

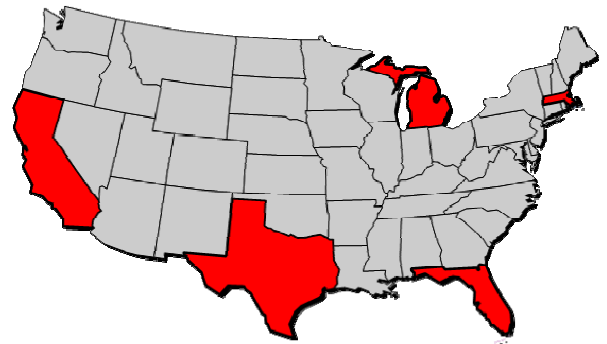


## CASE STUDY

# Core Practices in Math & Science: An Investigation of Consistently Higher Performing Schools in Five States

## South Haven High School

South Haven Public  
Schools  
(Michigan)



### Introduction

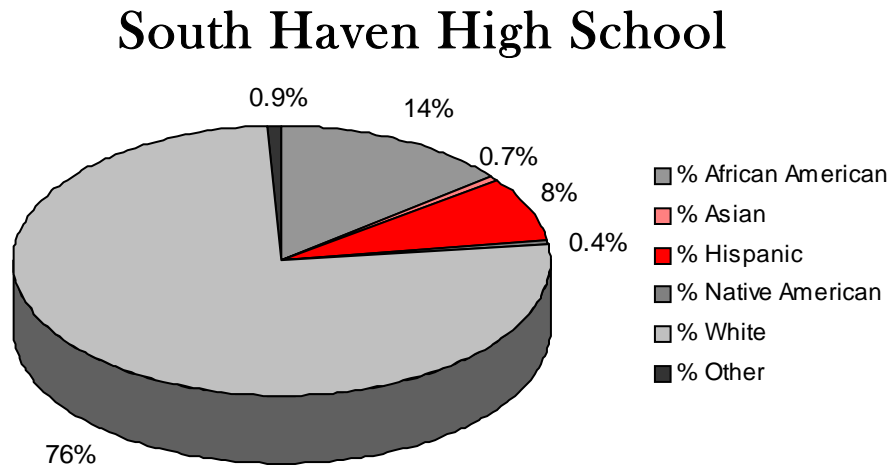
Since 1999, the National Center for Educational Achievement (NCEA) and its affiliated research teams have studied over 500 public schools across the country in an effort to identify and disseminate effective practices embraced by higher performing schools that distinguish their campuses from their average-performing peers. Building on the foundation established by this previous research, NCEA sought in the current study to focus specifically on educational practices in the areas of mathematics and science in five states: California, Florida, Massachusetts, Michigan, and Texas.

Criteria used in school selection in the current study included three years of state assessment data in mathematics and science (2004, 2005, and 2006), campus demographic make-up, percentage of economically disadvantaged students, school size, and geographic location. In addition, all of the schools selected for participation met the state and federal requirements for Adequate Yearly Progress (AYP) in 2006. Schools categorized as higher performing based on the selection criteria were those “beating the odds” with consistently better student achievement over three years, when compared to peer campuses with a similar student population. Therefore, a list of the state’s highest performing schools may contain schools different from those selected for this study.<sup>1</sup>

In order to illuminate the roles of different members in a school community, for each selected school, NCEA researchers interviewed district-level administrators, school administrators, and classroom teachers. To supplement the interview data, researchers collected pertinent documents, observed secondary level algebra classes, and invited participants to take part in the NCEA *Self-Assessment* online.

<sup>1</sup> For more detailed information about the school identification process and the list of higher performing schools included in the study, please see the full cross-case report at <http://www.nc4ea.org>.

**Figure 1: Student Demographics**



## District and School Profile

Located in a suburban area near Lake Michigan, South Haven Public Schools serves 2,300 students in seven schools, including three elementary schools, one middle school, and one high school. The majority of the students served are White (77%), followed by 13% African American students and 7% Hispanic students.

The population in the city of South Haven, Michigan, fluctuates throughout the year as many nearby Chicago-area residents spend their summer in the area. Among the city's year-round residents, many are socio-economically disadvantaged and receive federal assistance. In South Haven Public Schools, approximately 54% of the enrolled students are eligible for free and reduced-price meals. Because of the economical recession in the state of Michigan and increased property values in South Haven due to the city's new status as a resort community, families are leaving the area, and the school district has seen a steady decrease in student enrollment.

The only high school in the school district, South Haven High School serves 802 students, approximately 45% of whom qualify for free and reduced-price lunch. Most of the school's students are White (76%), and African American students are the second largest group on the campus, at about 14%. Hispanic students account for 8% of the student population.

As a strong proponent of higher standards, NCEA recognizes school efforts to move more students to the state's higher standard of achievement by accounting for those students in the analysis of consistent higher performance. Tables 1 and

2 summarize performance at both the state’s proficient and advanced standards attained by the students at South Haven High School for the years of 2004, 2005, and 2006. The state averages included in the tables represent student performance among schools with a student population similar to South Haven, particularly based on the percentage of economically disadvantaged students.

**Table 1:** Performance Trends based on Proficiency Standard

	2004	2005	2006
<b>Grade</b>	<b>11</b>	<b>11</b>	<b>11</b>
Mathematics	76%	59%	59%
Science	73%	62%	62%
State Average for Similar Schools (Math)	56%	47%	52%
State Average for Similar Schools (Science)	56%	53%	60%

**Table 2:** Performance Trends based on Advanced Standard

	2004	2005	2006
<b>Grade</b>	<b>11</b>	<b>11</b>	<b>11</b>
Mathematics	8%	3%	3%
Science	9%	5%	5%
State Average for Similar Schools (Math)	8%	4%	6%
State Average for Similar Schools (Science)	5%	3%	4%

## Theme 1

### Student Learning: Expectations & Goals

**With a focus on student achievement and post-secondary readiness in college and skilled careers, educators in South Haven Public Schools strive to provide students with abundant opportunities.**

- Embracing student achievement goals, educators in South Haven emphasize post-secondary readiness. With increasing accountability in the state and across the nation, the district administration “looks more inward” at student performance to focus on academically defined success for the students. One district leader expressed, “We believe we are preparing the students for college, where their talents can take over...Student achievement is the top priority. Everything revolves around that. It’s how we set our budgeting for

teachers, curriculum materials, and supplies for classrooms.” For example, district leaders prioritize assigning strong teachers to early grade levels, such as kindergarten and the first grade, “because that makes all the difference to students. If you give them the good start they need in school, they tend to move more smoothly through the system.”

- By providing students with a wide variety of opportunities, educators in South Haven Public Schools demonstrate their focus on post-secondary preparation. A district administrator shared, “It’s a high priority in the district for students to go to college if they can. We are aware of what students need to get into a college program, and opportunities are broad.” For instance, with the district’s partnership with the local community college, high school students can accumulate college credits by enrolling in direct-credit courses taught by district staff members as well as dual-enrollment classes offered at the college. Through the technology center established by a neighboring intermediate school district (ISD) and pathways mapped out by educators at the high school, students in South Haven have access to a large selection of vocational elective courses that confer credit hours in fields such as arts and communication, business, engineering, and agricultural science. Furthermore, in addition to prioritizing student performance on college entrance exams, educators at South Haven High School use state-provided resources such as the ACT publication, *Get Set for College*, to encourage students’ post-secondary aspirations.
- Post-secondary exploration and planning in South Haven Public Schools begin before students advance to high school. Middle school students have access to high school courses such as algebra, computer skills, and Spanish. While “students have always had a plan, even before it was a state requirement,” educators take advantage of the state-mandated Educational Development Plans (EDP) to “get [middle school students] to start to think about graduating from high school and attending college.” Using EDPs and the ACT EXPLORE test, educators help students chart out pathways that promote the development of high academic skills and fulfill individual career goals. To “identify traditional non-college goers in middle school and connect them with local universities and community colleges...[and] expose them to what college would be like,” the district office is actively researching and considering programs such as the Early College program funded by the Carnegie Foundation.

**Educators in South Haven Public Schools continuously work to align the curriculum to the state standards, while incorporating teacher expertise, instructional resources, and vertical articulation.**

- Using the newly established state expectations, educators in South Haven continue the ongoing curriculum process and uphold their high standards for the students. Constantly focusing their curricular efforts on identifying

performance standards and defining academic goals, educators adapt their current curriculum to align with the newly available state requirements. A district leader observed, “The priority now is to match the assessments, pacing, and curricular materials to the state standards.” In addition, while acknowledging the pressure from students and their parents to bring down academic expectations, educators in South Haven, for instance, including those in the science department at South Haven High School, “continue to stay the course and not change the curriculum or lower the standards. This is something we have been good at.”

- A teacher-driven process, the district-wide curriculum realignment effort emphasizes the provision of guidance and resources for instruction. A district leader observed, “While standards are a listing of knowledge and skills, a curriculum is the road map that provides multiple resources a teacher can teach to and assess the standards, including what should be taught and what materials to use...If teachers create the curricular materials with the district administration, then they know about the curriculum because they are the ones developing it. The materials have to come from the teachers.” A teacher at South Haven High School similarly expressed, “The district trusts the science department with curriculum materials...so the teachers’ job becomes what they believe is the best, rather than what the district has decided.” Educators develop standards-based curriculum materials, including corresponding instructional materials, pacing schedules, designated assessments, and desired proficiency levels. In high school science, the curriculum further contains information regarding lab activities, invited speakers, and class projects. In math, teachers prioritize the state standards; “while we are supposed to address all the standards, there are parts that need to be supplemented and parts that could be skipped and returned to if time permits.”
- In addition to committing to alignment with state expectations, educators in South Haven Public Schools emphasize vertical curricular articulation. Describing the current curriculum processes as “strategic planning for the K-12 experience,” district leaders arrange for middle school and high school teachers to work together “because that articulation is really important...[as] the alignment and articulation between schools will push the district in the right direction.” The strong alignment equips educators with knowledge about what happens in the different buildings in the district. For instance, in math, a uniform sequence of skills in the K-8 program has helped amend the previous “shotgun approach.” Math teachers at South Haven High School “have tried to make a stronger connection with the middle school” to ensure that the level of rigor in its instruction corresponds to the credits conferred in high school courses such as algebra. “Tackling one discipline at a time,” a leader at South Haven High School shared, “we are working to prepare students for the next

grade. It's not an easy undertaking...but this is an effort the district is heading.”

## Theme 2

### **Staff Selection, Leadership, & Capacity Building**

#### **Staff selection in South Haven Public Schools stresses commitment, experience, and competence.**

- Staff recruitment and selection in South Haven focus on connections to the local community as well as variation in experience. Without excluding candidates from outside, the district administration “leans towards teachers and principals with roots in the community...people who want to work and teach in the area and understand its dynamics so that they won’t be surprised by what they find in the community. We look for those who want to come back and give back to the schools where they grew up.” Currently working with several teachers and administrators who were former students, a district leader shared, “We don’t want all teachers to be exactly the same because students are different.” Staff members came to South Haven with backgrounds in industry and community college.
- Teacher selection procedures further emphasize instructional competence and commitment. In addition to thorough reference checks and qualification reviews, to ensure competence in the content area, administrators request that teacher candidates conduct sample lessons and ask current teachers to serve on the interview committee. For example, a leader at South Haven High School observed that in math and science, “teachers speak a different language, and it’s easier for teachers to understand if a candidate knows what she is talking about by asking the right questions.” Furthermore, regarding teacher commitment, a district administrator shared, “Everyone wants a job, so we have to find the people who will stay after their contractual time is over to tutor, lesson plan, coach, or help out with a play. That’s the kinds of teachers who are truly involved and engaged.”

#### **Constant support, professional development, and collaboration in South Haven Public Schools enable staff members to perform their daily tasks effectively.**

- To ensure timely acclimation and satisfactory performance of responsibilities, educators in South Haven provide new staff members with support and assistance. For instance, support for teachers new to the district includes regular meetings with assigned mentors who also conduct classroom observations. A leader at South Haven High School shared that “mentors are teachers who the administrators would like to involve in imparting information.

The all-around teacher gets the opportunity to mold the new teacher,” in areas such as managing the classroom, implementing the curriculum, and assisting struggling students. Similarly, support for new administrators exists in the form of orientation retreats, mentoring from district leaders, and regular administrative meetings.

- Continuous and focused staff development is available for every employee in South Haven Public Schools. To maximize the benefits of staff development activities, administrators focus on district priorities or “where the school is going and its mission” as indicated by annual teacher surveys and analysis of student performance data. For instance, district leaders conduct structured in-service workshops addressing curriculum development and teaching strategies such as differentiation, cooperative learning, instructional modalities, and activities based on “multiple intelligences.” With an increasing number of Hispanic students in the district, educators learn basic Spanish skills that they can build on to bridge communication. In addition to in-house training opportunities, administrators enhance accessibility to staff development on topics such as special education accommodation and trimester scheduling through the district’s relationships with local ISDs and nearby school districts. Administrators also inform staff members about conferences sponsored by various agencies.
- Collegial collaboration serves as another source of support for teachers. Although they do not have administratively designated collaboration periods, teachers at South Haven High School take the initiative to work with their colleagues during lunch or planning time, before and after school, via email, and by walking to each other’s classrooms. In the math department, “teachers lean on one another for things,” and those who teach the same courses communicate and collaborate especially closely, often to develop assessments and assignments that are consistent across classrooms. In science, because the classrooms adjoin, teachers frequently observe one another conducting lab activities and “make sure everyone has the appropriate materials.” Regarding the benefit of collaboration, a math teacher observed, “It helps us stay on the same page and stay focused on the common goal for the students.”

### Theme 3

## Instructional Tools: Programs & Strategies

**To attain student-learning results, educators deliver instruction supplemented by resources and characterized by diversity in approaches and consistency in content.**

- Educators in South Haven Public Schools aim to enhance student learning by adopting a variety of instructional strategies. Offering structured in-service

workshops to expose teachers to “alternative teaching strategies,” a district leader observed, “The district expects teachers to use a wider variety of instructional materials than they have in the past...Students learn differently and teachers need to match teaching to learning, to differentiate instruction.” Educators at South Haven High School expressed a similar perspective. For instance, a school administrator characterized the math and science teachers as “[having] explored different teaching strategies and styles to reach all students.” In science education, one teacher shared, “There isn’t really one single most effective instructional approach. If you vary instruction, it seems to be the best. Students are being taught the same thing, but one day it may be with manipulatives or a visual aid, and the next day with animation. So students are not being taught with the same approach; people learn better that way.”

- Math and science instruction at South Haven High School is standards-driven, with much integration of available technology. Administrators in South Haven Public Schools, despite depleted funds, “make sure that teachers receive the supplies, textbooks, and resources they need...trying to keep the math and science classrooms as up to date as possible,” for instance, with technology. “Trying to make sure we are hitting every standard,” math teachers take advantage of the technology components available on the textbook publisher’s website and take the time “to find what matches what we are doing in the classroom.” Likewise, science teachers also utilize the Internet for supplementary materials. For example, as biology students “can no longer do dissections due to the high costs,” teachers conduct virtual demonstrations. A school administrator observed, “The math and science departments have done a great job of integrating technology because those teachers understand that students learn differently. The old days of lecture notes don’t meet all the students’ needs.” In addition, teachers develop materials to “fill the holes with their own ideas of what works.”
- Consistent instructional content exemplifies math and science education at South Haven High School. In the science department, “the curriculum is much more consistent and steady” as a result of the single-teacher assignment in each course made possible by the school’s small size. In math, within each course group, teachers maintain a high level of consistency by embracing the same course-content focus and coordinating classroom assessments and assignments. The instructional consistency, particularly in the case of math education, ensures that “students have the same opportunities [as] teachers are doing the same things. So students don’t want to switch to get an ‘easier’ class.” In addition, the consistency strengthens “tiered and sequenced learning” to allow teachers the assurance that “every student has been taught the same thing in algebra before moving on to geometry.”



**With course offerings and student placement practices, educators in South Haven Public Schools equip students with post-secondary readiness.**

- Through course offerings, educators in South Haven cater to students' needs and interests and prepare them for post-secondary opportunities. At South Haven High School, educators develop new courses based on "the needs of the students. Courses are created by the interests of the students, parents, and/or teachers that point out what options are missing." These options include the elective forensics course in the science department. In addition, with an increased focus on math and science from the state agency, educators make adjustments to expand course availability and staffing in order to, as expressed by the principal at South Haven, "make sure we meet all students' needs, graduate them on time, and make all of them successful." While budgetary constraints limit the number of advanced courses at the high school, partnerships with the local community college, according to an administrator at South Haven High School, "[have] geared up student access to college preparatory subjects." For instance, high school teachers receive stipends for teaching dual-enrollment courses that confer either high school and/or college credits.
- Student placement in high school courses emphasizes both readiness and equality. Algebra and physical science as the minimum enrollment in math and science in the ninth grade, throughout each student's high school career, educators at South Haven High School determine readiness for course placement by consulting the EDP, grades, standardized assessment scores, and teacher recommendations. In science, for instance, "there is a minimal expectation, but if a teacher believes a student has matured since a particular grade in a prerequisite course, then the student can be placed in advanced courses...Students choose to take higher level science who hadn't intended to, coming into high school." In fact, the overall philosophy embraced by educators at South Haven encourages all students "to stretch and do the work." For example, by "stressing how important a strong math background is for future careers," math teachers work to "help students like math and get them to take as much math as possible." A science teacher further observed, "There is a focus on higher level classes and having a schedule for students to have options for dual-enrollment courses...One thing the school does well [is] we treat everybody the same."

## Theme 4

### Monitoring: Compilation, Analysis, & Use of Data

**Through reviews of student performance data, checks for understanding, and instructional monitoring, educators in South Haven Public Schools validate student-learning results.**

- Frequently monitoring student performance, educators ensure student learning and understanding. Driven by the accountability system to “[look] more internally at test scores,” district administrators institute processes and mechanics for effective performance monitoring. For instance, educators receive training to access programs for data storage. Educators in South Haven supplement data from state assessment results with data from additional published instruments or tests created in-house. For example, results from ACT’s PLAN test indicate to the educators whether 10th-grade students are on track for college. In the classroom, teachers develop tests such as weekly quizzes or chapter exams. Beginning with a small number of grades and subjects, district administrators provide formative assessments in line with teachers’ instructional focus and pacing.
- In addition to tests, teachers conduct frequent informal assessment of student understanding in the classroom. A leader at South Haven High School observed, “Teachers are constantly providing feedback to their students in written and verbal form. Students know right from wrong, and why. Teachers use other types of assessments, not just tests and quizzes, to determine if students are mastering the concepts throughout the lesson.” For instance, one math teacher shared, “When I ask a question and the students immediately know the answer, I know they understand, especially when I ask them to recall prior knowledge.” Homework and activities also allow teachers to determine understanding. For instance, math teachers ask students to hold up small whiteboards with answers to the daily problems. In science, lab activities allow teachers to “see if students have any inkling of what is really going on... [and to assess] student understanding of the lectures.” A science teacher described the practice of assigning different lab activities to students so that “we stagger where we start the labs. Students don’t always start on the same one, so there is a cross-section of people doing any one of the labs at once to see which students understand what they are trying to determine or verify.”
- Another measure undertaken by administrators to determine student learning is instructional monitoring. Taking on the primary responsibility of ensuring instructional soundness and faithful curricular implementation on their campus, school-level administrators frequently make informal classroom visits as well as formally observe teachers for evaluation purposes. Describing the teachers as competent and dedicated, a leader at South Haven High School

shared, "Once a week, I try to walk through all the classrooms to see what's going on, not to evaluate. I also ask teachers to e-mail me when something's going on in their classroom that's different or interesting." Time spent in the classroom also serves to offset the effect that the school's transient migrant student population may have on the validity of performance data. Furthermore, district leaders request monthly reports from school administrators on classroom walkthroughs, including information regarding instructional strengths and needs.

**Information and resources provided by educators enable students and parents in South Haven Public Schools to engage in progress monitoring.**

- By providing essential information, educators at South Haven High School enable students to monitor their own performance. One leader at the school observed, "When students know the game plan, they are going to learn." The practice of equipping students for self-monitoring begins at the eighth grade with the EDP and continues with, for instance, the school counselors' "one-on-one interviews with the students when they first enter the school. So they can understand what core classes are. It helps tremendously when students understand the why." The counseling office also provides "blank progress reporting documents [for students to take] to their teachers to fill out so that they know what their grades are...to 'take their temperature' with these documents." In addition, in the classroom, teachers communicate to the students "what the expectations are."
- Parents in South Haven Public Schools have the opportunity and information to participate in their children's education. For instance, "[taking] responsibility for what students are doing," math teachers at South Haven High School "try to follow up with parents whose children are not successful." Upon parents' request, science teachers provide additional lesson materials for individualized reinforcement at home. Every five weeks, educators at South Haven High School generate progress reports "so that parents know where their children are." In addition, parents throughout the school district have online access to information such as grades, current progress, and assignments. Educators also use newsletters and parent events to communicate updates and answer questions.

## Theme 5

### Recognition, Intervention, & Adjustment

**Teachers identified as in need of support based on consistent monitoring receive targeted assistance.**

- Administrative monitoring of classroom instruction and student performance directs the effort to provide support to the teaching staff. Increasingly "using

data to drive decisions,” the district office targets staff development based on student performance data from district and state assessments. In addition, as information about workshop opportunities from outside agencies frequently crosses his desk first, the principal at South Haven High School evaluates and determines “who the training might benefit or if it applies to all teachers” to address individual or campus-wide areas of need.

- In addition to focused staff development, administrators engage in activities that build specific support systems for teachers in need. For example, as “first year teachers often struggle,” administrators “remove the barriers to success” through the assignment of competent mentors. In addition, the state-stipulated four-year Individualized Development Plan (IDP) outlines annual professional growth goals or remediation measures to improve new teachers’ performance. For tenured teachers requiring support, administrators help them develop “plans of action” that include, for instance, “teaming with someone who is successful in the specific area.” Until improvement is evident, school leaders at South Haven High School schedule additional visits to the struggling teachers’ classrooms, conduct post-observation conferences, and provide guidance in weekly progress review meetings.

**Educators in South Haven Public Schools have a strong commitment to offering opportunities and assistance to help struggling students.**

- To help students achieve academic success, educators in South Haven introduce beneficial study skills. For instance, in addition to making bilingual personnel available on campuses to enhance academic skills, the district administration “offers study skills classes for migrant students.” As educators at South Haven High School often notice weak study-related skills among incoming 9th-grade students, classroom instruction emphasizes organizational skills that are essential for high school academics. Students at South Haven High School also receive academic planners that include advice on study skills and help them organize assignments and tasks.
- To meet the needs of struggling students, educators in South Haven Public Schools create additional opportunities and take advantage of existing resources. For instance, middle school educators, in an effort to enhance student success, rotate the core subject areas and schedule an additional five -week class period for each subject. In addition, English language learners who have struggled in the fifth grade concurrently enroll in a support class in middle school to improve their grades. Support classes in the form of “labs” are available to high school students needing extra support in math and English. In addition, to encourage struggling and credit-deficient students to get back on track and obtain diplomas, high school educators “have a dialogue with the students so they understand alternatives and opportunities” such as online classes, summer programs, adult education courses offered by a community organization, and the district’s alternative education program.

- Student interventions at South Haven High School exemplify staff commitment. For instance, teachers stay late to oversee the after-school Homework Club sponsored by National Honor Society students and volunteer to help with peer tutoring during lunch hours as well as before and after school. Describing themselves as “[wanting] to help all students regardless of ability to be successful, “ math teachers further shared, “every teacher welcomes students to come in for help after school.” Likewise, teachers in the science department offer opportunities such as after-school study sessions to review lessons and answer student questions. Teachers also submit names of struggling students to the administrators who then work to schedule “a teaming” for each student and involve the teacher, student, parents, and administrators to effectively plan for intervention measures.

## **Summary of Findings**

### **Student Learning: Expectations & Goals**

The goal to equip students with post-secondary readiness directs educators’ efforts in the provision of education and extended opportunities for the students in South Haven Public Schools. In addition, continuously refining the district curriculum and maintaining their high standards for students, educators in South Haven ensure student achievement by aligning curriculum materials to state expectations, enhancing the materials with abundant guidance and resources, and embedding vertical articulation in the materials.

### **Staff Selection, Leadership, & Capacity Building**

In South Haven Public Schools, staff recruitment and selection focus on strong instructional competence, connection to the local community, diversity in previous experience, and commitment to deep involvement in students’ education. Once hired, staff members in South Haven can enhance their capabilities through constant support, professional development opportunities, and collegial collaboration.

### **Instructional Tools: Programs & Strategies**

Instructional practices in South Haven Public Schools exemplify educators’ effort in diversifying approaches, maintaining content consistency, and supplementing existing academic materials with available resources. Instructional arrangements regarding course availability and student placement, in addition, focus on equality and post-secondary readiness for students.

## **Monitoring, Compilation, Analysis, & Use of Data**

Informed by available student data and performance indicators, educators in South Haven Public Schools consistently monitor and ascertain learning results and strive to engage both students and parents in performance monitoring. To further ensure student learning, administrators in South Haven conduct frequent instructional monitoring.

## **Recognition, Intervention, & Adjustment**

In South Haven Public Schools, educators follow up their monitoring efforts with the provision of targeted and abundant assistance needed for improvement. Intervention measures in the school district, for staff members and students alike, focus on full use of available resources and personnel as well as the creation of specific and achievement-centered support systems.



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