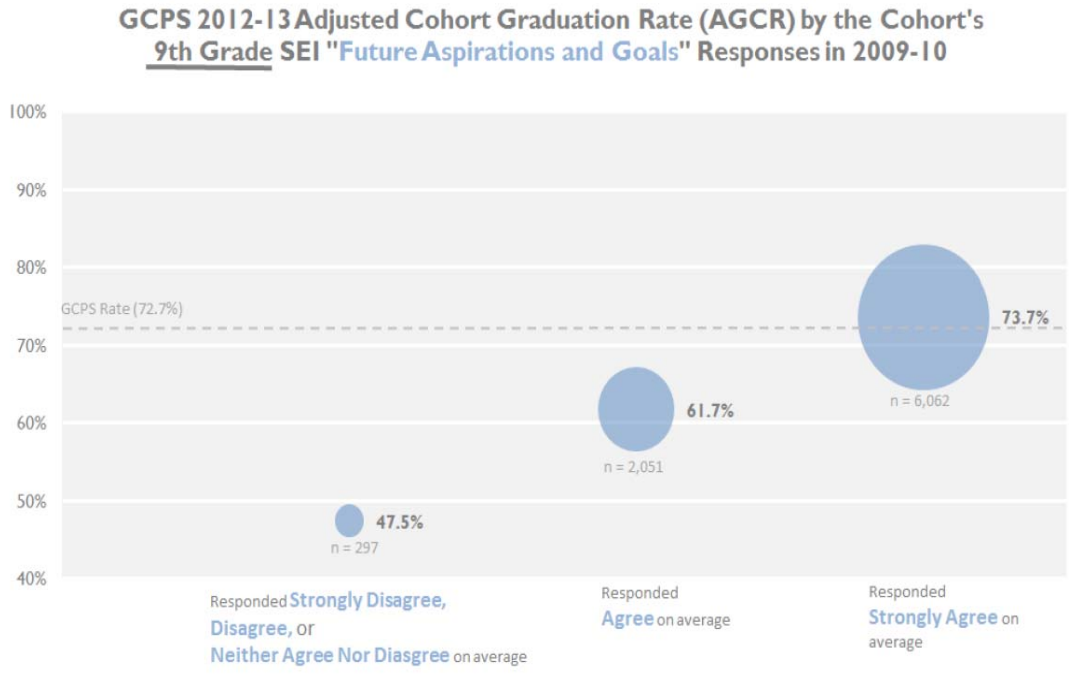
Four years later: On-time graduation and dropout as a function of SEI factor score levels in 9th grade.



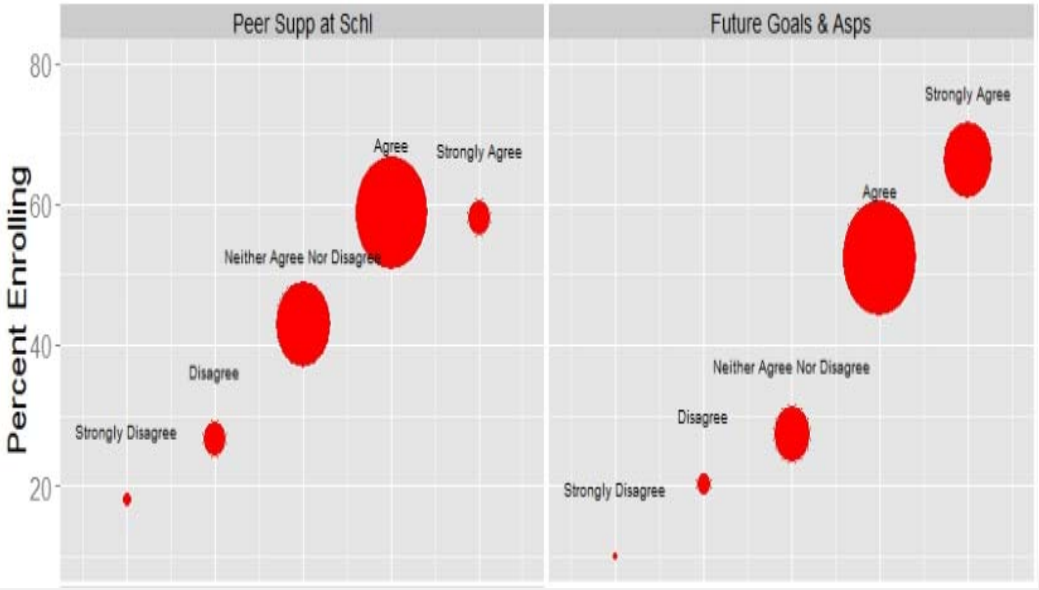
Note. Higher factor score levels indicate stronger student engagement. Factor score levels (1-4) indicate how a student tended to respond on items loading on a given factor. For example, students with a factor level of 1 onTSR tended to respond *Strongly Disagree* on items related to Teacher-Student Relationships, whereas students with a factor level of 4 tended to respond *Strongly Agree*. *Dropout* refers to students who were identified in school records as leaving between Fall 2007 and Fall 2011 for any of the following reasons (a) enrollment in an adult education program, (b) expelled/suspended, (c) financial hardship/job related, (d) incarcerated, (e) low grades/failure, (f) marriage or parenting, (g) removed for non-attendance, or (h) transferred to juvenile justice department. *Graduate* refers to students who were identified in school records as graduating with a full diploma within 4 years (by summer 2011).

Lovelace, 2014

Gwinnett County Public Schools



Post-Secondary Enrollment by Reported Student Engagement



Article

Concurrent and Predictive Validity of the Student Engagement Instrument

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Matthew D. Lovelace[1,2], Amy L. Reschly[2], James J. Appleton[1], and Mary E. Lutz[2,3]

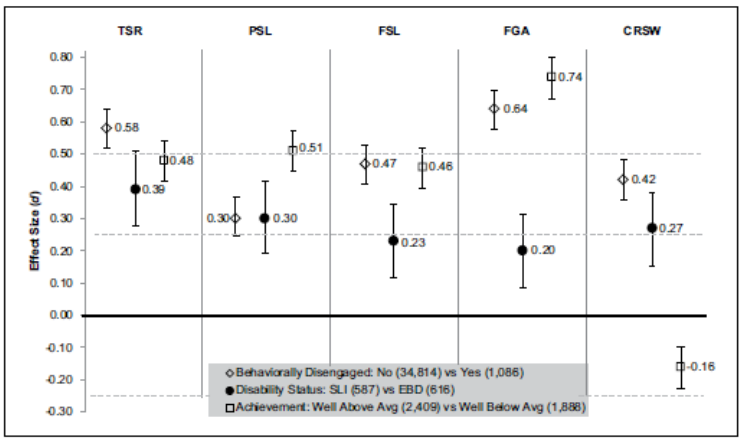

Figure 1. Effect sizes (ESs; Cohen's *d*) for group mean differences on SEI factor scores.
Note. Error bars represent 95% CIs for *d*. Horizontal dashed lines indicate thresholds for *educational significance* (|.25|) and *clinical* significance (|.50|) based on Wolf's (1986) recommendations. ESs are presented so that positive estimates fit with the hypothesized direction of the association. SEI = Student Engagement Instrument; TSR = Teacher–Student Relationships; PSL = Peer Support for Learning; FSL = Family Support for Learning; FGA = Future Goals and Aspirations; CRSW = Control and Relevance of School Work.

Article

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Concurrent and Predictive Validity of the Student Engagement Instrument

Matthew D. Lovelace[1,2], Amy L. Reschly[2], James J. Appleton[1], and Mary E. Lutz[2,3]

Table 2. Multiple Logistic Regressions of Each SEI Factor on Graduation and Dropout.

		SEI factor				
Outcome		TSR	PSL	FSL	FGA	CRSW
On-time graduation	OR	1.54* (.07)	1.45* (.06)	1.62* (.07)	2.38* (.11)	1.24* (.05)
n = 7,594 of 11,588	95% CI	[1.41, 1.67]	[1.33, 1.57]	[1.48, 1.78]	[2.17, 2.61]	[1.15, 1.36]
Dropout	OR	0.55* (.05)	0.67* (.07)	0.54* (.04)	0.45* (.04)	0.59* (.06)
n = 566 of 11,588	95% CI	[0.45, 0.67]	[0.54, 0.82]	[0.46, 0.63]	[0.37, 0.55]	[0.47, 0.73]

Note. Standard error for the OR in parentheses. Regressions controlled for gender, ethnicity, and free/reduced-price lunch eligibility. SEI = Student Engagement Instrument; OR = odds ratio; CI = confidence interval; TSR = Teacher–Student Relationships; PSL = Peer Support for Learning; FSL = Family Support for Learning; FGA = Future Goals and Aspirations; CRSW = Control and Relevance of School Work.
*OR is statistically different from 1.0, $p < .001$.

Continuing External Research from Pearson…

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focused on the many dimensions of students with early results below:

Research question(s):

- How well can college-ready graduation be predicted from 8th grade?
- How does this information support intervention and relate to changed outcomes?
- What are the characteristics of students who beat the odds?

Middle School Factor	College Readiness Variance Explained
Achievement	15%
Motivation	10%
Behavior	9%
Social Engagement	12%
Family Circumstances	13%
School Characteristics	9%
R^2	69%

key early findings:

- in both national datasets and the Gwinnett data, **almost 70% of the variation in college-ready graduation can be predicted** from 8th grade
- though Achievement was the best predictor of differences in college readiness (15% of the variation), **Motivation, Behavior, and Social Engagement together out-predicted Achievement by more than double** (31% of the variation)
- **student SEI responses accounted for a large portion of the prediction** (12% from Social Engagement) and part of the Motivation (10%) and Family Circumstances (13%) factors

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