



Organizational Applications: Student Management Software Applications in Education

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Terminology

- **Student Management Software - SMS**
- **Student Information System - SIS**
- **Student Record Software– SRS**

Different names – same software

Agenda

- **SIS Role in School Management**
- **Selecting an Student Information System**
- **Data Quality**

SIS Role in District/Building Management

- **SUMMER**
 - Enrolling students
 - New hardware & applications
 - Application upgrades
 - Scheduling
 - Rollover
 - TSDL reporting
 - All activities must be coordinated among the various related systems

SIS Role in District/Building Management

- **SUMMER (cont.)**
 - **Direct Certification review**
 - **Free/reduced lunch applications**
 - **Transparency reporting**

SIS Role in District/Building Management

- **FALL**
 - **Beginning of the year activities**
 - **Early warning system (EWS)**
 - **Prepare for the count day**
 - **1st Wednesday in October count day (due mid-November)**
 - **5th week of school progress reports**
 - **Parent/teacher conferences**
 - **10 weeks ~ 1st quarter report cards**

SIS Role in District/Building Management

- **FALL/WINTER**

- 15 week 1st semester progress reports
- Master schedule building for the next year
- End of first semester: Report cards
- Student schedule changes for 2nd semester

SIS Role in District/Building Management

- **WINTER/SPRING**
 - Student course selection for following year
 - Membership count 2nd Wed. in February (5 wks)
 - Progress reports
 - Parent/teacher conferences
 - K enrollment

SIS Role in District/Building Management

- **SPRING**

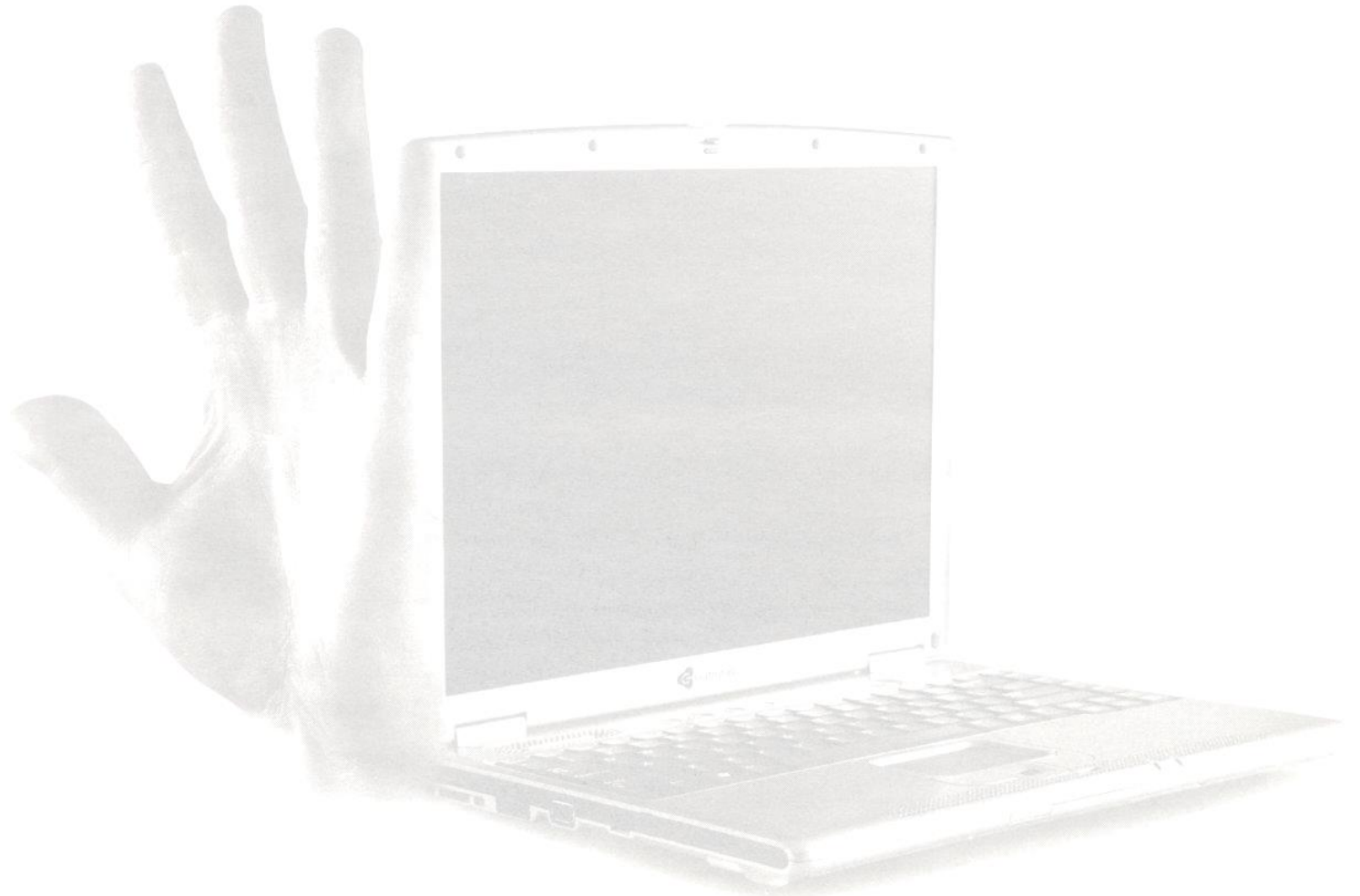
- Testing
- Scheduling for next year
- End of year activities
- Final report cards
- Final (?) student schedules
- MSDS General Collection submission for end of year
- Update EEM for next school year
- SID reporting
- Graduation rate review & student search

SIS Role in District/Building Management

- **ONGOING**

- **IEP Maintenance**
- **CTEIS reporting**
- **MEDS reporting**
- **Grant management and reporting**
- **Alert/phone system management**
- **Website management/maintenance**

What else should be added?



System Components

– Attendance

- **Daily attendance for Elementary Buildings**
- **Period attendance for Middle Schools**
- **Period attendance for High Schools**

Need to make sure that the student management system can meet and help enforce your district/school attendance policies.

System Components

– Attendance

- Positive or Negative?
- Positive – better audit trail, lots of data
- Negative – Less data, easier to question
- Key Question - Was attendance done?

- 1st attendance – Positive input?

System Components

– Attendance

- **Membership / Pupil Accounting**

- 10 day rule: unexcused absence on a count date, the student has 10 school days to return to class.
- 30 day rule: excused absence on the count date, the student has 30 calendar days to return to class.
- 45 day rule – expelled students
- Students with IEP – whole year return

- **LOSE \$\$\$\$** if a student does not return to class under the various rules.

System Components

– Attendance

- **75% Attendance**

- EVERY scheduled day of the school year:
- 75% of SCHEDULED students must be in attendance
- Funding loss if below 75% threshold

- **Implications**

- Year round schedules
- Added days in the summer
- Lower threshold – 60%

System Components

- **Student Membership:** The software must have the capability to track and report on all student information for funding:
 - **Full Time Equivalencies (F.T.E.)**
 - All regular students F.T.E.
 - Special Education F.T.E.
 - Alternative Education F.T.E

System Components

Membership continued...

- **Non-Conventional or Population III students**
 - Part Time students (5-F)
 - Non-public/Shared Time students (5-E)
 - Cooperative Ed students (5-B)
 - Homebound/Homebased (5-C & 5-D)
 - EC Special Education F.T.E. (5-K)
 - Career and Technical Education F.T.E. (5-P)
 - Virtual/online classes (5-O)
 - Early/middle college (5-G)

System Components

– Scheduling

- **Software and Humans can create the individual student schedules HOWEVER.. need to take into consideration:**
 - Teacher Contract
 - Master Schedule
 - Facilities
 - Teacher staffing & Collaboration time
 - Course Offerings
 - Failures & Repeat courses
 - Scheduling Constraints (blocks, A/B schedules)
 - School reform issues (focus/priority)
 - Semesters vs Trimesters

Student software must be able to create the master schedule, rotations, block classes, etc¹⁸

System Components

– Discipline

- **The system must track student disciplinary incidents for**
 - Helping students learn alternative problem resolution techniques.
 - MSDS reporting
 - » Regular Ed – Expulsions
 - » Special Ed – Suspensions and Expulsions
 - EWS
 - CRDC
 - Data sharing – student discipline records and sharing with the NEXT District

System Components

– Grade Reporting / Progress Reporting

- Graduation requirements
- Grading scales
- Weighted grading
- G.P.A. calculations
 - Academic
 - Honor Roll
 - Term / Cumulative
 - District creative grade point averages
- Student Privacy – Do you publish the honor roll?

System Components

- **Grade Reporting / Progress Reporting**
 - **Community Service**
 - **Citizenship marks**
 - **Teacher comments customizable by school**

System Components

– Transcripts / Course History

- **Course History capabilities that are flexible to allow transfer classes**
- **Dual Enrollment Classes**
- **Distance Learning Classes**
- **Independent Study**
- **Credits for work study (CTE)**

- **Michigan E-transcript Initiative (Parchment)**

System Components

– Immunization & Health Emergencies

- Student software should include a module for tracking immunization information and health emergency information.
- Student software should interface (export a file) to the SIRS program as required by the State Michigan Department of Health.
- Balancing of needs: making information easily & readily available to those who need it vs Student privacy

System Components

– Emergency Information

- Allergies
- Medical alerts
- Contact numbers for parents
- Alternate Contact numbers as provided by parent(s)
- Who is allowed to pick up a child from school
- Who is not allowed to have contact with the child.

System Components

– Parent Information

- **Name and address of all parents involved with the child**
 - Stored in the database as separate records
- **Ability to denote who should or should not have contact with child.**
- **Designation for sending report cards and other school information to the parent**
- **FERPA – Rights transfer at 18 to student**

Internal Customers or Users of the Data

- Security rights & Access privileges:**
 - Teachers**
 - Students**
 - Building/District administrators**
 - Parents/guardians**
 - School Improvement Teams**
 - Volunteers**
 - Board of education**
 - Technology & other staff**
- Data Access vs FERPA rights**

Software Components

(to meet reporting and management)

– Support systems & ETL

- Career and Technical Education (CTEIS)
- Special Education (variety of software including Tienet, EasyIEP, ISE, etc.)
- Limited English Proficiency (LEP) services software.
- Food Service Software(free and reduced lunch).
- Assessment Systems~ M-STEP (Secure Site), ACT, SAT, PSAT, etc.
- Transportation/bus routing software
- HR software (PIC codes, certifications)
- Library management systems

Software Components

(to meet reporting and management)

- Support systems & ETL
- Data Transfer
- ETL (Extract, Transform, Load)
 - Frequency & Data “ownership”
 - Student ID issues
 - System idiosyncrasies
 - File formatting & data structure issues
 - Pushed data vs Pulled data
 - Timing issues

External Customers or Users of the Data

- **State**
 - MDE (program control and evaluation)
 - CEPI (Center for Educational Performance and Information)
 - MiSchoolData
 - » Many, many reports
 - » Public and Confidential
- **Feds**
 - Many Federal reports based on State collected data
 - CRDC (Civic Rights Data Collection)

External Customers or Users of the Data

- **Parents and prospective parents**
 - Standard and Poor's District Analysis
 - Michigan report card
 - Transparency reporting
- **News Outlets**
 - Newspapers, Associated Press, CNN, television
- **Data Hubs**
 - Kalamazoo RESA (SWMI) Data Hub: <https://portal-kz.midatahub.org/OperationsCockpit>
 - Kent ISD (KENT) Data Hub: <https://portal-kc.midatahub.org/OperationsCockpit>
 - Oakland Schools (GMEC) Data Hub: <https://portal-os.midatahub.org/OperationsCockpit>
 - REMC 1/Copper Country ISD (RNMI) Data Hub: <https://portal-cc.midatahub.org/OperationsCockpit>
 - Wexford-Missaukee ISD (IMC) Data Hub: <https://portal-wm.midatahub.org/OperationsCockpit>

External Customers or Users of the Data

- Ed-Fi (Data standardization specification)
- Grants (Eisenhower, Perkins, USF, etc.)
- Researchers (Grad Students, others)
- NCAA for college scholarships

Others?

Cloud Computing?

- *User interface AND data storage is off-site, decentralized*
- **PROS**
 - *No local servers, software*
 - *No patching, updates*
- **CONS**
 - *Browser issues*
 - *Internet interruption*
 - *Bandwidth*
- *Can your system cope with web access interruption?*

Selecting an SIS

System considerations

- **Operating system / database choices**
 - Cloud computing may render irrelevant
 - Need to test against ALL browsers
- **How well will this system mesh with others?**
- **Hardware needs?**
 - **Database server(s)**
 - How many environments?
 - **Web server(s)**
 - User load & bandwidth issues
 - Building schedules can effect user load

Selecting an SIS

Data backup and recovery

– Backups

- How frequent?
- Storage medium(s)?
- Drive/system mirroring

– Have you tested it **RECENTLY**?

– Disaster recovery

- Is there an offsite copy of your system?
- What would you need to re-open school if IT building was wiped out?
- If you store to the cloud, what do you do when the internet goes down?

Selecting an SIS

System access and security

- User rights
 - Flexible enough?
 - FERPA rights apply to INTERNAL staff too!
 - Different rights in different modules?
 - Whole screen, or item level?
 - Are reports user access-sensitive?
 - Whole report, or field level?

Selecting an SIS

System access and security

– User rights approaches:

- User groups

- Collect rights unto user groups
- Employee-based groups
- Assign group or groups to users
- Harder to customize, less complex

- Lego-style security

- Lowest common denominator
- Function-based groups
- Small blocks, pieced together into larger blocks
- Easiest to customize, more complex

Selecting an SIS

System access and security

- Cross system security
 - Do other systems support the same user IDs, access rights
 - Distributed user management
 - Active directory support
 - Eliminate/minimize multiple IDs/passwords

Selecting an SIS

System scope considerations

- Does the system meet **ALL** your needs?
- Are you collaborating with:
 - Other Districts within the ISD?
 - Other ISDs
 - Regional data hubs?
- Do you have populations this system cannot easily serve
 - Special Ed center sites
 - Virtual programs

Selecting an SIS

Student ID (numbers, not badges)

- **Can you use UIC?**
 - Remember, some UICs start with '0'
- **Keep legacy ID from last system?**
 - Field compatibility
 - Connectedness to historical data
- **SINGLE SOURCE new student IDs**
 - Including connected systems
 - Special ed, transportation, food service
- **Good tools to find, merge Student IDs**
 - All tables, modules
 - Cross school year breaks?

Selecting an SIS

Student History

- **Can you move previous year into new system?**
 - Are tables able to translate?
- **If not, how do you maintain old records?**
 - Are printouts enough?
 - Keep old software?
 - Can old backups be read?
 - Changing storage media
- **What old records MUST be maintained?**
 - Transcripts
 - Attendance?

Selecting an SIS

Customization

- **Software drives policy**
 - Does your system do what you want it to do, or do your processes adjust to what the software allows?
 - Find the right balance
- **Can you unify across buildings?**
 - One standard set of screens for the district
 - Important to include building level staff in review
- **Can you unify across building levels?**
 - Elementary screens, secondary screens, etc

Selecting an SIS

Customization

- **Customization allows better user experience**
 - Screens follow forms, processes
- **Customization leads to better data quality**
 - Input limiters, front end data checking
- **Customization makes upgrading harder**
 - Must re-apply changes
- **Customization makes ETL harder**
 - Less standardization, more opportunities for error
- **Customization makes vendor support _____**
 - Always makes more difficult

Selecting an SIS

Query tools

- **Ultimate double edged sword**
 - Easier to use, more dangerous they are
 - Avoids UI data quality checks
- **Should be easy to search kids**
 - Save searches, distribute to others
- **Should be hard to alter data**
 - Require reporting PRIOR to alteration
 - Does not currently exist
- **Front-end vs back-end query tools**
- **Does your query tool follow your user access limitations?**

Selecting an SIS

Query tools

- Use 2 step process to alter data w/queries

1. Create report of data to be changed

- Includes ALL criteria, all changed data
- As it exists PRIOR to change
- Save, print, keep

2. THEN, change data

- If possible, re-use same query
- Minimize chances of typos in criteria

- Change data first thing in the morning

- Weekends are even better!

Selecting an SIS

Reporting tools

- **Can you recreate existing reports?**
 - If not, they better be LOTS better!
- **Can reports be shared, distributed?**
 - Can updates flow out to distributed reports?
 - Can users change reports for ALL users, or just themselves?
- **Needs to be tightly tied to user rights**
- **Can reports be run into excel?**
 - Data leaving your control, changed to say something else
 - FERPA follows the data
- **SECURE Acrobat (PDF) reports**

Selecting an SIS

User Community

- **Who else uses this software?**
 - In my area
 - Among districts like mine
- **Consortiums**
 - ISD level purchases
- **User groups**
 - Share knowledge, reports, best practices
 - User group meetings
 - Questions to a listserv

~~Data Quality~~

Data Quality is highest when:

- 1. Data providers know what is expected.**
- 2. Data providers use the data themselves for their own work.**
- 3. Everyone, everywhere checks the data**
- 4. The data are available and used**
- 5. Systems are required to share data**

Data Quality

Data Quality - 2 approaches:

- **Quality Control**
 - Finding and fixing bad data already in the system
- **Quality Assurance**
 - Keeping bad data out of the system

Data Quality

Quality Control

- Finding and fixing bad data already in the system
- **Sooner is better!**
- **Less time to make other data wrong**
- **Less chance to propagate into other systems**
- **Need good tools to find, fix data errors**

Quality Control

Finding the errors

- **CEPI**
 - **Errors and warnings**
 - After loading data
 - Internal consistency
 - **Certification errors and warnings**
 - During certification process
 - Compares to other data sets
 - **Staging reports**
 - Longitudinal analysis
 - **DQ reports**
 - **Great tools, but occurs too late in data stream**

Quality Control

Finding the errors

- **Parents**
 - Parent portal and reports
 - Need communication route
 - Don't let yourself become their sounding board
- **Staff**
 - Knows data the best
 - Knows students, school best
 - Probably made the mistake!
 - Can be learning opportunity
 - Who makes the fix?
- **Both groups find individual errors, not group ones**

Quality Control

Finding the errors

- **If you want it found right...**
 - Find it yourself!
- **Compare Summary data**
 - Reports, queries, excel dumps
- **Totals by various categories**
- **Needs good feel for your data**
- **Keep and compare next time**

- **Strong reporting tool, better data quality**

Quality Control

System Propagation

- Find the best “source” of the data
- Where is the primary originating point of that data?
- Ensure all systems rely on THAT version of data

Quality Control

Fixing the errors

2 Types of error

1. Data errors

- Data is simply incorrect
- Should be fixed

2. Data definition errors

- Data can't fit the required form
- Need to create crosswalk field
- Or alter output to meet report needs

Quality Assurance

Quality Assurance

- **Keeping bad data out of the system**
 - Best time to fix, at input!
 - No chance to propagate
 - Fixed by the person who knows best

 - Part of system design
 - **SHOULD** be major part of system evaluation
 - Seldom is
 - Vendors sell on slick screens, cool report writers
 - If customers don't demand QA controls, the vendors won't bother with them

Quality Assurance

Data field design

- What kind of field do you store the data in?
- Date Types:
 - Boolean – Pure Yes or No, no 3rd option
 - Number – Max/Min, nothing not 0-9
 - Text – Almost no controls
 - Date – Few internal controls & format checkers
- Always use the LEAST flexible you can
- Flexibility is bad quality assurance!

Quality Assurance

Code fields

- Hold data that means something else than what it is
- SSN, School code, UIC, Exit code
- Two types:
 - Intrinsic – has meaning in itself
 - You can tell what it means by looking at it
 - EEM District code – ‘41010’, SSN
 - Must follow rules
 - Takes good planning to avoid running into corner
 - Easier to understand if you know the rules
 - Non-Intrinsic – has no internal meaning
 - Can’t tell what it means by itself
 - MSDS Exit code, UIC
 - Simple rules
 - Need to look up to get meaning

Can be issued by several sources!

Must be issued by single source!

Quality Assurance

Input Control functions

- **Error checkers that run as data goes into the field**
 - Won't allow birth dates in the future
 - Can't enter '0' as a last name
- **Best case:**
 - Every field, 3 ranges of input
 - **Accepted**
 - Input without issue
 - **Questioned**
 - "Are you sure?"
 - Can compare against other fields
 - **Rejected**
 - Forced correction

Selecting an SIS

Data Governance

- **Who 'Owns' a set of data**
 - If it's duplicated, which is 'official'
- **Data owners and stewards**
 - Owners – update, keep accurate
 - Stewards – Make data quality a priority, make sure owners have what they need
 - Bad data falls on BOTH owners and stewards



**Thank you for your time,
patience, and
participation**

Questions ? Comments?

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