Bridging the gap between the value of High-stakes examinations data and the process to gather this Data

Lessons learned from working with top Ministries of Education and international testing bodies
Discrimination Index, Kuder-Richardson 20, Difficulty index – there is some consensus on how to analyze the data.

Is there consensus on how get the data? Are there homogeneous processes to guarantee the quality and INTEGRITY of the data?
While the academic community analyzes the data and creates strategies and plans, our question is:

Has the data been collected properly?
Scantron is leader worldwide on the automation of grading of high-stakes assessments

Work in 54 countries with 58 distributors

Work with 48 Ministries of Education around the world

Our experience dealing with assessments around the world allow us to share some of the experiences with you—Lessons Learned dealing with Traditional Exam Methods
Exam Life Cycle: Each Step Can impact results and Data

Content Creation → Form Design → Form Printing → Package Creation

Test Processing → Test Collection → Test Administration → Distribution

Reporting
Things Don’t Always go as Planned!
Uncommon Practices

- Buddhist Monks getting their certification in Thailand use incense to mark through the answer sheets to grade correct answers.

- In India they use a nail to perforate the correct answers and then grade the exams.
It starts with the form: Printing

- Most high-stakes national examinations require the paper printing to be a public tender. Automation of the scoring process via Optical Mark Reading requires some technical specification for forms.

- Most Ministries of Education have some issues with Local printing as the continuous change of printing providers lowers the learning curve for OMR forms.

- Horror Stories:
  - Argentina – Vegetable ink with poor UV treatment
  - Colombia – Hire 150 temps to do it manually
Issues with Test Administration

- Identity theft
- Cheating
- Students that show up and were not registered and therefore have no exam (generic ones)
- Students that damage the answer sheet and need to use a replacement one
After the test is taken: Test Collection

- Once collected the tests are placed in boxes
- Sometimes they are wrapped in rubber bands which affect the forms for scanning – Big Publisher in the USA
- Sometimes they are put in shoe boxes, grocery bags, etc.
- Best Practices: Libya metallic boxes, Japan sealed boxes
Processing Tests: A World Unto Itself..
Different Places & Different Contexts...
And yet, Value Placed on High Stakes is the Same...

- **New York Times**: this basic fact of life - that every Japanese child who has any hope of going to college must face crucial, detailed, impartial tests of his or her basic academic knowledge - defines what is taught in Japanese schools, shapes the extracurricular activities and determines the way Japanese children spend their free time.

- In extreme cases, the so-called "examination hell" has led to suicides by students who failed.

- **Hindustan Times**: Failure in examinations has been the second biggest reason for children’s suicides across India in 2011, reveal statistics compiled by the National Crime Records Bureau.

- **New York Times**: Limited number of quality schools in India is especially problematic given that 40 million extra students are expected during the coming decade.
**Japan**

The Japanese Ministry of Education through its testing agency, DNC, trusts Scantron with its most important exam in Japan. This is a national college entrance exam. This exam is scanned using 14 Scantron 99JW scanners at the rate of 33,000 sheets per hour. In 2011, they scanned 7,492,355 sheets in 3.5 days.

**India**

IIT Admission Test to India’s most prestigious Engineering Schools. Entails one Examination, 2 Papers MCQ. 479,651 Candidates took the Test/s on a single day in two sessions. Total number of sheets scanned and processed 959,302

**Libya**

Ministry of Education in Libya has a partnership with Scantron for a Measurement and Standardization in Education program for classes 9, 10, and 11. Currently, Libya scores exams with 18 Scantron iNSIGHT 150 scanners, more than 2 million documents per year.

**Mexico**

Scantron works with the Ministry of Education in Mexico’s testing arm: The Public Secretariat for Education (SEP) to process several high-stakes examinations a year.
Test Processing: It’s not just one thing

**Step 1:** Receive exams from the field

**Step 2:** Acclimation

**Step 3:** Document preparation station

**Step 4:** Create batches

**Step 5:** Document transportation

**Step 6:** Paper jogging

**Step 7:** Scanning

**Step 8:** Exception handling

**Step 9:** Data verification

**Step 10:** Quality assurance

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**Step 1:** Every log of the boxes coming from the field must be stored separately. Date number of the condition a system can make. At least 3 boxes and one system must be present at this location. If more than 4 boxes are have to be handled, they must be stored in a separate place.

**Step 2:** Forms are collected from the examination area. The forms must be checked for completeness and accuracy. The forms are scanned and compared with the original forms. Any discrepancies are noted and the forms are corrected.

**Step 3:** Forms are scanned and data is entered into the system. The data is verified for accuracy and completeness. Any errors are noted and the forms are corrected.

**Step 4:** Forms are prepared for batch creation. The forms are organized into batches based on various criteria such as date, time, or location.

**Step 5:** Batches are created for efficient processing. Each batch contains a specific set of forms. The batches are sent to the transportation department for delivery to the appropriate location.

**Step 6:** Paper jogging is performed to ensure that the forms are correctly arranged and ready for scanning.

**Step 7:** Forms are scanned using a high-speed scanner. The scanner reads the data from the forms and sends it to the system for processing.

**Step 8:** Exception handling is performed to address any issues that arise during the scanning process. Any incorrect or incomplete forms are corrected, and the forms are re-scanned.

**Step 9:** Data verification is performed to ensure that the data entered into the system is accurate and complete. Any errors are noted and the forms are corrected.

**Step 10:** Quality assurance is performed to ensure that the processed forms meet the required standards. The processed forms are reviewed and approved before they are released for use.
Forms Arrive with MAJOR issues

- Students marking and coloring the timing marks
- Scribbling on bar codes
- Nose bleeds on the paper
- Food/coffee stains
- Libya MOE – test takers write ABSENT on the form, creating 5 right answers
- Test administrators mark on envelopes with permanent markers which bleed through on the forms
One important Examination council in the Caribbean had a processing center in the middle of an open road, having a scanner inside a container, without AC, filtration or any acceptable condition.

Initial pilots with the MOE in Libya determined that the amount of dust (desert conditions) and sand on the forms was affecting the scanning.

Not many high-stakes leave forms in AC or humidity for the required 24 hours.
In order to improve the process, the forms need to be acclimatized for 24 hours.

Failure to do this creates constant stops in the scanning process.
Proper Processing Equipment is Crucial

- One important MOE in South America has been using scanners that are 23 years old and still process the national entrance examination.

- The use of joggers and air compression equipment still random in various processing centers.

- Space limitations create very poor process flows.
Managing of Exceptions
Guaranteeing Data Integrity: Key...Verifying Data Properly

- DNC in Japan runs every exam twice on the scanning process to compare and validate all data – inconsistencies are kept confidential to minimize trust in the process

- Mexico and India use Data Validation processes where the randomly selected exams are used to verify an image of the exam with the data captured
VALIDACIÓN DE HOJAS DE RESPUESTA

UNIDAD DE PLANEACIÓN Y EVALUACIÓN DE POLÍTICAS EDUCATIVAS
DIRECCIÓN GENERAL DE EVALUACIÓN DE POLÍTICAS

EVALUACIÓN NACIONAL DEL LOGRO ACADÉMICO EN CENTROS ESCOLARES
EDUCACIÓN MEDIA SUPERIOR
ENLACE 2011

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CCT: 01DCT0023V
ESCUELA: CR10 062
LOCALIDAD: LA PAZ
MUNICIPIO: LA PAZ
REGION: NOROESTE

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CORRECCIÓN DE LECTURA
POR ENTIDAD

LOTE
LMOPE03001
HOJA 1 DE 1

ENTIDAD:
BAJA CALIFORNIA SUR

PROYECTO:
ENLACE MEDIA OPERATIVO

POSICIÓN EN EL LOTE:
1127

ENTIDAD:
03
NIVEL:
MS0

FOLIO:
030004474B13

SERIE:
03000550149

GRUPO:

RESPUESTAS:

AJUSTES A LA IMAGEN

VER TOTA LA HOJA
AJUSTAR A LA VENTANA
VER EL FREnte
VER LA VIEJTA
INTENSIDAD DE LAS MARCAS
GIRAR

IMPRIMIR IMAGEN
GUARDAR Y SALIR
Q.No.: 26. (d)

Packet: 4001
Image: 354/457

User: Prof. Ranjan

Integration Cut Off: 50%

OMR INT FINAL
3.(b) 1 0 0
4.(b) 1 0 0
5.(a) 1 0 0
6.(a) 1 0 0
7.(c) 1 0 0
8.(a) 1 0 0
9.(b) 1 0 0
10.(d) 1 0 0
11.(b) 1 0 0
12.(a) 1 0 0
14.(b) 1 0 0
16.(b) 1 0 0
21.(a) 1 0 0
26.(d) 1 0 1

Commit Packet
Next Image
Lessons Learned: Process Matters!

- IN looking at the integrity of exam data, we cannot overlook the crucial part that processing can play in impacting results.

- The test process may differ from place to place but understanding the key areas of impact can make a difference.
  - **Environment**—where is the exam taking place and where does it go after.
  - **Forms**—how forms are designed and printed.
  - **Training**—staff for handling exams throughout life cycle.
  - **Equipment**—proper scanning equipment as well as peripheral equipment to manage forms.
  - **Operations**—clear rules of engagement with tests and handling.