

Using Data and Developing Data Systems in International Schools

NESA 2016

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Download today's presentation
<http://edtch.co/NESA16UsingData>

20 October 2016

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My Background

- Deputy Head for Learning Technology
British School Jakarta, Indonesia
<http://bsj.sch.id>
 - Previously in Singapore and USA
- International EdTech consultant
 - Serving int'l schools, MOEs, etc.
<http://edtch.co/2dQAaxw>
- Former ISTE board member
- Blogger, Vlogger, Presenter on EdTech
<http://mattharrisedd.com>
- Consulted with CIS, IB, schools and MOEs on EdTech topics
- Twitter: [@mattharrisedd](https://twitter.com/mattharrisedd)
- Current Project:

Blueprint for Global EdTech

My Sessions

- Using the ISTE Standards to Develop Leadership Capacity in International Schools
 - Friday, 21st October @ 08:30
<http://edtch.co/NESA16DigitalLeadership>
- Using Data and Developing Data Systems in International Schools
 - Friday, 21st October @ 13:00
<http://edtch.co/NESA16UsingData>
- Using the ISTE Standards to Program and Capacity Among Your Teachers
 - Saturday, 21st October @ 10:30
<http://edtch.co/NESA16Teachers>

“I want all international schools to use technology successfully.”

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“Information is the oil of the 21st century, and analytics is the combustion engine.”

[Peter Sondergaard](#)

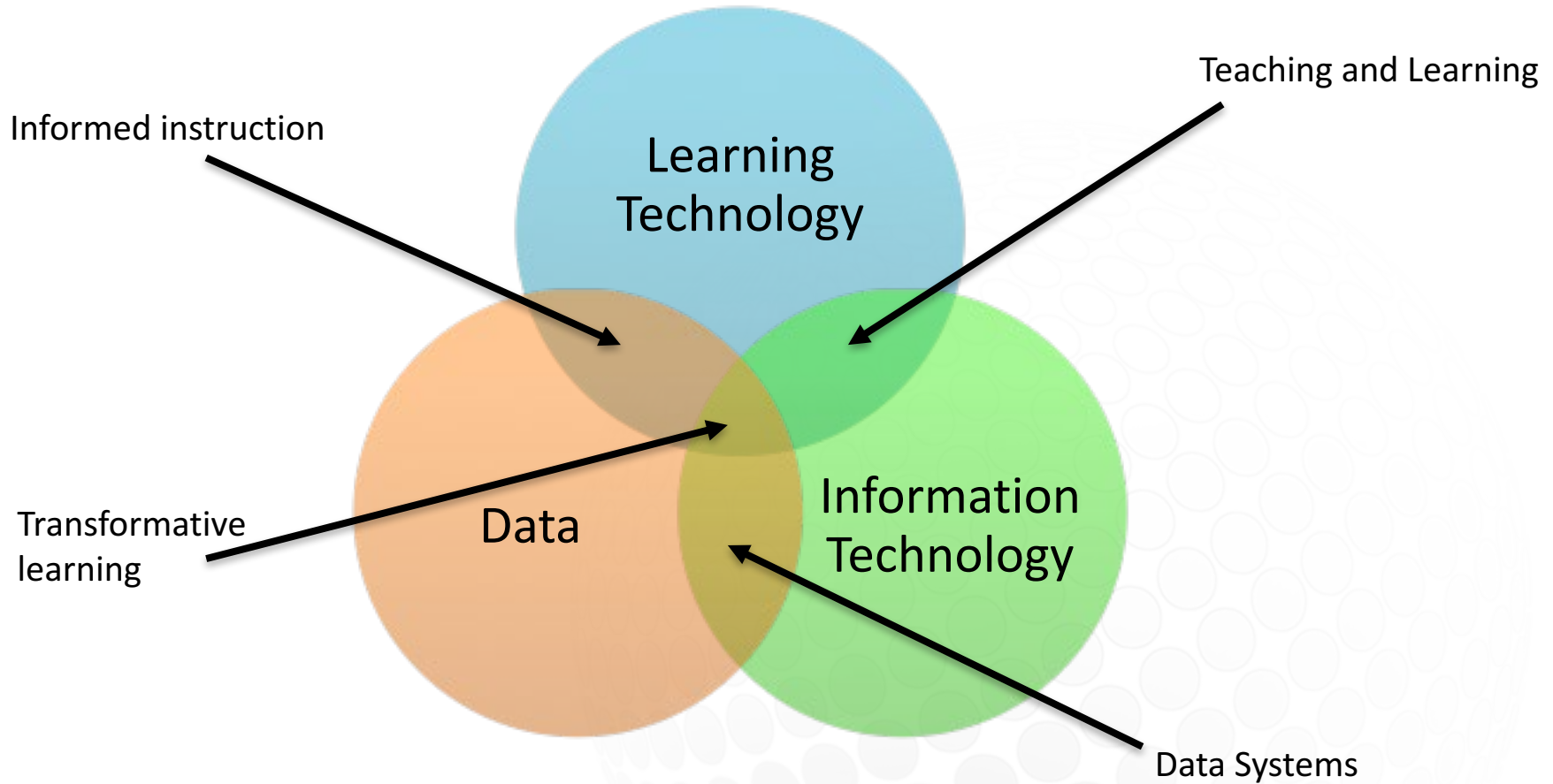
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Elements of Technology in School

- Learning Technology
 - Technology for teaching and learning
 - Pedagogic based
 - Focus on teaching and learning
- Information Technology
 - Infrastructure
 - Devices
 - Networking
 - Resources
- Data





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“Too often we forget that genius, too, depends upon the data within its reach, that even Archimedes could not have devised Edison’s inventions.”

[Ernest Dimnet](#)

Data is at the center of what we do in schools

Data based decision making

or **data** driven **decision making** refers to educator's ongoing process of collecting and analyzing different types of **data**, including demographic, student achievement test, satisfaction, process **data** to guide **decisions** towards improvement of educational process.

- https://en.wikipedia.org/wiki/Data_based_decision_making

Unleash the Power of Data

1. Get a big picture view of the organization
 2. Follow more than your customers
 3. Unify your departments under one umbrella
 4. Use data to develop
- <https://www.entrepreneur.com/article/245493>

What types of data do we have as international schools?

- Student academic performance data
 - Summative
 - Formative
 - Cumulative
- Student non-academic data
 - Behavior
 - PHSE
 - Health
 - Matriculation
 - Sports
 - Etc.
- Admissions data
- Alumni data
- Current parents
- Financial data
- Marketing data
- Recruiting data
- Human Resources data
- Transportation data
- Food services data
- External vendor data

THIS BEGS THE QUESTION:

DO YOU KNOW AND HANDLE YOUR DATA WELL?

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“Without big data analytics, companies are blind and deaf, wandering out onto the Web like deer on a freeway.”

[Geoffrey Moore](#)



40 ZETTABYTES

(43 TRILLION GIGABYTES) of data will be created by 2020, an increase of 300 times from 2005

6 BILLION PEOPLE have cell phones



WORLD POPULATION: 7 BILLION

Volume SCALE OF DATA

It's estimated that 2.5 QUINTILLION BYTES

(2.3 TRILLION GIGABYTES) of data are created each day



Most companies in the U.S. have at least

100 TERABYTES

(100,000 GIGABYTES) of data stored

The New York Stock Exchange captures

1 TB OF TRADE INFORMATION during each trading session



By 2016, it is projected there will be

18.9 BILLION NETWORK CONNECTIONS

—almost 2.5 connections per person on earth



Velocity ANALYSIS OF STREAMING DATA

Modern cars have close to

100 SENSORS

that monitor items such as fuel level and tire pressure



The FOUR V's of Big Data

From traffic patterns and music downloads to web history and medical records, data is recorded, stored, and analyzed to enable the technology and services that the world relies on every day. But what exactly is big data, and how can these massive amounts of data be used?

As a leader in the sector, IBM data scientists break big data into four dimensions: **Volume, Velocity, Variety and Veracity**

Depending on the industry and organization, big data encompasses information from multiple internal and external sources such as transactions, social media, enterprise content, sensors and mobile devices. Companies can leverage data to adapt their products and services to better meet customer needs, optimize operations and infrastructure, and find new sources of revenue.

By 2015

4.4 MILLION IT JOBS

will be created globally to support big data, with 1.9 million in the United States



As of 2011, the global size of data in healthcare was estimated to be

150 EXABYTES

(151 BILLION GIGABYTES)



30 BILLION PIECES OF CONTENT are shared on Facebook every month



Variety DIFFERENT FORMS OF DATA

By 2014, it's anticipated there will be

420 MILLION WEARABLE, WIRELESS HEALTH MONITORS

4 BILLION+ HOURS OF VIDEO are watched on YouTube each month



400 MILLION TWEETS are sent per day by about 200 million monthly active users



1 IN 3 BUSINESS LEADERS

don't trust the information they use to make decisions



Poor data quality costs the US economy around

\$3.1 TRILLION A YEAR



27% OF RESPONDENTS

in one survey were unsure of how much of their data was inaccurate

Veracity UNCERTAINTY OF DATA

Sources: McKinsey Global Institute, Twitter, Cisco, Gartner, EMC, SAS, IBM, MEPTec, QAS

IBM

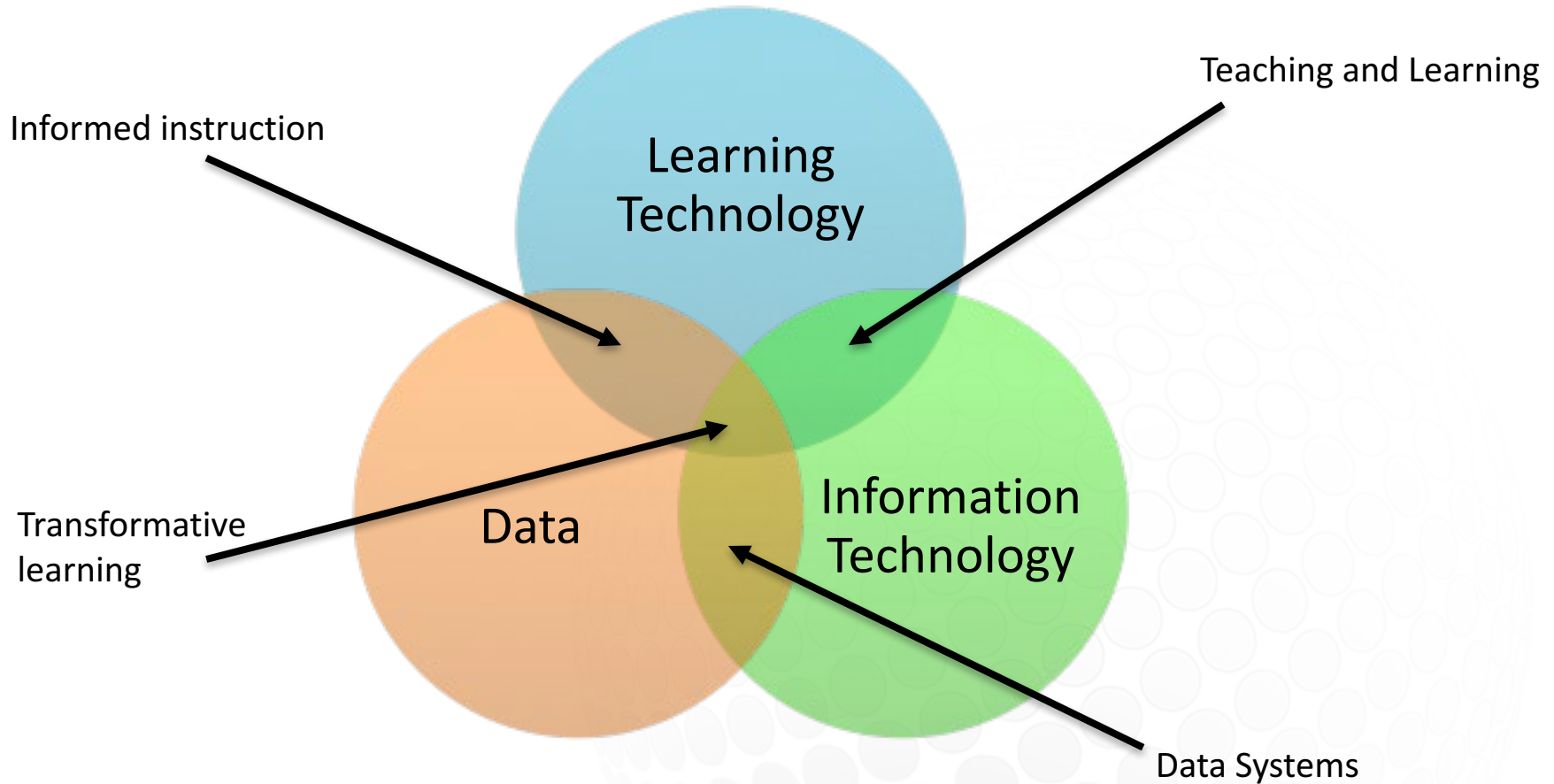
“It is a capital mistake to theorize before one has data.”
[Sherlock Holmes](#), “A Study in Scarlett” (Arthur Conan Doyle).

But let's not get ahead of ourselves...

...the most important exercise a school can undertake is to organize its

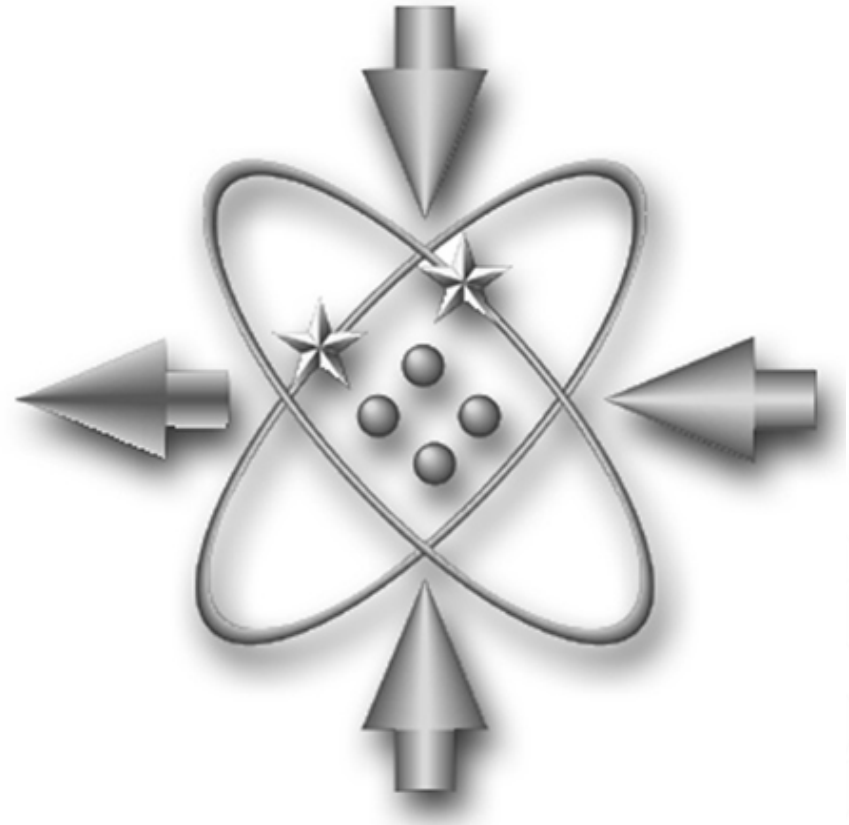
OPERATIONAL DATA SYSTEMS

These are the data systems where schools store and access their key operational and academic data.



Examples of Key Data Systems

- Student Information System
- Learning Management System
- Admissions System
- Finances/Accounting System
- Content Management System
- Human Resources Management System
- Library Management System
- Bus/Transport Management
- University Counselling System
- Point of Sale System



“He uses statistics as a drunken man uses lamp posts – for support rather than for illumination.”

Andrew Lang, Scottish Writer

The largest operational challenge in international schools:

Non-aligned data systems

The data systems separate departments and make school operations increasingly complex.

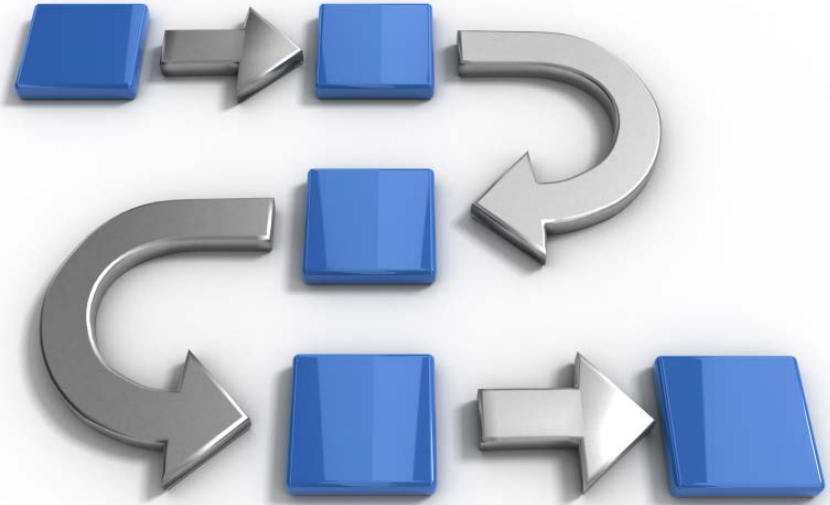
Workflows and Data Alignment – Singing from same hymnal



- **Hymnal** – Aligned data systems in the school
- **Hymn Sheet** – A single data system
- **Singers** – Teachers and staff members
- **Hymn - Workflow**

Example of workflow - A new student

1. Parent inquires
2. Communication
3. Application
4. Assessment
5. Acceptance
6. Enrollment
7. Scheduling
8. Participation in learning

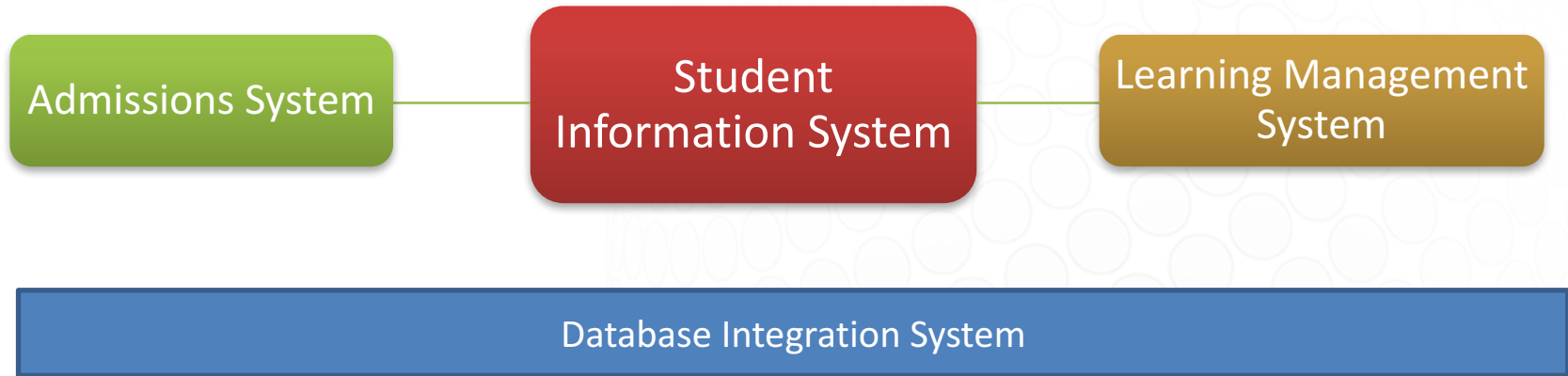


Specific processes vary by school.

What does this tell us about our school?

- Process and procedure
 - Opens up discussions about inefficiencies and connected relationships
- Needed data systems
 - What systems do we need and how should they talk?
- Personnel and tasks
 - Who is involved, at what point, and doing what function?
- Data
 - What information is collected and used and for what purpose

Data systems to facilitate our new student workflow



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What does this mean? Where do I go?

1. Know your data – what you have and what you want
2. Learn your processes...and be prepared to change them.
 1. Either your process will change to meet the system or the system changes to meet the process
 2. The latter is far more expensive
3. Hold your data systems to account – they must meet your needs and all work together
4. Start asking question that the data should be able to answer
 1. What are our conversion ratios for admissions?
 2. How much does it cost to recruit a teacher?
 3. What was the value add on learning for XXX project?

Key Takeaways

- Data is vital to the current and long term life of an international school
- Schools must know and manage their data
- Big Data analytics is coming to education (if its not here already)
- Improper data systems can be the largest operational impediment in a school
- Synchronized data systems are essential
- Workflows inform:
 - Data
 - Systems
 - Processes
 - Personnel
- It's vital to map a school's workflows, data systems, and data on hand

“If you torture the data long enough, it will confess.”
Ronald Coase, Economist

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QUESTIONS? COMMENTS?

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