

Understanding the development of information literacy in higher education

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**Understanding the development of information literacy in
higher education: Knowing, doing, and feeling**

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A dissertation for the degree of Doctor of Philosophy (PhD), September 2022



Supervisors

- Professor Tove Dahl (main supervisor)
- Senior academic librarian Torstein Låg
- Professor Mariann Solberg



Definition of information literacy

“Information literacy encompasses the knowledge, skills, and attitudes needed to be able to discover, evaluate, and use information sources effectively and appropriately in order to answer questions, solve problems, create knowledge, and learn.”

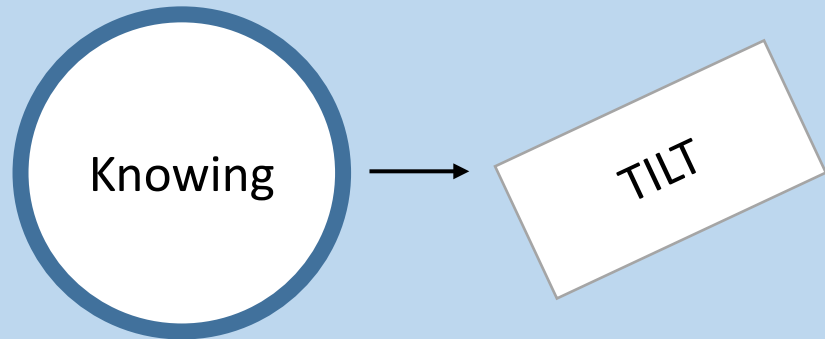
Main research question: How do students develop as information literate individuals in higher education?

1. Design and test tools to measure IL knowledge, skills, and attitudes
2. How students develop as information literate individuals over their first 3 years as undergraduates



MEASURES

Measuring IL knowledge

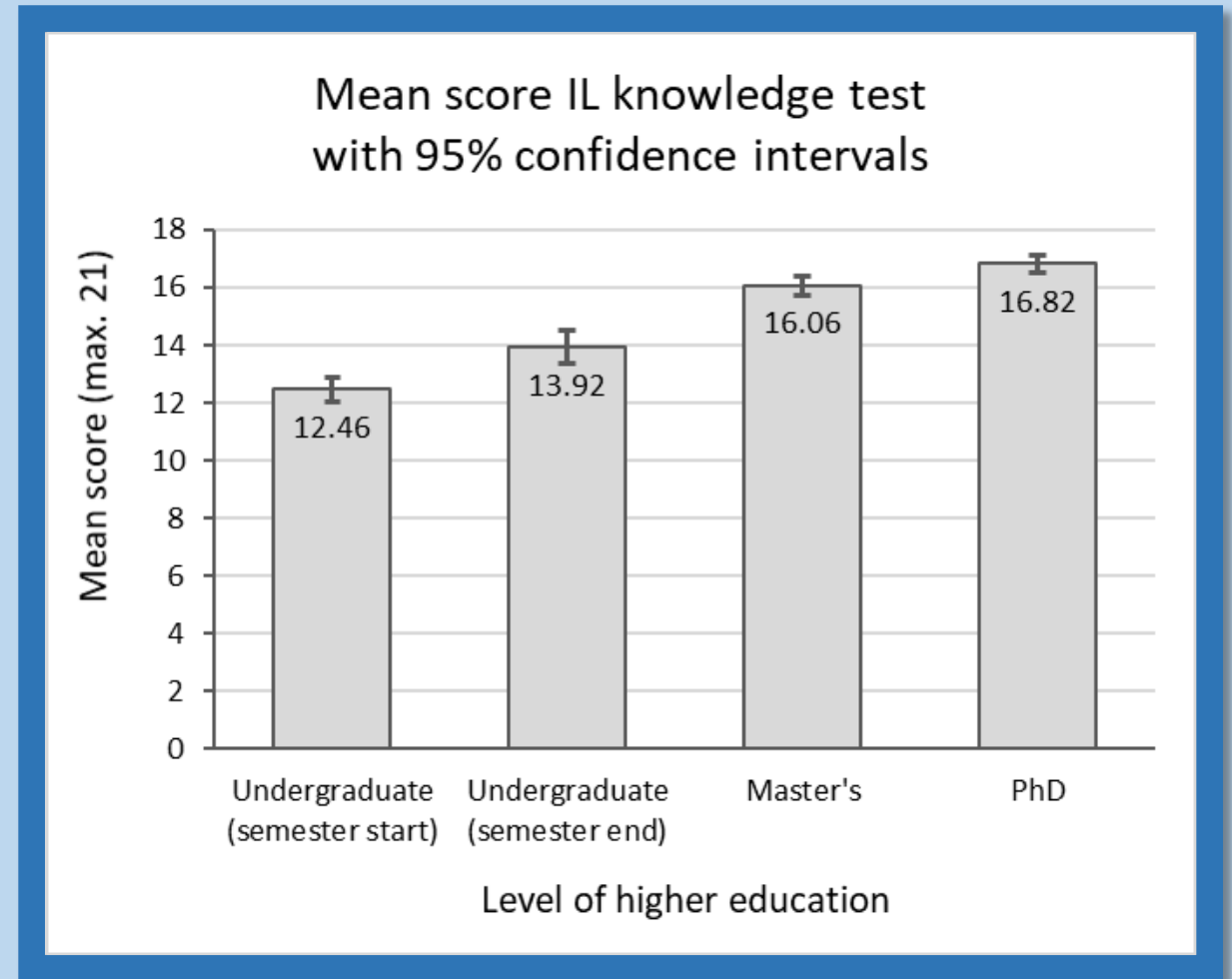


Tromsø Information Literacy Test (TILT)

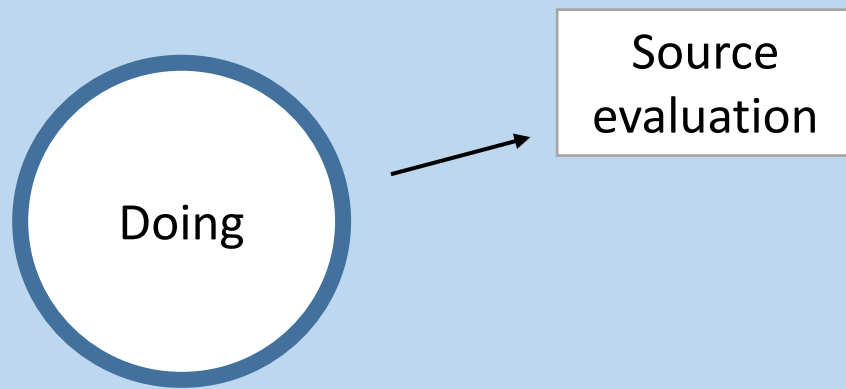
- 21 items
- multiple-choice
- finding, evaluating, and using sources
- validity
- reliability

Results

- Evidence of TILT's validity



Measuring IL **skills**: Source evaluation

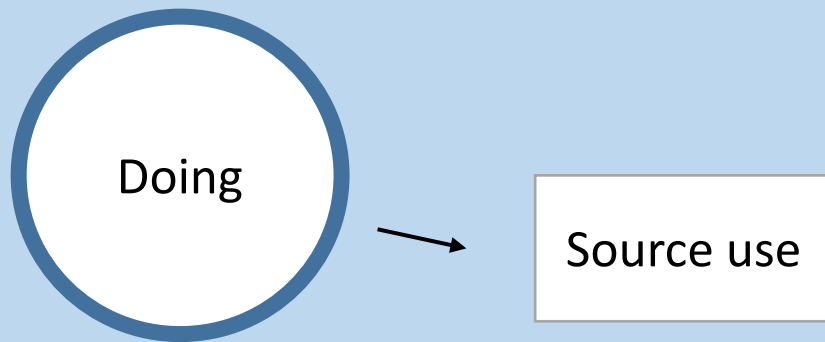


Source-evaluation measure (annotated bibliography)

- Quality
- Variety
- Frequency

Method inspired by Walton & Hepworth (2012)

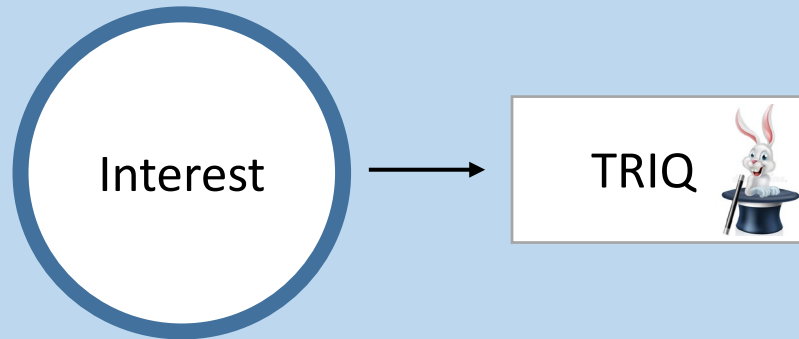
Measuring IL skills: Source use



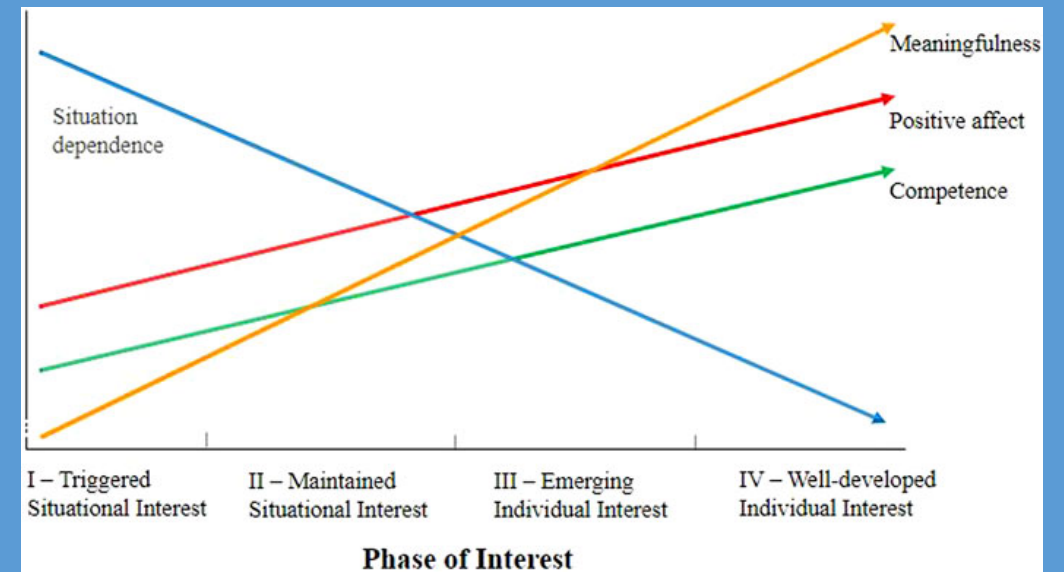
Source-use measure (rubric)

1. Are academic sources used to support arguments?
2. Are sources cited in the text when necessary?
3. Are in-text citations written in correct [reference style]?
4. Is the reference list written in correct [reference style]?
5. Are all in-text citations listed in the reference list, and vice versa?

Measuring interest

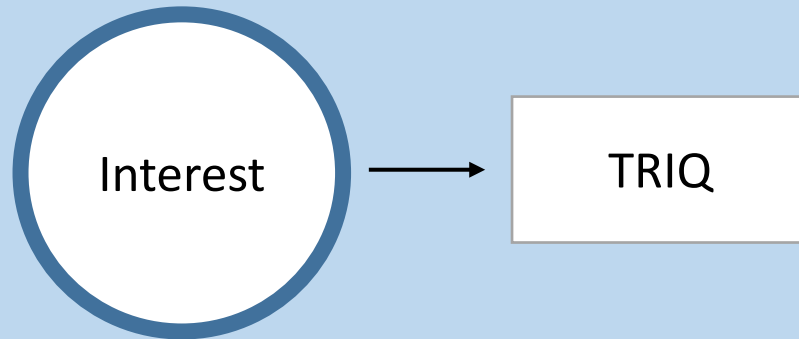


Tromsø Interest Questionnaire (TRIQ)



Based on Hidi and Renninger's (2006) theory:
Four-phase model of interest development

Measuring Interest



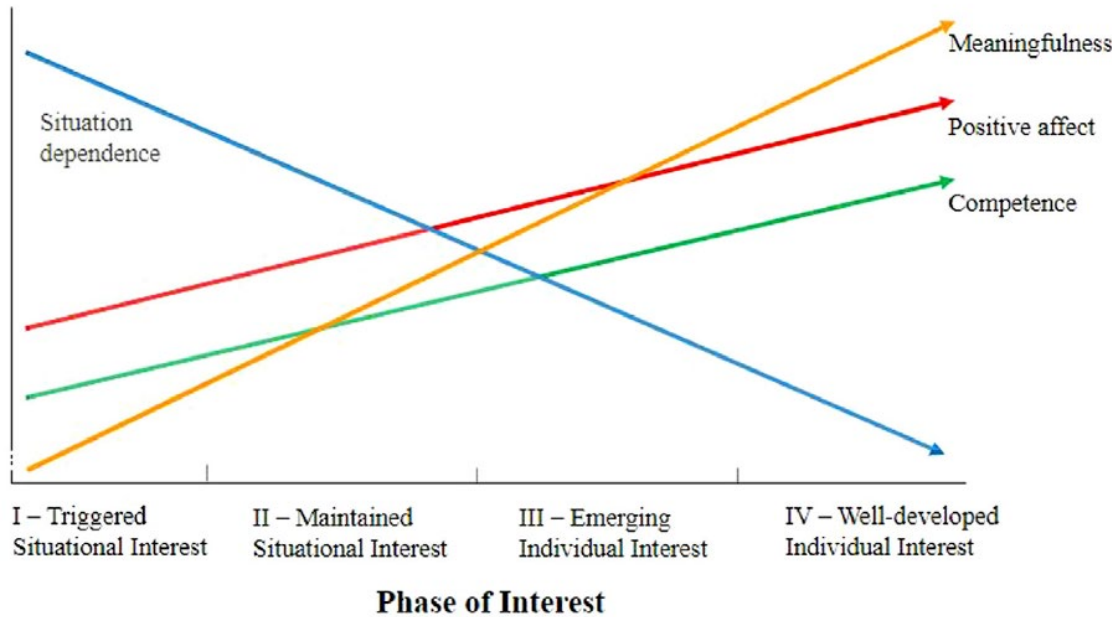
Situation dependence

Without others, I would lose interest in being or becoming an information literate person.

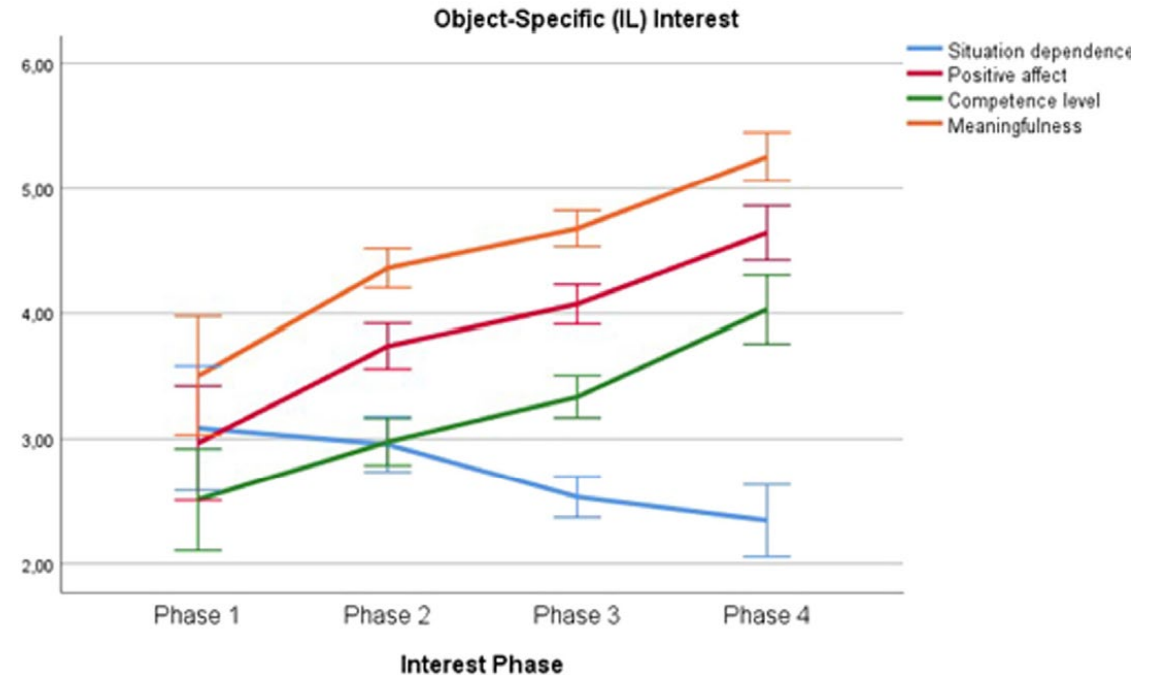
Meaningfulness

Being an information literate person is very useful for me.

Results



Theory: Hypothesized relationships among key interest variables. (Based on Hidi and Renninger's 4-phase model of interest development, 2006).



Results: Mean TRIQ subscale scores, with 95% confidence intervals, for object-specific interest (IL) by phase.

TROILS: Tromsø Information Literacy Suite

Tools for assessing Information Literacy



HERE ARE SOME TOOLS FOR DOWNLOAD

Information literacy assessment tools



INFORMATION LITERACY KNOWLEDGE TEST

The Tromsø Information
Literacy Test (TILT) is a 21-



SOURCE EVALUATION MEASURE

This quantitative measure
is designed to assess



SOURCE USE MEASURE

This quantitative measure
uses a rubric to rate
students' use of sources in



THE TROMSØ INTEREST QUESTIONNAIRE (TRIQ)

We are studying whether

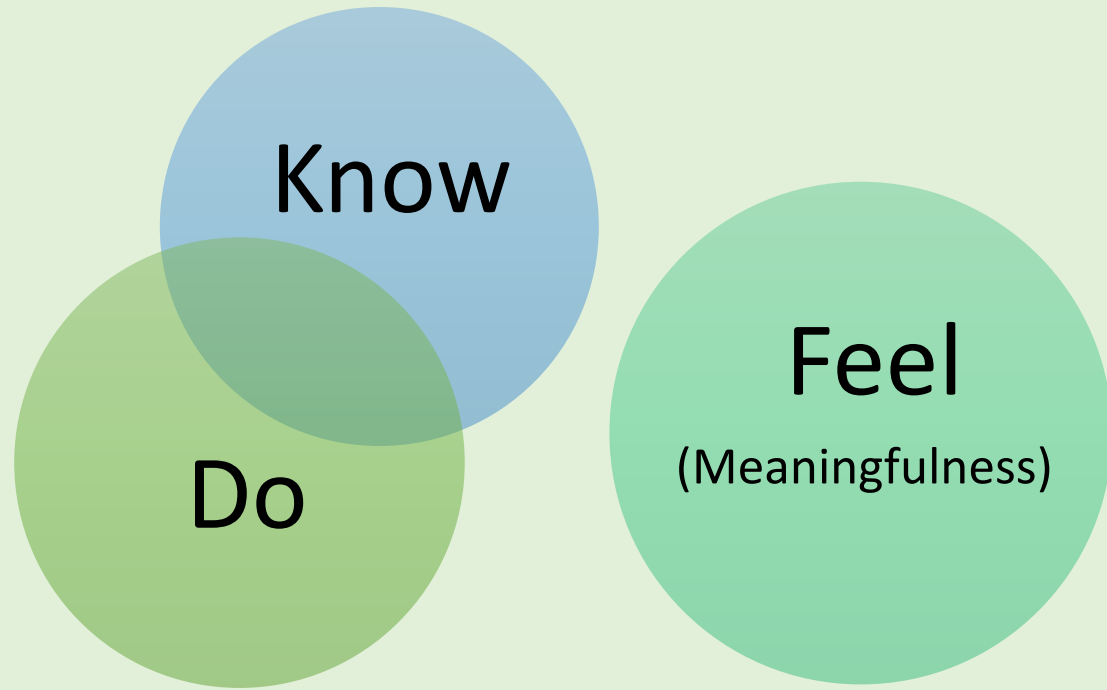
<https://site.uit.no/troils/>

GROWTH

Research questions

1. How do KNOW, DO, and FEEL – and their interaction – change during the first 3 years of an undergraduate education?
2. How do students' perceptions of themselves as information literate people evolve? Does transformative learning occur?

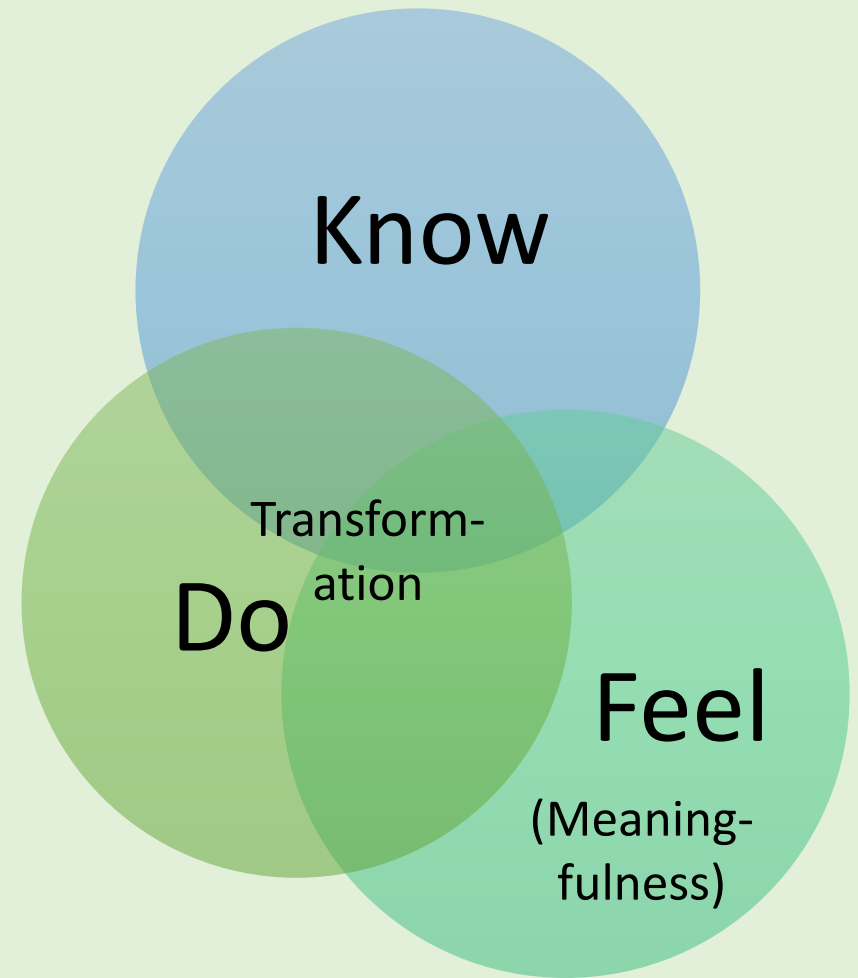
Semester 1



Mean score (diam) Correlations (r) (overlaps)

Know	58.1	Know – Do	.22
Do	59.6	Feel – Know	-.09
Feel	66.5	Do – Feel	-.19

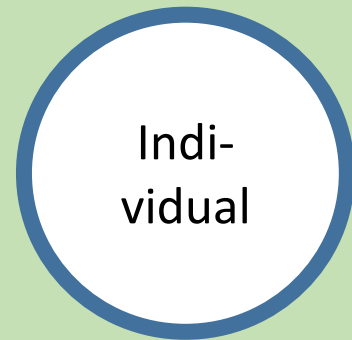
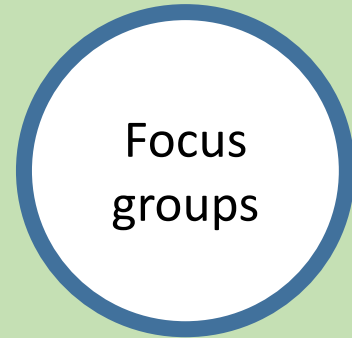
Semester 6



Mean score (diam) Correlations (r) (overlaps)

Know	74.7	Know – Do	.30
Do	72.8	Feel – Know	.18
Feel	75.2	Do – Feel	.37

Interviews



IL Knowing

IL Doing

IL Interest (feeling)

Transformative IL learning

Identity as an information literate person

transformative learning

knowing

When we had IL instruction, I suddenly realized how much I *didn't* know and have since been trying to learn more.

doing

I've really made a huge leap. Everything – from how I read, to where I choose to find information, to how I evaluate it – has changed, evolved.

feeling

[After learning about IL,] I feel more confident when it comes to academics.

critically reflecting

I've gradually become more reflective about the things I do. The more assignments I have, the more I realize how important it is that I do them in the correct way and that I think about the sources I've used.

I'm not the same person today as I was before. [Previously, I was] perhaps somewhat less reflective... [and I became] emotionally engaged a little faster.

- Baartman & de Bruinj (2011)
- Illeris (2014)

Integrating QUAN and QUAL results

Quantitative results	Qualitative results	Example quote
TRIQ scores increased significantly for the Meaningfulness subscale.	When asked about how the meaningfulness of IL has changed for them, several students mentioned how it has become more meaningful regarding their present and future education and in everyday life, often referring to its instrumental value.	Regarding avalanche knowledge, I have become very interested in this after coming to Tromsø and I feel IL is extremely relevant for deciding which sources to use, what is reliable. <i>(Could it be a matter of life and death?)</i> Yes, it could. It's so extreme.

Some contributions of my research

- New IL measures (TROILS)
 - KNOW: IL test (TILT)
 - DO: 2 IL-skills measures (source evaluation and source use)
 - FEEL: IL interest questionnaire (TRIQ)
- Development of knowledge, skills, and attitudes over time
- IL learning and interest
- Transformative IL learning in students

Future research

- 1-shot vs. embedded IL instruction
- IL instruction in 1st vs. 2nd semester
- Information literacy in the age of artificial intelligence:

References

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.
- Hidi, S. & Renninger, K. A. (2006). The four-phase model for interest development. *Educational Psychologist, 41*(2), 111-127.
- Walton, G. & Hepworth, M. (2012). Using assignment data to analyse a blended information literacy intervention: A quantitative approach. *Journal of Librarianship and Information Science, 45*(1), 53-63.

List of PhD publications

1. Nierenberg, E., Låg, T. & Dahl, T. I. (2021). Knowing and doing: The development of information literacy measures to assess knowledge and practice. *Journal of Information Literacy*, 15(2), 78–123. <https://doi.org/10.11645/15.2.2795>
2. Dahl, T. I., & Nierenberg, E. (2021). Here's the TRIQ: The Tromsø Interest Questionnaire based on the Four-Phase Model of Interest Development. *Frontiers in Education*, 6(402), 1-17. <https://doi.org/10.3389/feduc.2021.716543>
3. Nierenberg, E., & Dahl, T. I. (2021). Is information literacy ability, and metacognition of that ability, related to interest, gender or education level? A cross-sectional study of higher education students. *Journal of Librarianship and Information Science*. <https://doi.org/10.1177/09610006211058907>
4. Nierenberg, E. (2022). *Understanding the development of information literacy in higher education: Knowing, doing, and feeling* [Doctoral dissertation, UiT The Arctic University of Norway]. <https://munin.uit.no/handle/10037/27245>
5. Nierenberg, E., Låg, T., Solberg, M. & Dahl, T. I. (in press). Knowing, doing, and feeling: A three-year, mixed-methods study of undergraduates' information literacy development. *College & Research Libraries*.

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Thank you!

