Summary:

My proposed research project is intended to facilitate self-directed and non-academic scholarship by designing and testing various web-based tools that can assist individuals of various learning styles. TH particular learning scenario I am using is information literacy, so I will attempt to find appropriate web-based tools to teach foundational information literacy concepts from the perspectives of various learning styles in an interesting and engaging manner. The quantity and quality of information available through web-based searches is both overwhelming and myriad, and information literacy skills in distinguishing the validity and trustworthiness of information are foundational to self-directed learning.

While the relevance of such tools to academic libraries is clear, my particular focus is on public libraries and the free services they offer to the general public. In an age where broad swaths of the totality of human knowledge are freely available online for those that know how to search and access this information, the advancement of human knowledge need no longer be limited to academic institutions.

Definitions:

User/Learner – These terms are used interchangeably for a member of the target audience and target sample group. These individuals test and utilize the tools (see below) with the goal of developing expanded knowledge, information, and/or skills through the exercise and experimentation process. In this particular test case the users/learners will be attempting to gain skills in information literacy and assess the efficacy of the provided information literacy development tools.

Self-directed learning/learner – This is a particular target of user/learner that epitomize the target audience. Self-directed learning is education and information accrual that is done from individual personal impetus, and not as any type of academic or current vocational requirement. This can be skills gained in the hopes of future vocational use, but not that which is required for a current vocation. A self-directed learner is a learner (see above) that seeks out education and information accrual from their own personal impetus.

Tool(s) – By tool, I am referring to an application, website, series of instructions, or other such system utilized to gain informational or educational skills, knowledge, abilities, and structures. In this particular context I am referring to the system designed in the course of the study, which the users will test and comment on with regards to its efficacy in performing information literacy education.

Learning style – I am using this term primarily to refer to the Herrman Whole Brain Model of learning styles (de Boer, du Toit, Bothma, & Scheepers, 2012). This model also encompasses the original model which forms its basis, as well as numerous other versions within academic publication. In simple terms learning style is the manner of information presentation which enables an individual user to achieve educational and informational milestones with least difficulty.

Learning style flexible – Learning style flexibility is the capacity of educational instructions, systems, and tools to adapt to each individual learner’s differing primary learning style, in order to maximize educational and informational outcomes.

Assumptions:

From my research, there seem to be a number of calls for research in the area of promoting information literacy, particularly for self-directed learners. Self-directed learners without information literacy skills are particularly vulnerable to falling into traps of misinformation, by stumbling across information that is not properly vetted and assuming it to be correct. Information literacy skills allow us to critically interpret the input we receive both for veracity and relevance, so that the uninformed can become informed.

While many K-12 educational institutions provide the basic instruction necessary to use a search engine along with library resources, often these instructions are phrased as requirements and not given context in terms of information vetting. For example a teacher may tell a student to only use a particular type of resource for a paper, but fail to explain that the information vetting is substantially better using such sources. A student may meet the requirements but not fully understand the skills for information literacy, or their importance.

In many institutions of higher learning as well, students are often presumed to have a certain basic understanding of information literacy, or basic requirements are phrased as assignment requirements in a similar way to K-12 schools. Teachers and professors are not aware of every student’s full academic history and what skills they may or may not have acquired to date, and so information literacy instruction can often fall by the wayside. Many academic institutions are addressing this issue by creating broader and more inclusive information literacy instruction, as demonstrated in the literature. Many of these efforts are spearheaded by academic libraries.

While the efforts to promote and encourage basic information literacy instruction in academic institutions is commendable, such efforts are limited to those that can and do attend the institutions engaging in such initiatives. Public libraries have long been champions for the information rights of the under-represented, and providing deeper information literacy skills to the under-educated seems to be a niche ideal for public libraries to fill in the same way that academic libraries are attempting to fill this deficit in academic institutions.

Additionally, even for those adult learners who have been given detailed instruction on information literacy in the past, concepts can fade over time. Adult learners continuing educational pursuits outside of typical educational institutions often utilize the public library for information needs. The public library seems to be an ideal place to provide instruction and refresher courses on information literacy concepts. However, such programs often require additional staff, and turnout can be extremely spotty for scheduled sessions. Many people expect to be able to access information immediately and consistently because of the increasing availability of information on the internet.

In depth instruction in information literacy is a type of knowledge that someone might not realize they are lacking, and thus may never consider attending a workshop or course offered on the subject. However, a web-based tool for information literacy instruction may encourage greater usage while providing a fun, engaging learning experience. A web-based tool will also require little to no extra staff hours for public libraries that are already struggling to receive adequate funding.

My final assumption is that the tool I intend to design can be useful for its intended targets, as well as being transportable to other contexts. If designed with enough flexibility, the information literacy tool could also become a tool for teaching a variety of different subjects in a similar way, taking into account learning style flexibility to reach a broader range of various learners.

Process:

This study consists of two main parts. The first is synthesizing appropriate research in various different areas in order to create a useful web-based tool. The second part is a usability testing and survey process that will provide information on the efficacy of various components of the tool as they are created. These two parts will be performed concurrently, as user input will have an effect on the way the tool’s creation proceeds during the process. The research follows the standards of action research, and will follow the basic framework of the unpublished dissertation “Using the Herrman whole brain model for mentoring academic staff” (Goode, 2015), but with several additional contexts. The focus is instead on public library patrons and self-directed learners, rather than academic staff and peer mentoring.

The tool creation portion will follow the processes demonstrated in “ADDIE: Designing web-enabled information literacy instructional modules” (Koneru, 2010), but with the particular conceptual context of the article “Constructing a Comprehensive Learning Style Flexibility Model for the Innovation of an Information Literacy Module” (de Boer, et al. 2012). Though this article does not go into extreme depth about processes for implementation, it has multiple thoroughly cited conclusions about the type of activities learners gravitate toward and struggle with, and how that relates to their primary learning style and the ADDIE study provides more in terms of process of implementation.

Since research has shown that approaching an educational objective from multiple points of access with regards to learning styles contributes to greater educational outcomes and understanding of the concepts involved, this model will be instrumental for me (Jackson, 2014). My idea is to provide a web-based approach to learning that will allow users to select one of the types of learning they prefer to begin an educational process, and gradually move into other modes of learning as the material becomes more comfortable.

For example, a user who does well with collaborative thinking may lean toward a collaborative discussion board format, or live interactive module, and gradually incorporate more various approaches to the subject as understanding develops. On the other hand, another user may choose to read about the subject area more before delving into peer to peer discussion, and still another may be interested in playing an interactive game or watching a video. By creating opportunity for the various approaches to blend together, and avoid the ways in which each learning style struggles in the process, a computer program can easily direct and suggest the next activity to build greater understanding.

For the purposes of content, the ADDIE study specifically lists instructional processes for designing web-based modules for information literacy (Koneru, 2010). This process will enable me to design each particular aspect or learning style for the tool, as well as the transitions between the various learning styles and modes of interaction. This article also advocates for the type of fun, engaging learning that web-based structures are able to deliver more widely than other potential educational tools.

The process of user input will need to be ongoing to ensure that the interface remains fun and engaging. Thus, for every step in the process I will selectively identify test at least five users that either self-identify with the learning style being tested as well as those that take a simple questionnaire to identify their most probable primary learning style, based on the testing concepts outlined the 2012 learning style models. Because of the focus on self-direction and independent learning, the test results are less important overall than user self-identification, so a simple questionnaire for what basic type of learning style a user gravitates toward will be more effective than a complex test.

The users will test how easy the material is to understand from their various perspectives in an informal interview fashion as well as an exit questionnaire about final impressions. A secondary round of usability testing using some but not all of the original participants will determine how smooth and appropriate the transitions are between various activities. The secondary testing interview and exit questionnaire will also contain questions about any struggles the users may have with grasping the material after transitioning to a different learning style method. The qualitative and quantitative data will be repeatedly analyzed throughout the process to determine inconsistencies, errors, and flaws that need to be addressed.

References:

de Boer, A., du Toit, P. H., Bothma, T., & Scheepers, D. (2012). Constructing a comprehensive learning style flexibility model for the innovation of an information literacy module. *Libri, 62*, 186-196.

Fourie, I. (2013). Twenty-first century librarians: Time for zones of intervention and zones of proximal development?, *Library Hi Tech, 31(1),* 171-181.

Goode, H. (2015). *Using the Herrman whole brain model for mentoring academic staff* (Unpublished doctoral dissertation). University of Pretoria, South Africa.

Jackson, S. A. (2014). Student reflections on multimodal course content delivery. *Reference Services Review, 42(3)*, 467-483.

Koneru, I. (2010). ADDIE: Designing web-enabled information literacy instructional modules. *Journal of Library and Information Technology, 30(3),* 23-34.