Assessment of knowledge and skills in nursing and allied health student information literacy instruction: results from a scoping review

Jill Boruff, MLIS
McGill University Library

Pamela Harrison, MLIS
Alberta Health Services

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Disclosure Statement

• No conflicts of interest
Study objectives

To determine how knowledge and skills are being assessed in nursing and allied health student information literacy instruction.

To determine whether these assessment methods have been tested for reliability and validity.

To provide librarians with guidance on assessment methods that could be used in their own instruction.
Background: Our context

• Teaching course-integrated information literacy in School of Physical and Occupational Therapy since 2008.

• Wanted to improve assessment of learning, but did not know the best methods for finding whether instruction was effective.

• Desire to learn about assessment in an allied health context.
Background: Previous reviews

- **Shaneyfelt (2006)** conducted a systematic review on validated instruments for evaluating evidence based practice education.
- **Brettle (2007)** conducted a systematic review on measures used to evaluate information skills training in health libraries.
- **Schilling and Applegate (2012)** reviewed the biomedical, arts, humanities and social sciences literature to compile an overview of the assessment methods being used by librarians.
- **Just (2012)** updates the review done by Brettle (2007) and takes it a step further by conducting a literature review on the methods of instruction and assessment of that instruction with medical students and residents.
- **Maggio & Kung (2014)** did a systematic review of information retrieval instruction in undergraduate medical education in 2007-2012, but do not collect data on assessment methods.

- None of the above results included physical and occupational therapy or communication sciences and disorders.
Background: Attitude versus performance

Measures of attitude: “based on learners’ perceptions of their skills and learning, including what people think, feel, or believe about the training experience or about their skills.”

- I am glad we learned about Medical Subject Headings.
- I feel confident in using Medical Subject Headings.

Boruff and Harrison, 2016
Background: Attitude versus performance

Measures of performance: “based on actual student work”; direct measurement of their knowledge and/or skills.³

I know how to define Medical Subject Headings

I can demonstrate the use of Medical Subject Headings in PubMed.

Knowledge

Skills

Boruff and Harrison, 2016
Study Methods

- A scoping review of the literature was conducted, following the methods outlined by Arksey and O’Malley.\(^6\)
- A systematic search strategy was constructed by one author and reviewed by the second author.
- This strategy was then run in Ovid Medline, and adapted for CINAHL, EMBASE, ERIC, LISA, LISTA, and ProQuest Theses and Dissertations from 1990 to January 16, 2015.

**Articles included if information literacy skills were being taught and assessed with OR without a librarian involved.**
Results: PRISMA Diagram

Records identified through database searching (n = 4366)

Records after duplicates removed (n = 2965)

Records after pre-1990 removed (n = 2747)

Records screened (title/abstract) (n = 2747)

Records excluded (n = 2143)
Results: PRISMA Diagram (cont’d)

Full-text articles assessed for eligibility (n = 604)

- Full-text articles excluded (n = 468):
  - Librarian but no assessment described (n = 67)
  - No assessment described (n = 58)
  - No instruction program described (n = 83)
  - No librarian and no IL skills (n = 166)
  - Reasons from abstract screening (n = 40)
  - Review articles (n = 4)
  - Article not available (n = 11)
  - Language (n = 33)
  - Duplicates (n = 6)

Studies included in qualitative synthesis (n = 136)

- Nursing and midwifery (n = 112)
- Other allied health (n = 4)

- Physical and Occupational Therapy; Communication Sciences and Disorders (n = 20)

Boruff and Harrison, 2016
Results: Country of study

- Canada: N = 3
- United States: N = 12
- Australia: N = 1
- Republic of Ireland: N = 1
- Norway: N = 1
- The Netherlands: N = 1

N = 20

Boruff and Harrison, 2016
Results: Subject area and level of learner

<table>
<thead>
<tr>
<th>Subject Area and Level of Learner</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Therapy</td>
<td>3</td>
</tr>
<tr>
<td>Occupational Therapy</td>
<td>6</td>
</tr>
<tr>
<td>Physical &amp; Occupational Therapy combined</td>
<td>1</td>
</tr>
<tr>
<td>Communication Sciences and Disorders</td>
<td>2</td>
</tr>
</tbody>
</table>

N = 20 studies

Boruff and Harrison, 2016
Results: Measures of attitude

Published self-report surveys used:

- Knowledge, Attitude, and Behavior Questionnaire (Johnston et al.\textsuperscript{7}) N=1
- EBP self-efficacy and task value (Spek et al., 2013\textsuperscript{8}) N=1
- Research Self-Efficacy Scale (Bieschke et al.\textsuperscript{9}) N=1
- Evidence-Based Competency Scale (Sabus\textsuperscript{10}) N=1

N = 14 studies
Results: Measures of performance

N= 18 studies

Boruff and Harrison, 2016
# Results: Measures of performance

<table>
<thead>
<tr>
<th>Study included in scoping review</th>
<th>Name of measure used by research study (Authors of study that created the measure)</th>
<th>Tested for Validity</th>
<th>Tested for Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Justiss and Swinehart(^{11})</td>
<td><strong>Adapted Fresno Test of Competence in EBP</strong> <em>(McCluskey and Lovarini(^{12}))</em></td>
<td>Original test developed by Ramos et al.(^{13}), yes Adaptation, no</td>
<td>Yes</td>
</tr>
<tr>
<td>Simoni et al.(^{14})</td>
<td><strong>Italian Adapted Fresno Test</strong> <em>(Translated into Italian measures tested by McCluskey and Bishop(^{15}); Tilson(^{16}))</em></td>
<td>Originals, yes Translation, no</td>
<td>Originals, yes Translation, no</td>
</tr>
<tr>
<td>Spek et al., 2013(^{17})</td>
<td><strong>Dutch Modified Fresno</strong> <em>(Spek, et al, 2012(^{18}))</em></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ratcliff et al.(^{19})</td>
<td><strong>Research Readiness Self-Assessment</strong> <em>(Ivanitskaya, et al(^{20}))</em></td>
<td>Original, yes Adaptation, no</td>
<td>Yes</td>
</tr>
<tr>
<td>Thomas et al.(^{21})</td>
<td><strong>Marking Rubric for Test Vignette</strong>(^{21})</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Theme 1: Role of assignments

- 14 studies had assignments that could be used for assessment of information literacy knowledge and skills.
- 3 of these 14 studies had assignments that were not considered assessment measures.

Boruff and Harrison, 2016
Theme 2: Librarian involvement

6 of the 20 studies identified had librarians involved

2 involved in instruction and assessment

4 involved in instruction only

3 had librarians as authors

Many opportunities for librarians to get involved in course integrated instruction.

Boruff and Harrison, 2016
Theme 2: Librarian involvement

Examples of instruction of information literacy skills happening without the (explicit) involvement of a librarian:

"The major objective of this class is to provide students opportunities to research current interventions and to develop research proposals based upon their findings."\(^{18}\)

"Students learn how to frame appropriate clinical questions...then to search for and appraise descriptive and assessment studies to obtain the best scientific evidence to inform their clinical decisions."\(^{19}\)

Boruff and Harrison, 2016
Conclusions

- Few validated tools are being used in PT, OT, CSD information literacy instruction.

- The variety of assignments being used as assessments provide a rich resource for ideas.

- Librarians have many opportunities to contribute to assessment of learning.

Boruff and Harrison, 2016
Future directions

• Investigate the development of validated rubrics for marking assignments.

• Investigate the use of the Adapted Fresno for information literacy assessment in EBP contexts.
# Included studies: 1-10

<table>
<thead>
<tr>
<th>Study</th>
<th>Location of study</th>
<th>Degree level of learners</th>
<th>Health profession of learners</th>
<th>Librarian involved</th>
<th>Measures of attitude</th>
<th>Assessment validated</th>
<th>Measures of performance</th>
<th>Assessment validated</th>
<th>Assessment tested for reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boruff and Thomas, 2011&lt;sup&gt;24&lt;/sup&gt;</td>
<td>Canada</td>
<td>Undergrad</td>
<td>PT &amp; OT</td>
<td>Yes, as author, instructor, assessor</td>
<td>None</td>
<td>N/A</td>
<td>Course products: Searching assignment</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Cahill, 2012&lt;sup&gt;25&lt;/sup&gt;</td>
<td>Rep. of Ireland</td>
<td>Undergrad &amp; Grad</td>
<td>OT</td>
<td>No</td>
<td>Self-reported survey: KAB questionnaire</td>
<td>Yes</td>
<td>None</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>Cohn et al., 2014&lt;sup&gt;23&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>OT</td>
<td>No</td>
<td>Self-reported survey: Locally developed (2 different measures)</td>
<td>No</td>
<td>Course products: searching assignment</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Crist, 2010&lt;sup&gt;26&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>OT</td>
<td>No</td>
<td>Self-reported survey: Research Self-efficacy scale; and locally developed measure</td>
<td>Unclear</td>
<td>Course products</td>
<td>No</td>
<td>Unclear</td>
</tr>
<tr>
<td>Griffin and Schummm, 1992&lt;sup&gt;27&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>OT</td>
<td>Yes, as author, instructor</td>
<td>Self-reported survey: Locally developed</td>
<td>No</td>
<td>Locally developed tests; Course products: searching strategy</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Justiss and Swinehart, 2012&lt;sup&gt;11&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>OT</td>
<td>No</td>
<td>None</td>
<td>N/A</td>
<td>Non-IL questionnaire or test: Adapted Fresno Test</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Lederer, 2004&lt;sup&gt;22&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>OT</td>
<td>No</td>
<td>Informal feedback</td>
<td>No</td>
<td>Course products: searching assignment</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Maritz et a.l, 2011&lt;sup&gt;28&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>PT</td>
<td>No</td>
<td>Self-reported survey: Locally developed</td>
<td>No</td>
<td>Course products: capstone research project</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Olsen et al., 2014&lt;sup&gt;29&lt;/sup&gt;</td>
<td>Europe</td>
<td>Undergrad</td>
<td>PT</td>
<td>No</td>
<td>Self-reported survey: Locally developed</td>
<td>Face validity</td>
<td>None</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Portney, 2004&lt;sup&gt;30&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>PT</td>
<td>No</td>
<td>None</td>
<td>N/A</td>
<td>Course products: development of Critically Appraised Topic</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
# Included studies: 11-20

<table>
<thead>
<tr>
<th>Study</th>
<th>Location of study</th>
<th>Degree level of learners</th>
<th>Health profession of learners</th>
<th>Librarian involved</th>
<th>Measures of attitude (indirect)</th>
<th>Assessment validated</th>
<th>Measures of performance (direct)</th>
<th>Assessment validated</th>
<th>Assessment tested for reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raghavendra, 2009&lt;sup&gt;31&lt;/sup&gt;</td>
<td>Australia</td>
<td>Grad</td>
<td>CSD</td>
<td>Yes, as instructor</td>
<td>Informal feedback</td>
<td>No</td>
<td>Course products: development of Critically Appraised Topic</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ratcliff et al., 2013&lt;sup&gt;19&lt;/sup&gt;</td>
<td>US</td>
<td>Undergrad &amp; Grad</td>
<td>CSD</td>
<td>No; one author specialist in IL</td>
<td>None</td>
<td>N/A</td>
<td>Standardized IL test: Research Readiness Self-Assessment</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sabus, 2008&lt;sup&gt;10&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>PT</td>
<td>No</td>
<td>Self-reported survey: EBP Competency Scale</td>
<td>Face validity</td>
<td>Course products: in-service presentation (few details)</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Scott et al., 2011&lt;sup&gt;32&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>PT &amp; OT</td>
<td>No</td>
<td>Self-reported survey: Course evaluation</td>
<td>No</td>
<td>Course products: Poster presentation (not used as assessment)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Simoni et al., 2014&lt;sup&gt;14&lt;/sup&gt;</td>
<td>Europe</td>
<td>Undergrad</td>
<td>PT</td>
<td>No</td>
<td>Focus groups</td>
<td>No</td>
<td>Non-IL questionnaire or test: Italian A-Fresno; Course products: Audit form (behaviours)</td>
<td>Fresno, yes</td>
<td>Audit: not tested, but noted</td>
</tr>
<tr>
<td>Spek, et al., 2013&lt;sup&gt;17&lt;/sup&gt;</td>
<td>Europe</td>
<td>Undergrad</td>
<td>CSD</td>
<td>No</td>
<td>Self-reported survey: EBP self-efficacy and task value</td>
<td>Yes</td>
<td>Non-IL questionnaire or test: Dutch Modified Fresno</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Thomas et al., 2012&lt;sup&gt;21&lt;/sup&gt;</td>
<td>Canada</td>
<td>Undergrad</td>
<td>OT</td>
<td>Yes, as instructor</td>
<td>None</td>
<td>N/A</td>
<td>Non-IL questionnaire or test: Vignette written for study with grading rubric</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Villeneuve and Maranda, 2005&lt;sup&gt;33&lt;/sup&gt;</td>
<td>Canada</td>
<td>Undergrad</td>
<td>OT</td>
<td>Yes, as author, instructor</td>
<td>Focus group</td>
<td>No</td>
<td>Course products: case based inquiry</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Vogel, 2012&lt;sup&gt;34&lt;/sup&gt;</td>
<td>US</td>
<td>Grad</td>
<td>OT</td>
<td>Yes, as author, instructor, assessor</td>
<td>Self-reported survey: Locally developed</td>
<td>No</td>
<td>Course products: searching assignment</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Wolter et al., 2011&lt;sup&gt;35&lt;/sup&gt;</td>
<td>US</td>
<td>Undergrad &amp; Grad</td>
<td>CSD</td>
<td>Unclear</td>
<td>None</td>
<td>N/A</td>
<td>Course products: Research article critique</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Boruff and Harrison, 2016
References

References

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References

Images from the Noun Project

Slides 6 and 7:
Speech-bubble by Blake Thompson

Slide 11:
America by Bohdan Burmich
Canada by Ted Grajeda
Australia by Ted Grajeda
Norway by Ted Grajeda
Italy by Ted Grajeda
Netherlands by Ted Grajeda

Slide 16:
Writing by Magicon

Slide 17
Two people by Alfredo Hernandez
Three people by Alfredo Hernandez
Four people by Alfredo Hernandez
Six people by Alfredo Hernandez

Slide 18
Quotes by Consumer Financial Protection Bureau

Slides 3 and 19:
Target by Creative Stall

Slide 20:
Arrow by Austin Condiff

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Contact information

Slides on website:

Email: jill.boruff@mcgill.ca