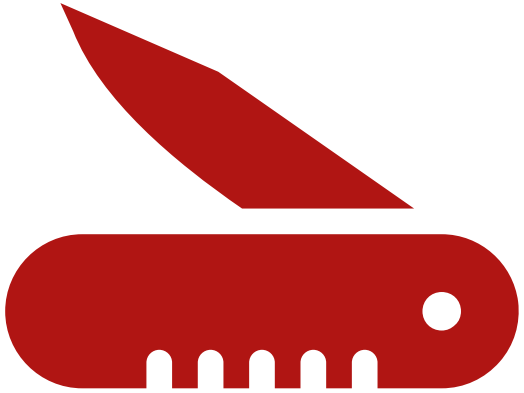


Data Visualization Literacy

a **vital** nursing competency

CYD CHARISSE VILLALBA, MS, RN-BC, PMP

2017 ANA-NY NURSING RESEARCH FELLOW

definitions

competency

a core ability required to fulfill one's professional role

can be undefined or unstandardized

literacy (read, understand, interpret, apply appropriately)

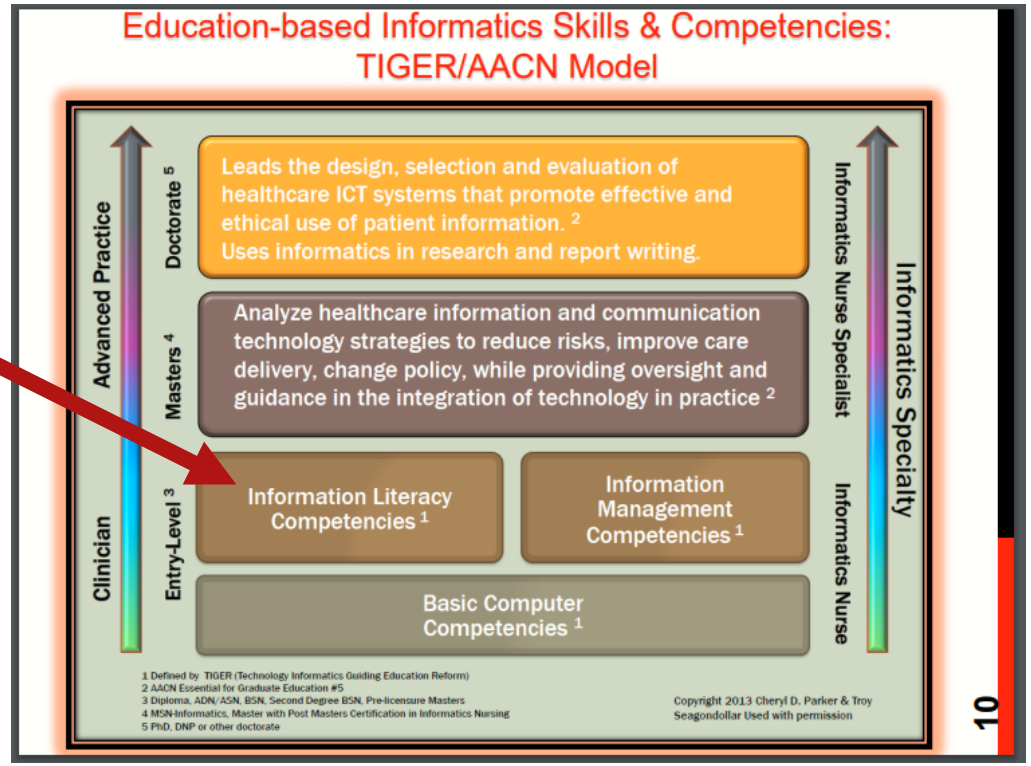
numeracy - numbers

graph – graphical representations of data

informatics

science of how to use data, information and knowledge

analytics, business intelligence



11. ***Nursing informatics (NI)*** is the specialty that integrates nursing science with multiple information management and analytical sciences to identify, define, manage, and communicate data, information, knowledge, and wisdom in nursing practice. NI supports nurses, consumers, patients, the interprofessional healthcare team and other stakeholders in their decision-making in all roles

and settings to achieve desired outcomes. This support is accomplished through the use of information structures, information processes and information technology.
Source: Nursing Informatics: Scope and Standards of Practice, 2nd Edition, ANA 2015

a. ***Nursing Informatics (NI)*** this science and practice integrates nursing, its information and knowledge and their management with information and communication technologies to promote the health of people, families, and communities worldwide.
Source: International Medical Informatics Association – Nursing Informatics, 2011

Nursing Informatics Competency

issue

About 1/3 of the general population lacks basic numerical and graphical skills

impacts

patients (Nayak et al, 2015)

nurses & physicians (Dowding et al, 2018)

article search keywords:

numeracy, graph literacy, data visualization

findings (Dowding et al, 2018)

- no significant differences in graph literacy or numeracy
  - sex
  - age
  - race
  - education level
  - nurse training level
  - staff or per diem
  - years as a nurse
  - agency tenure

findings (Dowding et al, 2018)

Categorized into two groups:

- Numeracy high: 75% (147)
- Graph literacy high: 75% (146)

Categorized into four groups:

- Both low: 12% (24)
- High numeracy and low graph literacy: 12% (24)
- Low numeracy and high graph literacy: 13% (25)
- Both high: 63% (122)

solution

Awareness, Acknowledgment and Action

- Publication, talks, initiatives
- Professional Education – baccalaureate to advanced degrees
- Employee training
  - hospital orientation
  - unit onboarding
  - transitions to leadership/administrative roles
- Deploy well-designed data products
  - integrate best-practice design
  - incorporate infobuttons or navigation guides
  - provide user training

Spread the word

- Research fellowship (2017-2019)
  - American Nurse Today **article** with Cynthia Saver
  - Graph literacy module to improve graph literacy in nurses
- ANA-NY Annual Meeting **talk** (Jun 2019)
- DNP practicum – **EBP project** (Aug 2020)
  - University of Pennsylvania & Memorial Sloan Kettering Cancer Center
  - PICOT qs: In hospital nurses does graph literacy training compared to no training improve graph literacy one month after training?

Good design → Better understanding

http://www.healthdataviz.com/gallery/

Data context

- Project, objective, audience, primary contact
- Last data refresh, inclusion/exclusion criteria, data source
- Meaningful titles, labels

Guides

- Navigation cover page or landing page
- On-demand infobuttons
- Contextual and dynamic tooltips

resources

Data Visualization Design

- https://labs.centerforgov.org/guides/dataviz/index.html
- https://datavizcatalogue.com/
- https://guides.library.duke.edu/datavis/topten
- https://guides.library.georgetown.edu/c.php?g=75874&p=487160

Graph Literacy

- https://learn.concord.org/graph-literacy
- https://www.nytimes.com/column/whats-going-on-in-this-graph?emc=edit_ln_20171109&nl=learning-network&nlid=52022771&te=1
- http://www.inspiration.com/visual-learning/plots-and-graphs
- http://kyae.ky.gov/educators/resources/rla/BuildingGraphicLiteracySkillsStrategiesfortheClassroom.pdf
- https://serc.carleton.edu/quantskills/teaching_resources/index.html?q1=sercvocabs__40%3A8
- http://web.archive.org/web/20080728230949/http://www.leeds.ac.uk/languages/resource/english/graphs/tren.htm
- https://infogram.com/blog/charts-and-graphs-increase-visual-literacy/
- https://www.act.org/content/act/en/products-and-services/workkeys-for-job-seekers/assessments/graphic-literacy.html
- https://www.nsf.gov/awardsearch/showAward?AWD_ID=1810498&HistoricalAwards=false