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Data Technologies and Education in Emergencies

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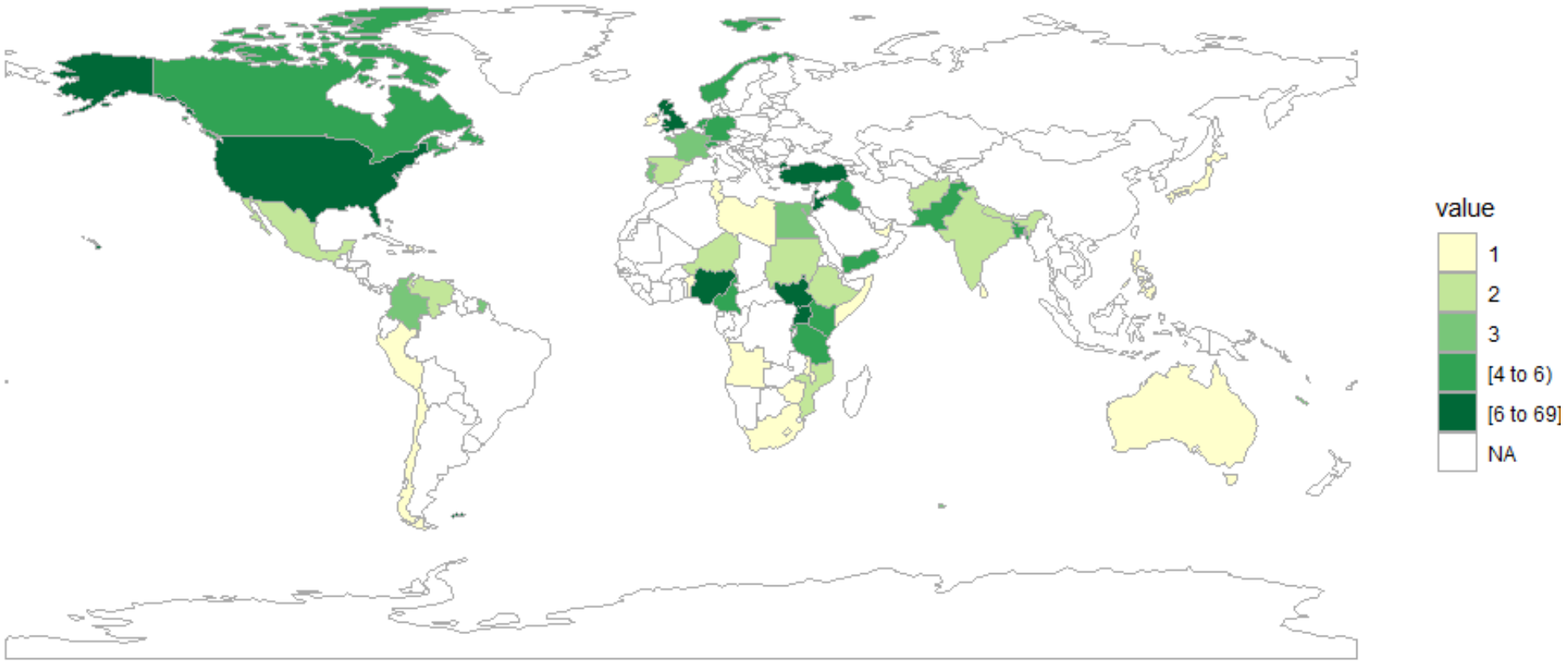
Roadmap

- Background
- Methods
- Findings
  - Typology
  - General Utility, Cost, Safety & Security
- Recommendations
- Call to contribute

Webinar Participants



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Background

Opportunity

Technology's potential in the humanitarian sector

Rapidly changing nature of emergency setting can benefit from real-time information

Challenges

Technological innovations aren't keeping up with the rapidly changing environment (Dahya, 2016)

Existing research has looked at EdTech's potential to *deliver content* (Tauson & Stannard, 2018)

Lack of research on the use of data technologies within EiE constraints

Goal

Create a typology of data technologies

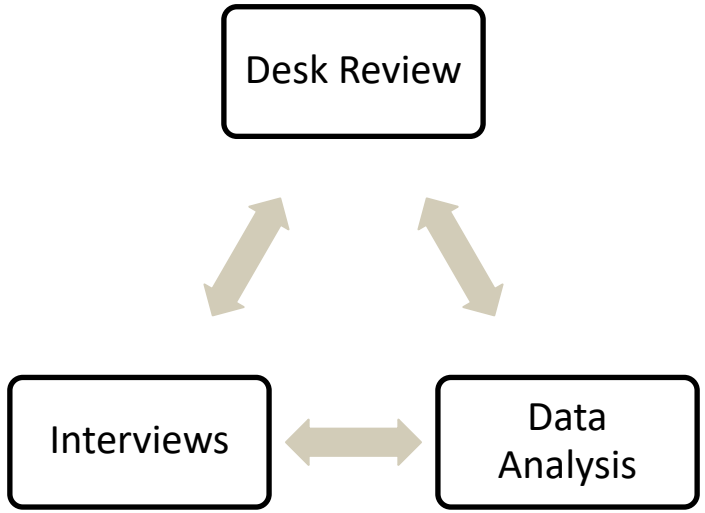
Develop guiding principles for data collection, processing, and communication

Curate recommended practices for data collection, processing, and communication

Disclaimer

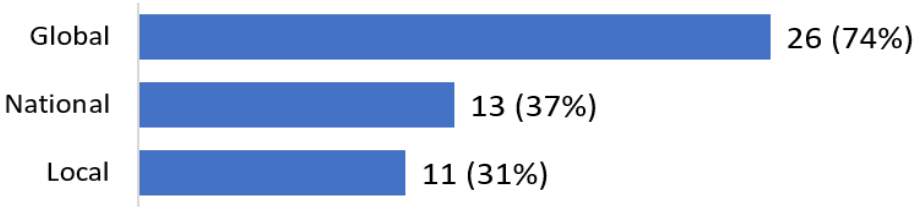
- This study **does** not focus on the use of technology for national education systems in crisis settings
- The focus of this paper is primarily on non-governmental EiE practitioners, both large and small, global, and local

Methods

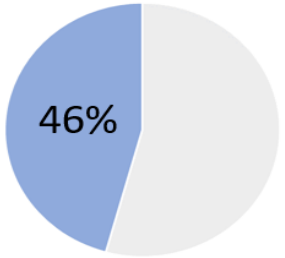


94% (33) work in education with an average of 14 years education experience
Of these, **82%** (27) focus in EiE with an average of 8 years EiE experience

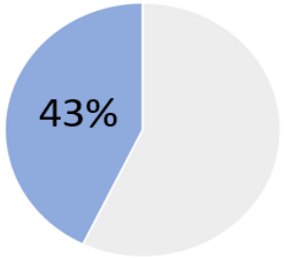
Strategic level of focus*



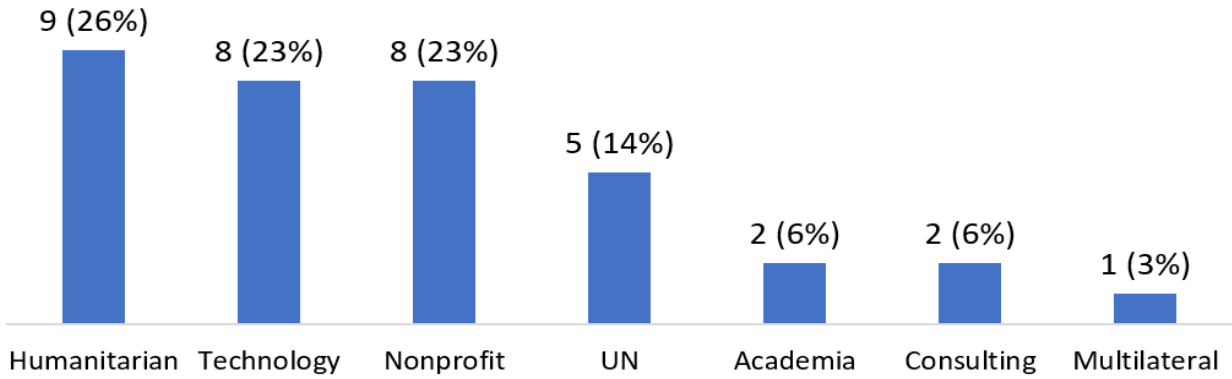
46% of the respondents work in the Middle East



43% of the respondents are women

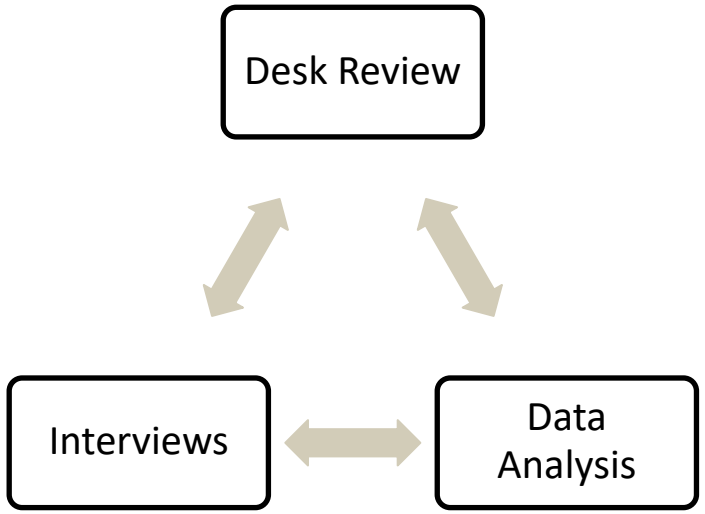


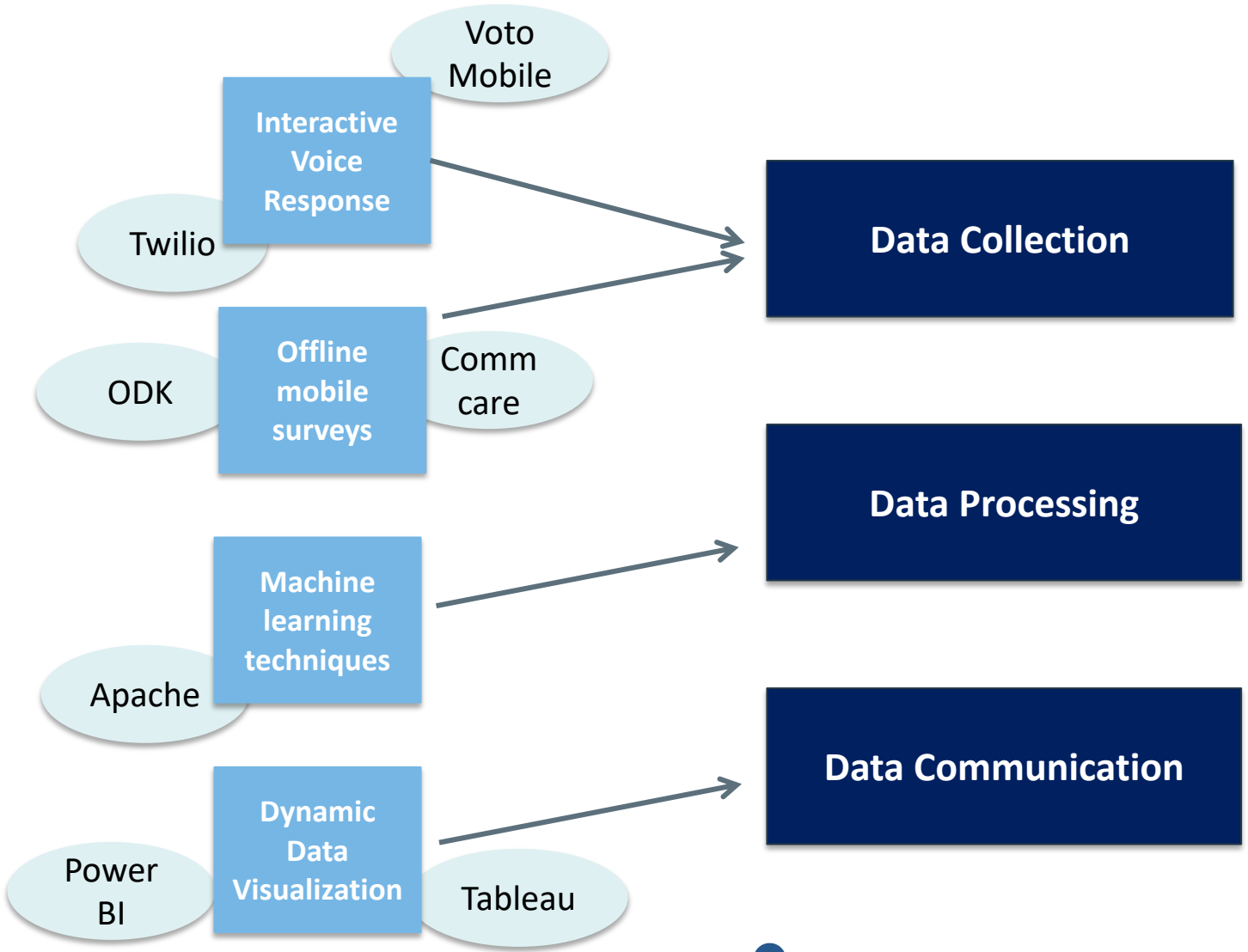
Organization Affiliation



*Note that respondents may have listed multiple strategic level of focus (i.e. a focus on national and local work)

Methods





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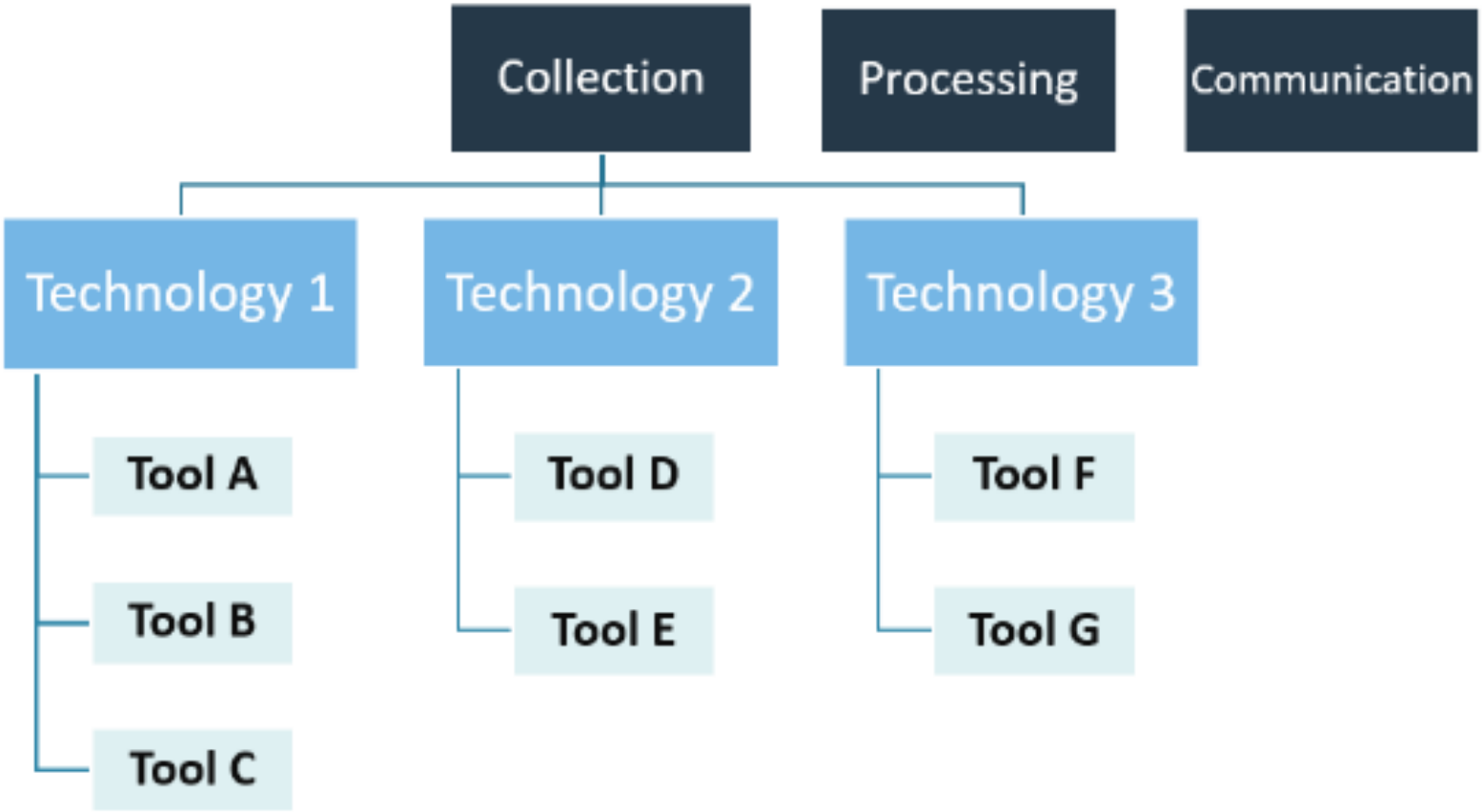
Methods – Analytical Framework



Technology Mapping:
An Overview of Technologies Mapped

We identified the following technologies used across the different phases of the data life cycle, including (i) **collecting** data: the process of capturing information on targeted variables; (ii) **processing** data: a broad category that includes validating, cleaning, exploratory data analysis, and modeling; and (iii) **using** data: the process of communicating data back to stakeholders, primarily through written results and data visualization.

Process ▾ | Technology ▾

Process ▾	Technology	Definition	Examples of Use	Illustrative Software
Using Data	Static Visualization	Visualization that captures a specific story of the data.	Static images showing student performance on an assessment.	Adobe Illustrator, ArcGIS, Quantum GIS, Microsoft Excel
Using Data	Dynamic data visualization	Visualization that can be manipulated in real-time by a user.	A dashboard that shows the number of students in conflict-impacted regions in a country with drill down features to see schools at a local level.	Microsoft PowerBI, Tableau, Google Data Studio, shinydashboard, Salesforce
Processing Data	Spreadsheets	Computer application for organizing and analyzing data in tabular form.	Data stored on the number of attacks in a region across time.	Microsoft Excel, Google Sheets, Numbers
Processing Data	Data Analysis Software	Software designed to support quantitative data analysis.	Creating maps that provide beneficiaries with information on the nearest service provision locations.	SPSS, ArcGIS, QGIS, Stata
Processing Data	General purpose programming languages	Programming language dedicated to general purposes.	Developing a continued process of checking on a collected dataset's data quality issues through a scripted analysis.	R, Python, SQL, JavaScript, Julia
Processing Data	Computer-assisted qualitative data analysis	Computer-assisted qualitative data analysis software (CAQDAS) software	Software systems that help collate qualitative data and assist in deriving	Dedoose, RQDA, MAXQDA, Nvivo

Findings – Data Collection Technologies

- Data quality and improved efficiency
- Strengthening information ecosystems
- Ease of adoption
- Richer qualitative data
- Exclusionary aspects and survey bias
- Low response rates and access issues

General Utility

- Enhanced data security
- Enumerator and respondent safety risk
- Risk of data co-option

Safety & Security

- Upfront vs long-term costs
- Tool dependent
  - Software
  - Hardware
  - Human resources

Costs

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Recommendations – Guiding Principles

- Do No Harm
- Follow GDPR and related standards
- New technology does not mean better technology
- Coordinate among stakeholders, adapting technologies using a systems-thinking approach.
- Develop innovations in collaboration with local organizations and end-users
- Introduce new technology as social and behavior change
- View technology as a long-term investment
- Nurture a culture of data feedback loops and DDDM

Recommended Practices – Data Collection

Strategic

- Address direct and maintenance costs upfront
- Consider coordination and data sharing in advance
- Research the technological landscape

Operational

- Duty of care is first and foremost
- Deploy multiple modes of collection
- Ensure clear survey design
- Tailor technological solutions to the culture in which it is being deployed
- Use familiar technologies when possible

Recommended Practices – Data Processing

Strategic

- Invest in more analytical support
- Obtain clarity on which data must be supplied to a client or government
- Build capacity in staff to leverage data
- Build expertise in multiple platforms

Operational

- Use technology to ensure data is accurate and timely
- Automate data validation processes
- Develop processes to share analyses
- Triangulate data sources

Recommended Practices – Data Communication

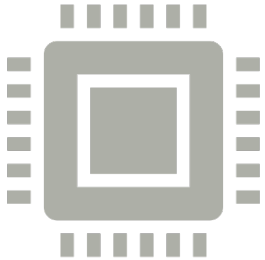
Strategic

- Approach the use of new tools as change management
- Identify data champions
- Create a culture of data sharing

Operational

- Provide data in a timely fashion
- Follow data visualization best practices and simplify reporting
- Use row-level security to limit access to data
- Ensure systems are maintained

Crowd-sourcing Insights



Problem

-Nuances on advantages, disadvantages and recommended practices dependent on technology

-Curating a list of tools is costly and will change rapidly with advances in technology

-Cost and ease of use data hard to compare

Solution

-Develop a dashboard with insights for specific technologies

-Incorporate a feedback mechanism to crowd-source insights

-Provide a means to add new tools as they are created

Crowdsourcing Data Technologies for Education in Emergencies (EiE)

This dashboard provides a mapping of technologies through the data life cycle in the EiE sector, gathered through research and crowdsourcing. This mapping is by no means exhaustive. Use it to supplement other sources as you explore technology insights and examples in order to determine which technologies work best for your context!

FIND & CONTRIBUTE RESOURCES

Find Tools

Find Use Cases

READ INSIGHTS ON TECHNOLOGIES

Examine Insights by Tech

Compare Technologies

RESEARCH FINDINGS

Technology Mapping

Guiding Principles for Tech & Data in EiE

Research Study: "Education in Emergencies and Technology: Data Collection, Processing, and Use"

Interested in how this dashboard came to be? Content presented here comes from a research study led by FHI 360 under the USAID Middle East Education Research, Training & Support (MEERS) initiative.

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Thank you!

Please reach out with any questions or comments!

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Dashboard: https://tinyurl.com/ajm4p9rj