

# Pinnacle Insight:

## A Low-Cost, High-Impact Alternative to a Data Warehouse

# TOC Table of Contents

<b>1.0</b>	<b>Executive Summary</b>	<b>1</b>
<b>2.0</b>	<b>An Alternative to Data Warehousing</b>	<b>2</b>
2.1	How It Works: Pinnacle Insight Versus a Data Warehouse	2
2.2	What It Is Not	5
2.3	Benefits	5
<b>3.0</b>	<b>Making a Difference</b>	<b>6</b>
3.1	Data Accessibility Across the Organization	6
3.2	Making Instruction More Effective	7
3.3	Reporting	7
3.4	Better Use of Resources	9
<b>4.0</b>	<b>GlobalScholar: The Company Behind Pinnacle Insight</b>	<b>10</b>

# 1.0 Executive Summary

Educators understand the importance of data-based decision making as they struggle to meet the challenges of increased accountability. But collecting, accessing, and analyzing data is often a frustrating and time-consuming experience. While some states and districts have developed data warehouses as vehicles to collect, store, and analyze data, others have concluded that warehouses are too expensive and complicated to be a viable option. As a result, many teachers and administrators don't analyze data—and accountability is more difficult to achieve.

GlobalScholar (formerly Excelsior Software) has developed a viable alternative to the data warehouse: Pinnacle Insight, a cutting-edge tool that delivers the reporting capability of a data warehouse without the associated cost and complexity. Pinnacle Insight (formerly Pinnacle Analytics) uses a technology called Associative Query Logic™, which greatly simplifies the process of accessing and analyzing data. The result is a tool that can be up and running in weeks (as opposed to the months or years required to build a data warehouse); that provides answers to queries in seconds instead of hours or days; that requires no new hardware; that teachers and others can use after less than an hour of training; and that provides on-the-fly reports that can be saved as PDFs, Word files, Excel spreadsheets, or copied to other Microsoft Office applications. Initial costs are less than a third the cost of a traditional data warehouse, on average, and ongoing costs are also considerably less because Pinnacle Insight doesn't require a highly trained tech staff to maintain.

Pinnacle Insight is making a difference for education organizations because it makes data easily accessible to people throughout the organization, provides the kind of information that educators need to improve teaching and learning, simplifies the reporting process, and allows for more efficient and effective use of resources.

The company behind Pinnacle Insight, GlobalScholar, is well known as a pioneer in the field of electronic gradebooks. Today it is a leader in assessment and curriculum management software, including modules within the Pinnacle Suite developed in collaboration with Dr. Robert Marzano and recommended by the Association for Supervision and Curriculum Development (ASCD). The company's reputation for quality products and service continues to impress its clients who are using Pinnacle Insight, including the Bellevue School District in Washington State, a Baldrige award winner; Laredo Independent School District in Laredo, Texas; and Natrona County Public Schools in Casper, Wyoming.

**Pinnacle Insight delivers the reporting capability of a data warehouse without the associated cost and complexity, providing instantaneous access to useful information.**

**GlobalScholar's reputation for high-quality products now extends to Pinnacle Insight.**

## 2.0 An Alternative to Data Warehousing

Public calls for accountability and government mandates related to No Child Left Behind have today's educators facing unprecedented demands to increase student achievement. In searching for ways to meet the challenge, educators have come to realize the value of reliable data as a critical element in informing decisions related to teaching, assessment, curriculum, professional development, and many other areas. Many states and districts have purchased or developed traditional data warehouses, which provide a repository for data and complex tools for data analysis. But many others find that data warehouses are not a viable option because they cost too much, take too long to build and implement, and require end-users to have a higher level of technical expertise than most people in the organization possess. Accessing and attempting to use available data becomes a time-consuming, difficult, and sometimes futile task. As a result, many teachers and administrators don't analyze data — and accountability is more difficult to achieve.

Fortunately, educators now have another option: a cutting-edge technology tool that delivers the reporting capability of a data warehouse without the associated cost and complexity. This tool, Pinnacle Insight, is a viable alternative to a data warehouse. It is currently used in more than 30 school districts in the United States, as well as the Wyoming State Department of Education.

## 2.1 How It Works: Pinnacle Insight Versus a Data Warehouse

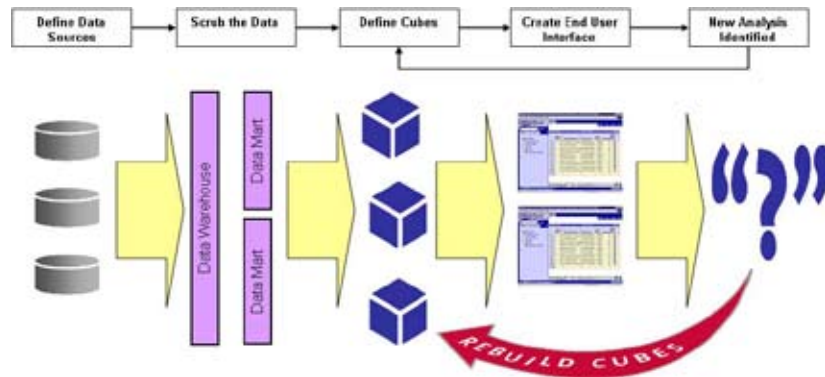
Building a traditional data warehouse requires a series of complicated steps:

- defining the various data sources (such as student information systems, finance systems, HR systems, and so on);
- “scrubbing” the data to eliminate inconsistencies and other potential problems;
- building “data cubes,” the multidimensional units that relate data items to each other; and
- creating the interface that allows the end-user to access and work with the data.

In many cases, the first few steps take many months, if not years to complete. Time that could be spent actually using the data is instead spent creating the elaborate system that houses the data.

**Pinnacle Insight is an option for states and districts that don't have the time, money, or technical resources required to build and maintain a data warehouse.**

## Traditional Data Warehouse Structure



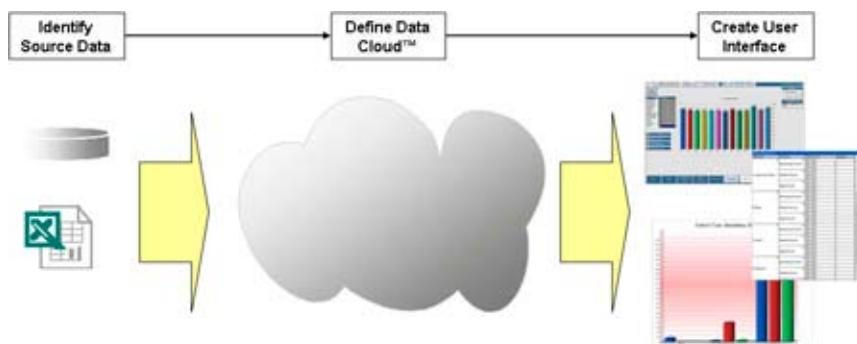
Pinnacle Insight uses a revolutionary technology that greatly simplifies the process of accessing data, so data analysis is quick and easy. No new hardware is required for Pinnacle Insight – it can reside in the RAM of a laptop.

Pinnacle Insight takes advantage of a more sophisticated yet simpler technology than the technology underlying traditional data warehouse structures. This technology, called Associative Query Logic™ (AQL™), was developed in Sweden in 1993 and has been used in data analysis tools in Europe since the mid-1990s. In the United States, it is taking over the data analytics field in business and is gaining credibility as a result of the successful experience of corporate giants such as Wal-Mart, Merck, and Pfizer.

In traditional systems, the same piece of data — a student ID number, for example — may reside in hundreds of places. In AQL™ systems, a piece of data occurs only once. Using AQL™, Pinnacle Insight extracts data elements from various existing data sources to form a Data Cloud™. The Data Cloud™ cleans up the data as it loads, eliminating inconsistencies and redundancies. Building the Data Cloud™ requires fewer steps and is much simpler than building a data warehouse.

Because the Data Cloud™ is generally only 15 to 20 percent of the size of the original source data, the entire Pinnacle Insight application can reside in the RAM that already exists on most computers, including laptops. Online operation requires only minimal bandwidth. The compact size of the Data Cloud™ also allows data to be retrieved, combined, and manipulated almost instantaneously.

## Pinnacle Insight Process



Accessible from a variety of sources:

- Any ODBC/OLE DB Relational Database
- Other file formats such as:
  - DIF
  - HTML
  - XML
  - Microsoft Excel
  - Microsoft Access
  - Comma delimited

Patented AQL™ (Associative Query Logic) builds a non-relational associative database that resides in RAM

### Click-and-View Analysis

Query results are revealed instantly through intuitive color coding which may be:

- Printed as Reports
- Saved as Adobe PDFs
- Sent to Microsoft Excel
- Copied into Microsoft Office applications

In a traditional data warehouse, the need to define complex hierarchies and build data cubes limits the flexibility of analysis tools; only the information that has been built into the cubes is available for processing, and so users are limited to a predefined set of data. If they want to get a report or conduct an analysis that doesn't correlate to an existing cube, the cube must be rebuilt — a process requiring a lot of time and expertise. Pinnacle Insight eliminates hierarchies and cubes. On-the-fly queries generate a response in less than a second. Reports can be modified without changing the data structure.

Pinnacle Insight's point-and-click user interface provides optimal functionality. A user can select an object and view all associated items in an instant. Query results appear in whatever format the user prefers — color-coded charts, tables, list boxes, and so on. The results may be printed as reports, saved as PDF files, sent to Microsoft Excel, or copied to other Microsoft Office applications.

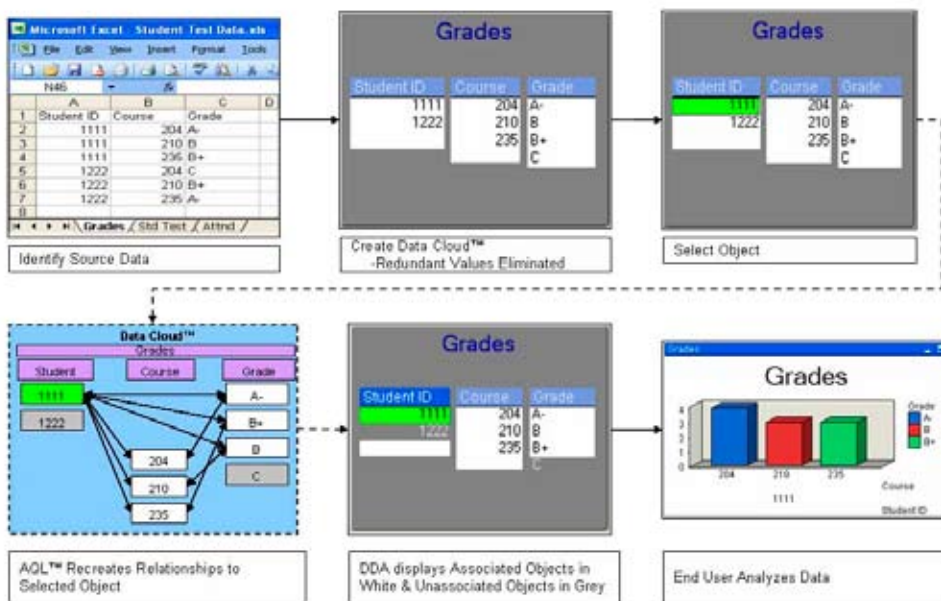
The simple technology and easy-to-use interface of Pinnacle Insight makes it possible for people with little previous experience in database work to use the tool with minimal training. The typical end-user can be trained in minutes; “power user” training requires about one day, and developer training can be accomplished in two or three days. The lengthy training period associated with learning how to navigate traditional databases is largely eliminated—along with the costs.

Similarly, Pinnacle Insight requires only a fraction of the time required to construct a traditional data warehouse and get it up and running. Whereas a data warehouse may require two or three years to assemble, Pinnacle Insight is typically installed and functioning within three months—and often within as little as 30 days. Again, this reduced time frame translates into significant reductions in cost.

Users can quickly generate reports as PDF files, Word documents, or in other formats.

Pinnacle Insight can be up and running in as little as 30 days.

## Pinnacle Insight – Beginning to End



Benefits of Pinnacle Insight compared with a traditional data warehouse include speed, flexibility, ease of use, and lower initial and ongoing costs.

## 2.2 What It Is Not

Pinnacle Insight does not have the collection and storage capabilities of a traditional data warehouse. Rather, it provides a powerful, flexible tool for data reporting and analysis. As such, it can complement and enhance a state's or school system's existing data warehouse. And for organizations without the money and expertise required to build and operate a data warehouse, it can serve as a stand-alone product, integrating existing, dispersed data sources including the student information system, curriculum management system, HR system, and state and district assessment data.

## 2.3 Benefits

Compared with a traditional data warehouse, Pinnacle Insight offers a number of significant benefits:

- **Time** — Pinnacle Insight can be constructed in weeks, not months or years.
- **Speed** — Retrieval of information and analysis of data occur almost instantaneously. Output that may take days to produce using traditional data warehouse tools can be obtained in seconds.
- **System requirements** — The entire Pinnacle Insight application resides in RAM. No new hardware is required.
- **Flexibility** — Queries and output are not limited by predefined data sets; as a result, users get instant responses to on-the-fly queries, and they can easily modify reports and other output.
- **Personnel** — Operating and maintaining Pinnacle Insight does not require a large staff of highly trained technology management personnel.
- **Ease of use** — People with little or no previous experience with a database find the tool easy to use.
- **Money** — Initial and ongoing costs are significantly lower. Whereas a traditional data warehouse may cost an average of about \$600,000 to purchase, Pinnacle Insight starts as low as \$15,000 to \$20,000 per district, with volume discount incentives for large districts. Because management and support of Pinnacle Insight does not require extensive IT capacity or training, ongoing costs are also less.

## 3.0 Making a Difference

Educators need to improve accountability and increase student achievement, and Pinnacle Insight can help them do both. Specifically, Pinnacle Insight can make a difference by:

- making data accessible to users across the organization,
- efficiently delivering the kind of data that teachers need to make instruction more effective,
- simplifying the reporting process, and
- allowing resources to be deployed more efficiently and effectively.

### 3.1 Data Accessibility Across the Organization

Many districts can be described as “data rich and information poor” because accessing data is a cumbersome, time-consuming, arduous process—or access is limited to those with advanced technical know-how. In addition, once the data is accessed, it may be difficult to interpret.

Pinnacle Insight puts the power of data analysis in the hands of district-level administrators, principals, teachers, and others who face the day-to-day challenges of improving student achievement. Access to data and the ability to use it to inform decisions is broadly dispersed throughout the education system — to everyone who makes decisions that affect student learning and, ultimately, the success of the system.

Dr. Michael N. Riley, superintendent of the Bellevue School District in suburban Seattle, says he’s convinced that the Pinnacle Insight is “the tool we need to make all the professionals in this system ‘data hounds.’ When that happens, we will be a much better school district.”

Pinnacle Insight puts the power of data-based decision making into the hands of teachers, principals, and others throughout the system.

## Spotlight

**Bellevue School District began using Pinnacle Insight (then Pinnacle Analytics) in August 2004. Superintendent Michael Riley recently described the impact it has had on his work:**

While having access to the tool for only a few months, I have already been engaged in countless conversations when the need for data presented itself. I was able to conduct an analysis in no time and inform the debate with actual facts instead of just guesswork. I have also used Pinnacle Analytics to mine for issues. I have, for example, examined how many of our minority students, free/reduced lunch recipients, and ELL students are enrolling in advanced classes; how many students with low standardized test scores have been in our school system three or more years; how many students who take a math support class in sixth grade reach calculus by twelfth grade; and so on. In the past, these questions would take me weeks to answer and would tie up a number of staff charged with conducting the research. Now, whatever question crosses my mind can be answered within minutes.

Teachers can use Pinnacle Insight to quickly find information that can make a difference in teaching and learning. Reports take a fraction of the time to produce.

## 3.2 Making Instruction More Effective

Some analysts estimate that only 10 percent of the data that education organizations maintain is actually meaningful, in terms of its potential impact on instructional decisions. For example, data related to transportation or test scores from five years ago may not be useful in finding ways to individualize instruction for the students a teacher faces today. The efficient technology of Pinnacle Insight allows easy access to information that does matter—information that can help a teacher begin to understand why certain students are struggling and what kinds of approaches might improve the situation.

Here are a few of the kinds of questions a teacher might ask:

1. collecting student background information?
2. knowing which courses students take?
3. linking units within courses to state standards and objectives?
4. diagnosing student interim, formative learning needs?
5. diagnosing student summative, high-stakes, end-of-year performance for next year?
6. connecting those diagnosed learning needs to teaching actions?
7. analyzing, aggregating and disaggregating achievement data by student descriptive characteristics?
8. determining program eligibility?
9. keeping enrollment, promotion, graduation and dropout data?
10. tracking those measures over time?

The flexibility and agility of Pinnacle Insight results in up-to-date responses to questions such as these. Daily feedback with reliable information becomes the norm.

## 3.3 Reporting

Reporting has become a significant and time-consuming task for educators, whether in response to federal or state mandates or as part of outreach efforts to parents and community. Schools, districts, and states must produce compliance reports and other documents in a regular, never-ending cycle. Concerns about such high-stakes matters as having highly qualified teachers and making Adequate Yearly Progress consume educators' attention—the need for accurate, timely reporting adds to the pressure.

## 3.3 continued...

Pinnacle Insight simplifies the reporting process. Data obtained through Pinnacle Insight's easily customizable user interface can be exported to PDF files, Word documents, Excel spreadsheets, or other formats. Reports that present information in easily understandable tables, charts, or graphs can be produced in minutes.

### Spotlight

**When the Laredo Independent School District in Texas purchased Pinnacle Insight in 2005, it had a simple but powerful goal in mind: improving instruction and learning for its 26,000 students, more than 90 percent of whom are economically disadvantaged.**

As CTO Roy Lanier puts it, "We asked, what tools can we give teachers so that they can give kids the proper instruction? How can we help teachers determine if a child is learning and how instruction might need to be changed to meet the child's needs? If we can do that, that's everything."

Before it began using Pinnacle Insight, Laredo's ability to access data to inform daily instruction was limited. The state provided data for results on state-mandated tests, but if the district wanted to compare results from year to year, school to school, or classroom to classroom, the work had to be done manually and typically took a month or six weeks to complete. And the system had no capacity to report data from local assessments.

Now, after piloting Pinnacle Insight during the 2005–06 school year and implementing it districtwide in 2006, Laredo is benefiting from easy access to student achievement data. Most of the 1,900 teachers and 150 administrators, including principals, are using Pinnacle Insight to look at data from weekly tests and benchmark tests, as well as state measures.

Teachers can get a customized report on a classroom assessment the day after they give the test. In addition to scores and passing rates, they can see if students who didn't do well are having trouble with a particular topic, such as dividing fractions. Rather than relegating students to broad-based remediation, teachers can differentiate instruction to address specific weak spots. With Pinnacle Insight, "classroom teachers have the decision-making ability to determine how to modify their own instruction," says Lanier.

Teachers can also see information about students' performance in previous years or in other subjects. If a math teacher finds that a student is struggling with reading, it becomes easier to understand why the student is having trouble with word problems. Teachers across or within subjects or grade levels may get together to plan how to help students improve. Lanier says having access to timely, targeted information has made teachers' planning time more productive.

Principals and district-level administrators are using Pinnacle Insight to get a broader picture of student performance and the implications for curriculum, instruction, and professional development. If students consistently score lower in a particular subject area, the data provides the impetus to consider changes to the curriculum or additional teacher training. Similarly, if the data indicates that one classroom or school is consistently underperforming, professional development can be targeted where needed rather than blanketed across the district. And where the data reveals exemplary performance, administrators can explore the reasons behind the success, with an eye toward replicating results.

Lanier reports that Pinnacle Insight is meeting Laredo's expectations so far. Teachers and administrators appreciate having to spend less time trying to gain useful information on student performance so they can focus more on instruction. "We have a lot of faith in Pinnacle Insight," he says. "This is one of the few products that will actually make a difference in the classroom."

## 3.4 Better Use of Resources

The simple but powerful technology behind Pinnacle Insight frees up resources across the education organization. Time and personnel no longer need to be devoted to entering data, scrubbing data, building data cubes, and performing other tasks associated with a traditional data warehouse. Teachers and administrators can get answers to questions in seconds rather than days, freeing up more time for meeting student needs. Time and attention spent on producing reports can be devoted to other tasks. The bottom line: a more efficient, cost-effective organization.

“We can add data from teacher desktops every day, and the reports generated from Pinnacle Insight will reflect those additional data points,”

### Spotlight

Natrona County School District in Wyoming is using Pinnacle Insight to help it comply with state requirements related to student achievement. Rather than rely on high-stakes tests, Wyoming requires school districts to develop a Body of Evidence (BOE) system that reflects what a student knows and is able to do in up to nine content areas. The system must meet certain criteria, such as alignment with standards; consistency in terms of minimal error attributable to differences in raters, tasks, and testing conditions; fairness in terms of nonbiased treatment of any particular subgroup of students; and comparability across schools and classrooms within a district, and both within a given year and across years.

Meeting the BOE requirements under these criteria is a complicated task, involving analysis of large amounts of data. Mark Mathern, executive director of curriculum and instruction for the Natrona County School District, sees Pinnacle Insight as a “honing device that can help us tell if our efforts to align, be fair, be consistent in our judgment, and be comparable across classrooms need some adjustment.” Mathern appreciates Pinnacle Insight’s ability to develop on-the-fly reports and just-in-time reports. “We can add data from teacher desktops every day, and the reports generated from Pinnacle Insight will reflect those additional data points,” he notes. “Other systems require regular uploads into a static warehouse, thus making them extremely expensive.”

# 4.0 GlobalScholar: The Company Behind Pinnacle Insight

GlobalScholar is perhaps best known as a pioneer in electronic gradebooks. Its assessment management tools are used in nearly 1,000 districts nationwide, and its Pinnacle System is the only student assessment software product to have been recommended by the Association for Supervision and Curriculum Development (ASCD). Since 2001, GlobalScholar has collaborated with the distinguished education researcher and author Dr. Robert Marzano to incorporate many of his methodologies and philosophies into the standard functionality of the Pinnacle platform. In 2006, Pinnacle won the prestigious CODiE award in the category of "Best Student Information System or Gradebook".

With Pinnacle Insight, GlobalScholar has moved into the data analysis field with the same commitment and dedication to quality performance that has characterized its achievements with the Pinnacle System. Pinnacle Insight (as Pinnacle Analytics) was recognized as a finalist in the 2006 CODiE award category of "Best Solution for Education Enterprise".

Pinnacle Insight complements all of the Pinnacle Suite modules and can be used to extend their functionality. Data from Pinnacle, like data from other ODBC-compliant data sources, can be seamlessly accessed through Pinnacle Insight. Pinnacle Insight can also operate as a stand-alone application for clients that do not use the entire Pinnacle system.

GlobalScholar's solid track record with its Pinnacle platform is contributing to the confidence its clients have in Pinnacle Insight. Chris Lindberg, manager of data, research, and testing for the Bellevue School District notes that the district's good working relationship with GlobalScholar through its use of the Pinnacle Gradebook led to the decision to purchase Pinnacle Insight. Bellevue has not been disappointed, Lindberg reports. Two years after purchase, Lindberg says she is "far more impressed with Pinnacle Insight's capabilities and potential now than when first introduced to the product. Pinnacle Insight has grown along with us, as we continually expand our ideas of how data and technology can be put to work, furthering our goal of ensuring success for all our students."

**GlobalScholar's reputation as a leader in the education software industry is confirmed by ASCD's endorsement of Pinnacle and by the company's association with Dr. Robert Marzano.**

**Pinnacle Insight connects seamlessly with all Pinnacle modules, or can be used as a stand-alone product.**