

## **Promoting Lifelong Information Literacy throughout Schooling: The Role of Dispositions [pre-print]**

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Bird, N.J. (2022). *Promoting lifelong information literacy throughout schooling: The role of dispositions* [pre-print].

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### **Abstract:**

The ultimate goal of information literacy (IL) theory and instruction is to prepare people who are first students and then adults to continue learning throughout their lives from the multitude of information sources that surround them. Academic librarians in the United States have adopted the Framework for Information Literacy which encompasses threshold concepts, knowledge practices, and dispositions. The Threshold Achievement Test for Information Literacy (TATIL) by Carrick Enterprises was developed to measure all of those pieces. Two different modules of the test were deployed in an undergraduate course with over 200 students. The results of the disposition tests and overall information literacy were used to understand how information literacy theory can be advanced toward a more active focus on critical thinking and attitudes of students that will persist throughout their lives.

**Keywords:** information literacy | threshold concepts | dispositions | critical thinking

### **Chapter:**

**\*\*\*Note: Full text of preprint chapter below**

## **Promoting Lifelong Information Literacy throughout Schooling: The Role of Dispositions [pre-print]**

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**Abstract.** The ultimate goal of information literacy (IL) theory and instruction is to prepare people who are first students and then adults to continue learning throughout their lives from the multitude of information sources that surround them. Academic librarians in the United States have adopted the Framework for Information Literacy which encompasses threshold concepts, knowledge practices, and dispositions. The Threshold Achievement Test for Information Literacy (TATIL) by Carrick Enterprises was developed to measure all of those pieces. Two different modules of the test were deployed in an undergraduate course with over 200 students. The results of the disposition tests and overall information literacy were used to understand how information literacy theory can be advanced toward a more active focus on critical thinking and attitudes of students that will persist throughout their lives.

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### **1 Introduction**

The questions that animated this project were inspired by a research-based model proposed by Annemaree Lloyd [1] that combines the conceptualization of information literacy derived from research on information behavior with the guidelines created by practitioners for IL instruction to form a model that places both perspectives within contextual information landscapes. As students move through schooling levels, their information landscape changes, and they must employ a different set of literacies and modalities to navigate the new situations. In Lloyd's model, library practitioners enact their teaching model from the circle of "literacies of information" including all of the many forms that have been investigated such as information, visual, media, digital, and health. Researchers have a different vantage point; they have focused on the central "information environment" – the part of the landscape where

people find themselves confronting a particular information problem. The focus of information behavior research is on the individual's own decisions within the landscape; applying the resources and literacies to solve the contextualized problem.

A vast literature on information literacy has been produced since the concept was first described by Paul Zurkowski in 1974 [2]. In the beginning, the concept was primarily in the context of helping professional people attain a level of competency with information gathering and use in order to make good decisions. Over time it became clear that information was needed in every facet of life and information literate people would need to expand their skills throughout their lifetimes. This study tried to shed light on the guidelines promulgated by practitioners and aimed at college students while interrogating whether the relatively new addition of "dispositions" to those might lead to a more holistic view of lifelong learning. In order to understand the questions, it is first necessary to understand the guidelines and standards, the dispositions, and the measurements used.

### **1.1 Information Literacy Guidelines and Standards**

Starting in 2011, members of the Association of College and Research Libraries (ACRL) realized that instructional guidelines issued by the Association [3] were inadequate to address the multimodal literacies and the variations in disciplinary information environments that were now part of the higher education information landscape. As the *Framework for Information Literacy for Higher Education* document notes, "the rapidly changing higher education environment, along with the dynamic and often uncertain information ecosystem in which all of us work and live, require new attention to be focused on foundational ideas about that ecosystem." [4] Adopted in 2015, The *Framework* strives to instill a lifelong information literacy that will apply in all contexts, though many of the knowledge practices are useful primarily within academic settings.

The move from a set of standards to the more open and flexible frames model has been welcomed by most practicing information literacy instructors across higher education. One notable dissent from within the ranks of the Association for College and Research Libraries was from the two-year college community that the move away from standards were difficult to implement in curricula that emphasize speed and general education [5] [for a rebuttal see work by Swanson [6]]. The researcher community was also not convinced, as Tefko Sarcevic outlined at this conference in 2014 [7],

- threshold concepts were under-researched and “agent relative”, or tied to the individual
- knowledge practices were undefined and appeared to be holdovers from the standards.

Saracevic did not discuss the dispositions at that time.

Each of the six frames are considered threshold concepts that are foundational to information literacy and were derived from a single Delphi Study with library practitioners that was unpublished at the time of the adoption of the *Framework* but can now be found in the article by Townsend, Brunetti, and Hofer [8]. The frames have been adapted to fit numerous disciplines and contexts (see for example case studies in [9]) and most articles have focused on how to instruct students to build their understanding and application of these concepts to their information problems within secondary level education.

Each frame is described by a set of “knowledge practices” and a set of dispositions. Knowledge practices are defined in the document as the “proficiencies or abilities that learners develop as a result of their comprehending a threshold concept” [4] while dispositions are defined using a reference to a 1994 conference paper as “a tendency to act or think in a particular way.” [4] More specifically, a disposition is a cluster of preferences, attitudes, and intentions, as well as a set of capabilities that allow the preferences to become realized in a particular way”. The concept of personal characteristics, or dispositions, comes from education theory where it has been studied by researchers interested in teaching critical thinking skills at all levels of education [10, 11]. The *Framework* document lists between 5 and 8 dispositions that are purported to be related to each of the six frames that can be used to view information literacy, but these connections are not based on empirical data.

It should be noted that at the same time the *Framework* was being enacted, the American Association of School Librarians (AASL) was at work on guidelines which were released in 2018 [12]. Because there was little cooperation between the groups, the language used to describe some of the desired outcomes were quite different. Especially interesting is that the desired dispositions that students should develop are differently described in that document. However, the two documents were reconcilable as shown through a crosswalking process done by Elizabeth Burns, Melissa Gross, and Don Latham [13]. There has been some work done in the United States to show the transition from two-year (community and technical) colleges to four-year (baccalaureate) institutions (see for example [14]). There is much work to be done, however, since truly understanding the progression of information

literacy across a lifespan would require studies that examine students as they progress from primary to secondary to tertiary education.

### 1.2 Dispositions

Information literacy requires critical thinking about the sources people use to create their own knowledge. Though it is not specifically mentioned in the *Framework*, the document does talk about the concept of IL as a metaliteracy which includes references to the critical thinking processes required for using information [15, 16]. A later article by Fulkerson, Ariew, and Jacobson describes the move away from the use of metaliteracy as a founding concept in the *Framework* because it diluted the focus on critical thinking [17].

In one of the major texts on cultivating strong thinking through education, Diane F. Halpern discusses dispositions as attitudes that are necessary antecedents to good critical thinking [11]. In Table 1, Halpern’s language is placed in the first column and compared to the two frames from the Framework that were used in this study. Although there is some congruence; these relationships are untested and merely reflect the author’s own sensemaking and paraphrasing. It can be seen, however, that the language changes considerably between the columns.

Table 1

<b>Halpern</b>	<b>Authority is Constructed Frame</b>	<b>Information has Value Frame</b>
Willingness to Plan		
Flexibility	Question how authority is granted	Value the effort needed to produce knowledge
Persistence	Motivation to find authoritative sources	See themselves as contributors to knowledge
Willingness to self-correct and change your mind	Maintaining these attitudes and actions requires frequent self-evaluation	Are inclined to examine their own information privilege.
Being Mindful	Open mind to conflicting perspectives	
Consensus seeking	Skeptical assessment of content	Respect the original ideas of others

### 1.3 Information Literacy Assessments

A number of tests to measure levels of information literacy were developed under the original ACRL Standards [3], including one called Project SAILS: Standardized Assessment of Information Literacy Skills by Carrick Enterprises [18]. At the time of this study, Spring 2019, the company had

developed four modular tests based on the Framework called the Threshold Achievement Test for Information Literacy (TATIL). These modules included questions that were scored to show what they termed “knowledge outcomes” which are comparable to ACRL’s knowledge practices. It also measured dispositions for each of the TATIL tests. The exact parameters of the tests used will be described in section 2.3.

In order to measure dispositions, the TATIL test questions looked for behaviors by asking questions. Table 2 lists those behaviors.

Table 2

<b>TATIL Test Behaviors</b>	<b>EPA</b>	<b>VOI</b>
Mindful self-reflection	<ul style="list-style-type: none"> <li>• Challenge source of trustworthiness</li> <li>• Question the reliability of traditional scholarly authority</li> <li>• Recognize good reasons to change position on an issue</li> </ul>	<ul style="list-style-type: none"> <li>• Use existing intellectual property to inspire new work without violating the creator’s rights.</li> <li>• Participate in informal networks of dissemination</li> <li>• Recognize ways to reduce the negative effects of the unequal information distribution</li> </ul>
Toleration of Ambiguity	<ul style="list-style-type: none"> <li>• Decide what to if/when authorities disagree</li> <li>• Use traditional and non-traditional information sources</li> <li>• Treat authority as a flexible concept</li> </ul>	
Responsibility to community	<ul style="list-style-type: none"> <li>• Be responsible to the discourse community by using sources properly</li> <li>• Recognize that the discourse community determines authority and propriety</li> <li>• Take responsibility for critical evaluation and explaining authority to a work’s audience</li> </ul>	<ul style="list-style-type: none"> <li>• Access scholarly sources through formal channels</li> <li>• Avoid plagiarism in their own work and discourage others</li> <li>• Recognize the value of their own original contributions to discourse</li> </ul>

The connections between critical thinking and dispositions are still being investigated in education [10]. Certainly, they have been used rarely in information literacy practitioner studies.

### 1.3 Research Questions

The questions asked were:

R1. Do dispositions measured using the TATIL test vary significantly across demographic characteristics including racial/ethnic identity, gender, generation, or class rank?

R2. Did prior exposure to information literacy instruction affect student performance on the TATIL information literacy scores or on the type of dispositions exhibited?

R3. Do dispositions predict information literacy?

## **2 Methodology**

### **2.1 Research Design**

Two TATIL tests, based on two ACRL frames from the Framework, were used in this research: *Value of Information* and *Evaluating Process and Authority* both of which are described on the Carrick Enterprises website [18]. The tests were administered in January/February 2019 and repeated in April/May 2019. Participants were students in sections of a semester-long general education course, *Information Use in a Digital World*, for students in a mid-sized public university in the southeast United States. This course had recently been designed and implemented and the tests were primarily intended to be used to evaluate the effectiveness of instruction. Students were provided with extra credit if they participated.

Although not only about information literacy, many of the concepts involved in the ACRL Framework are included in the class. The author did not teach any of the classes. Course faculty asked students to take two online tests at their own convenience; time, place, and setting was controlled by each participant. Extra credit was awarded for taking the tests. The tests were open for a set period of time. Each participant logged into the test with their email and was given an identification number. The number was used to match pre-test and post-test results.

### **2.2 Participants and Prior Schooling**

Out of 250 students enrolled in the course, 144 participated in some way. Demographics reveal a diverse set of participants with 13% Latino or Hispanic, 25.7% Asian, 25.7% Black, 45% White, and 8% with more than one

race/ethnicity; 3% did not disclose their ethnic or racial identity. Gender identity choices in the survey were broad but the results were binary, 56.9% identified as female, while 41.7% identified as male; only 1 participant chose “other gender identity”. A question about the language spoken in their homes revealed that 28.6% used a language other than English there.

In order to ascertain prior information literacy preparation, questions were asked about their prior schooling, general library use, and how they might have been taught the basics of using library information. A library was available for 94% of the participants in the school that they attended before coming to the university. A librarian did not necessarily teach library and information skills; 53% were taught by a librarian, 32.6% said that teachers had provided IL instruction, 2.8% were taught by a public librarian, and 10.4% said that they had received no instruction at all. Other library use was also revealing; 11.8% of the participants reported that they never use a library of any kind while 74% said that they use a public library and 11% had used a community college library.

### **2.3 The Tests**

The TATIL tests that were administered were Module 1: Evaluating Process & Authority (EPA) and Module 4: Value of Information (VOI). The tests provide an overall score for all of the performance indicators and measures of either 2 (VOI) or 3 (EPA) Dispositions (see Table 2). The scores provided are composite scores based on a number of questions.

The initial purpose of the tests was to assess the quality of instruction in the course, so a pre-test/post-test design was employed. However, the underlying questions about the dispositions were more about the personal characteristics prior to arriving in that classroom, so only pre-test results were used. The precise measures were Pre-EPA Overall Information Literacy Score, Mindful self-reflection, Toleration of ambiguity, and Responsibility to community and Pre-VOI Mindful self-reflection and Responsibility to community.

It was also important to compare scores on the Pre-EPA and Pre-VOI tests. The behaviors looked for across the dispositions on these tests are similar.

## **3 Results**

### **3.1 Demographics**

Analysis revealed that there was no correlation between racial identity, generation marker, gender, or class standing and either the dispositions or the overall score on the Pre-EPA test. There was a weak and negative



correlation between gender and the VOI Community measure ( $r=-.220$ ,  $p=.05$ ) but none with the EPA Community.

### 3.2 Dispositions

A weak correlation was found between the participants reported use of other libraries and both Pre-EPA Ambiguity and Community at the .05 level. The majority of participants (75%) said that they used a public library, while 11.8% said that they “never use a library”. The concept of library use was ill-defined in the survey; how the libraries were used was not clarified.

More interesting is the measured dispositions effect on the overall scores and on each other. Significant results can be summarized as:

- Pre-EPA and pre-VOI overall scores were related ( $r=.498$ ,  $p=.01$ )
- Mindful reflection correlated with the overall score on both pre-EPA ( $r=.285$ ,  $p=.01$ ) and pre-VOI ( $r=.433$ ,  $p=.01$ ) tests.
- Community was strongly and positively correlated with the overall score on the pre-VOI ( $r=.535$ ,  $p=.01$ ).
- Community and mindful reflection were correlated with each other on the pre-VOI ( $r=.470$ ,  $p=.01$ )
- Community on the pre-EPA and on the pre-VOI were significantly related ( $r=.324$ ,  $p=.01$  level)
- Pre-VOI Reflection and the pre-EPA overall score was ( $r=.350$ ,  $p=.01$ )
- Pre-VOI Community and Pre-EPA overall score ( $r=.511$ ,  $p=.01$ )

## 4 Discussion

None of the standard demographic descriptives correlated with overall information literacy scores on either of the TATIL tests taken. It makes the job of information literacy practitioners to bring students to the level of the threshold concepts, as embodied in the *Framework*, difficult. As Saracevic pointed out, attaining the level of information literacy that is transformative is an agent-relative exercise.

There were three participant characteristics that did relate to the

dispositions, prior schooling impacted the Community score on pre-EPA while general library use, and gender was negatively related to the measures of community in the VOI context. They were not strong but they do show that instruction does impact the dispositions.

The strong relationship between community, reflection and overall information literacy shows that dispositions can be cultivated and will impact information literacy. Does that disposition remain across different domains? If health literacy or science literacy measures were used instead of information literacy would the disposition scores be the same? That cannot be ascertained from this data.

Very few participants came from a school that had no library and the number of students who admitted never using a library was low. But just the presence of a librarian does not correlate with information literacy in this particular study unlike the conclusions reached by school library researchers [19]. In fact, instruction by a librarian or the presence of a library in the participant's prior education wasn't necessary either as there were no differences between participants who were taught about information literacy by a librarian and those taught by a teacher. However, this does not answer whether a librarian can impact the quality of instruction provided by teachers.

## **5 Conclusion**

Dispositions are important to overall information literacy in some way. But the diversity of language used by the TATIL test, the critical thinking literature, and the *Framework* does not create a clear path forward. Work in critical thinking by Dwyer [10] and others needs to be used more productively by practitioners and researchers in the information literacy field.

As Annemarie Lloyd wrote in her grand unifying theory of information literacy, "Unless those who engage in IL research can come towards [a] more holistic understanding of the field, it will remain trapped in an agenda of disjuncture and divergence that fails to evolve." I propose that the philosophically rich and important area of dispositions and the corresponding critical thinking are one area that needs to be constructed more holistically.

## **5.1 Limitations**

The TATIL test questions are proprietary and the results on the measures of Mindful Reflection, Tolerance of Ambiguity, and Responsibility to Community, are based on composite scores. This limits the generalizability of the results outside of the testing situation.

The original intention of the research process was to demonstrate Pre-and Post test score change. The testing conditions were not ideal and may have invalidated the results.

## **5.2 Implications**

Whether information literacy is a multiliteracy or not a literacy at all is still in question. If there are no differences in either pre-test or post-test scores based on social demographics, and even the effect of instruction is in question then it may be that there is nothing there. An intriguing recent paper by Griesbaum, Cetta, Mandl and Montanari reviewed the position papers of 19 experts in the field [20]. Their conclusion was that research skills are predominant and are domain or discipline specific. They also noted that critical thinking and ethical use of information are inextricably linked to the cultivation of these skills.

Critical thinking and ethical use are embedded in the dispositions. But a better frame for them must be created and Lloyd's model is a good start [1]. It is unclear at present whether these results fit in the model. But it would be helpful if we could agree to adopt parts of it as we move forward. We must agree, both the research community and practitioners, on the definitions of these concepts so that they can be measured successfully. And those must be applied across areas of schooling.

Three of the areas of development identified by the experts in the work by Griesbaum, Cetta, Mandl, and Montanari were the evaluation of information as the central subcompetence, improved integration of learning provision across levels, and fostering motivation. [20] Mindful self-reflection, toleration of ambiguity, Understanding them, agreeing what they are and that they operate in multiple frames and domains is a necessity.

### 5.3 Further research

Deeper statistical analysis of this data set is planned. But the use of TATIL as a measure needs to be further verified in other studies. Real lifelong learning and its relationship to information literacy is elusive but it starts with using a common set of understandings across levels of schooling in the US and internationally.

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