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SOCIOCULTURAL THEORIES AND THEIR APPLICATION IN INFORMATION LITERACY RESEARCH AND EDUCATION

Dr. Li Wang, The University of Auckland, New Zealand

Professor Christine Bruce, Queensland University of Technology

Dr. Hilary Hughes, Queensland University of Technology

Drawing on the example of a recent study (Wang, 2010) this paper discusses the application of a sociocultural approach to information literacy research and curricular design. First it describes the foundation of this research approach in sociocultural theories, in particular Vygotsky's sociocultural theory. Then it presents key theoretical principles arising from the research and describes how the sociocultural approach enabled the establishment of collaborative partnerships between information professionals, academic and teaching support staff in a community of practice for information literacy integration.

Theoretical perspectives in information literacy research

Various research approaches and techniques have been adopted in information literacy (IL) research. These range from survey (Korobili, Malliari, & Christodoulou, 2008), Delphi study (Saunders, 2009), case study (McAdoo, 2008), testing (Gross & Latham, 2009), to interviews (McGuinness, 2006), focus group studies (Dunn, 2002), document analysis (Wright, 2007) phenomenography (Bruce, 1997), critical theory (Elmborg, 2006) and critical incident technique (Hughes, 2007; 2009). Several of these are highlighted in a recent text *Exploring Methods in Information Literacy Research* (Lipu, Williamson and Lloyd, 2007).

Each approach meets specific IL research needs. For example, studies that use surveys (Neely, 2000), Delphi studies (Saunders, 2009) or testing (Dunn, 2002) are usually quantitative in orientation. Such quantitative and behaviourally oriented methods are useful for the collection of objective, measurable or patterned data from a large sample. However, different methods are required to understand the dialogic nature of human experience in the social sciences. Cognitive constructivism, and social constructivism or sociocultural approaches usually draw on the constructivist paradigm. However, while cognitive constructivism focuses on individuals, social constructivist theories and the associated sociocultural approach outlined in this paper take much greater account of the roles that social relations, community and culture play in learning and development (Rogoff, 1990).

Vygotsky is the major theorist influencing sociocultural research (Limberg & Alexandersson, 2010). The application of Vygotsky's sociocultural theory is, however, still new in IL research (Lloyd & Williamson, 2008; Tuominen, Savolainen, & Talja, 2005; Wang, 2007). While growing attention is being given to the principles of sociocultural theories and their application to IL research in community, workplace and school contexts, little has been written about them in the context of IL research in higher education. This article will fill in this gap by providing a brief overview of sociocultural theories and introducing the way in which principles arising from the approach can be used in situations requiring attention to both research process and curricular design.

Sociocultural theories

Sociocultural theories are based on the social constructivist paradigm which considers that knowledge is constructed socially through interaction and shared by individuals (Bryman,

2001). Sociocultural theories describe learning and development as being embedded within social events and occurring as a learner interacts with other people, objects, and events in the collaborative environment (Vygotsky, 1978).

Sociocultural theories were first systematised and applied by Vygotsky and his associates in Russia in the 1920s and 1930s (John-Steiner & Mahn, 1996). Lev Vygotsky was a Russian psychologist and educator who died in 1934 in his late thirties of tuberculosis "without the world understanding or accepting the sociocultural theory that he nearly single-handedly constructed" (Whiteside, 2007, p. 48). His translated seminal works, *Mind in society* (Vygotsky, 1978) and *Thought and language* (Vygotsky, 1986) addressed the critical importance of social and cultural context to human cognitive development. Sociocultural theories have been further developed by other theoreticians such as Lave (1988; 1991), Lemke (1990), Rogoff (1990, 2003) and Wertsch (1991).

Sociocultural theories describe human cognition as developed through engagement in social activities, as an individual interacts with other people, objects, and events. Therefore, human cognitive development cannot be separated from the social, cultural, and historical contexts from which such development emerges (Johnson, 2009). This social and cultural engagement is mediated by culturally constructed tools such as language, materials, signs and symbols that create uniquely human forms of higher-level thinking. In his well-known genetic law of development, Vygotsky emphasised the primacy of social interaction in human cognitive development in which human mental abilities emerge twice: "first, on the social level, and later, on the individual level; first, *between* people (*interpsychological*) and then *inside* the learner (*intrapsychological*)" (Vygotsky, 1978, p. 57). From this perspective, learning and development occur on two planes: first on the social plane (interactions with others) and then

on the psychological plane (within the learner or researcher). This describes a process of human cognitive development which is situated in, but not limited to, social interaction (John-Steiner & Mahn, 1996).

Vygotsky's sociocultural theory has been discussed in relation to four aspects of human cognitive development, namely *mind, tools, Zone of Proximal Development (ZPD)* and *community of practice* (Mantero, 2002; Nuthall, 1997; Palincsar, 1998; Wertsch, 1991). First, *mind* extends beyond a person and people. Mind, according to Vygotsky is socially distributed. Thus our mental habits and functioning are dependent upon our interaction and communication with others, which are also affected by our environment, context, and history (Mantero, 2002). Lave and Wenger (1991) claim that "learning, thinking and knowing are relations among people engaged in activity in, with, and arising from, the socially and culturally structured world" (p. 67). The sociocultural perspective assumes that human cognition is formed through engagement in social activities (Mantero, 2002). The second aspect of cognitive development, *tools* assist the developing communicative and cognitive functions in moving from the social plane to the psychological plane. Such tools include language; various systems of counting; algebraic symbol systems; works of art; writing; diagrams, maps and mechanical drawings and so on (Vygotsky, 1981). The third aspect of cognitive development, *ZPD* (the Zone of Proximal Development) was defined by Vygotsky as: "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (1978, p. 85). Vygotsky argued that to understand the relationship between development and learning we must distinguish between two developmental levels: the actual and the potential levels of development. The actual level refers to those accomplishments a learner can demonstrate

alone or perform independently. The fourth aspect of cognitive development is *community of practice, where* learning a subject domain is viewed as a process of becoming a member of a community of practice (Mason, 2007, p. 2). A 'community of practice' is a group of people who are recognised as having a special expertise in some area of significant cultural practice (Nuthall, 1997). Now let's look at how sociocultural theories can be applied in higher education IL research and curriculum development.

Applying sociocultural theory in information literacy research and developing a community of practice

The sociocultural approach has also been adopted in the design of active collaborative learning in IL learning (Lazarow, 2004; Wang, 2006, 2007). From the perspective of sociocultural theories IL is embedded in the activities of particular groups and communities, therefore "we need to understand the practices of these communities before we can effectively teach IL" (Tuominen et al, 2005, p. 341). Practice here refers to the practice of IL integration such as using information to learn, searching or evaluating information to complete a task (Tuominen et al, 2005). In the remainder of this paper we use an earlier study (Wang, 2010) to demonstrate the processes and benefits of using the sociocultural approach to develop a community of practice for information literacy integration, involving simultaneous attention to IL research process and IL curriculum design. First a summary of key features of the study is provided (the reader may refer to the full report for further detail), and then the manner in which key sociocultural principles applied is elaborated.

The key aim of the study of relevance here was to explore how IL can be systematically integrated across academic curricula in higher education. In order to achieve this, two phases were implemented: an interview phase and a development phase. In the interview phase, 22 academic staff and professional librarians from three Australian universities were contacted

via the university Library Directors. These participants were selected because they had experience of integrating IL into curriculum in different disciplines. The main purpose of the interview phase was to co-construct the richest possible evidence on curricular integration of IL. All the interview data were recorded, transcribed and used as a tool for the development of a common interpretive understanding of IL integration. Progressively, a common interpretive understanding of curricular integration of IL in higher education was reached

In the development phase, the participants formed four IL curricular design groups in each year, from year 1 to year 4 at a university. The curricular working groups consisted of academic staff, librarians, learning support staff, learning designers, IT support staff and the researcher. The purpose of the development phase was to explore the process of IL integration in curricular design as it was enacted, and also to apply knowledge of IL integration developed during the interview phase. Each curricular group held an average of six meetings or discussions. All discussion details were summarised and sent to curricular group members to double check.

The research process was based on the social constructivist paradigm, expressed through the adoption of sociocultural theories described earlier. That paradigm asserts that reality is socially constructed through interaction and shared by individuals; the research object and the researcher therefore become inseparable. The perspectives of the Cochrane Qualitative Research Methods Group's criteria were adopted to critically appraise the findings (Cochrane Qualitative Research Methods Group, 2009).

Key findings emerging from the study of most relevance here were characteristics of curricular integration of IL and the bottom-up versus top-down approaches evident among participants. First, key characteristics of IL curricular integration were found to be: collaboration and negotiation, contextualisation, and ongoing interaction with information. The curricular integration of IL involves collaboration between multiple partners and negotiation, which is built on personal relationships. It includes pedagogies for contextualising IL in an academic curriculum and an ongoing interaction with information. Second, librarians played proactive roles in IL integration which may involve either bottom

up or top-down approaches within the institution. The bottom-up approach to integrating IL will only occur when course coordinators and lecturers are aware of IL and are willing to have it integrated into their course curriculum. The heads of faculties are important in the top–down approach. The bottom-up approach here means that integration is implemented by individual teaching staff including lecturers and librarians. The top-down approach here means the curricular integration of IL is endorsed by the institute or by the faculty. In both approaches student needs and feedback are critical. Please refer to the full report (Wang, 2010) for further details of the research findings.

The remainder of this section elaborates the key principles that were applied in the study to enable the development of a community of practice focussed on information literacy integration. These principles can be summarised as:

1) knowledge is socially constructed and the social nature of cognitive development serves as a powerful dialogic model for understanding how IL could be integrated into the curriculum in a community of practice;

2) tools play an important role in these social interactions in curriculum integration;

3) internalisation can serve as a powerful model when data is generated and analysed using this research approach.

Principle 1 - Knowledge is socially constructed and the social nature of cognitive development serves as a powerful dialogic model for understanding how information literacy could be integrated into the curriculum in a community of practice

Sociocultural theories propose that mental constructions of reality are based on people's experiences and views; that the researcher and the participants are inseparable and interact to

influence one another. Sociocultural theories recognise that knowledge is a construction between individuals or between members of a group of people. The process of the study was therefore, actually a process of a high level of interaction between individual participants and the on-site researcher. The interviews conducted represented social interaction. In the interview phase, the interviewing researcher dialogued and interacted with the chosen experienced librarians and academic staff to share their knowledge and experience of curricular integration. Individual interviews provided the participants with the opportunity to share their experience and perspectives on integration with the researcher. They explored effective ways of integrating IL into academic curriculum. Both academic staff and librarians were viewed as collaborators and valued experts. After each interview, the participants were also asked to review transcripts and to provide comments on them. This was another example of an interaction.

Sociocultural theories were also applied in the entire process of the development phase. In the development phase, a socially interactive environment was established in which a community of practice for IL integration was formed. In this community, both the researcher and participants shared knowledge; collaborated and co-constructed the best way to integrate IL into the course curriculum in each year. They communicated and negotiated to support each other in the development of learning outcomes, assignments, activities and assessment. They worked collaboratively by building on each other's knowledge and developing teaching resources with which to scaffold students' learning.

The collaborative learning aspect of sociocultural theories was also applied to the curricular design, especially assignments, class activities and other assessment. Students were provided with a collaborative learning environment to enable them not only to interact with the

learning tools but also with peers and lecturers, thus becoming engaged in the learning process. For example, in an IL lecture, instead of showing and telling students the variety of information resources, the librarian asked students to talk to their peers in the class about their research topic and the resources required to conduct their research and how to find these resources. Each group discussed and tried different resources, then reported back to the class with the reasons why they thought these resources would be useful. The librarian intervened from time to time to extend students' knowledge to a wider range of resources. Through these brainstorming discussions, interactions and the instructor's intervention, students were able to internalise the variety of information resources for their research topic.

Principle 2 - Tools play an important role in these social interactions

The second principle is that human learning and development are mediated by tools or signs - semiotics. Vygotsky elaborates Engels' concept of human labour and tool use as the means by which man changes nature and, in so doing, transforms himself (Vygotsky, 1987). In this study, tools were used in different situations in a learning and development environment. For example, in the interview phase, learning tools such as assignments, class activities, an annotated bibliography, web resource evaluation criteria, and an assignment marking schedule, were all used during the dialogues and interactions. Through the use of these tools, a new understanding of the curricular integration of IL was raised and new knowledge of the IL curriculum was developed. Learning tools were also used in the re-designing of IL curriculum. In the curricular working groups, electronic means such as databases, journal articles, patents, online books and an online peer review system were used. These were used as learning tools for the design of class activities. In the IL integrated activities, students were provided with a social collaborative learning environment to enable them to interact

with the learning tools and to complete a course task, class activity, or an assignment. Vygotsky claimed that the internalisation of the use of these tools in social interaction leads to higher order of thinking development (Vygotsky, 1986).

Principle 3 - internalisation serves as a powerful model when data is generated and analysed using this research approach.

The third principle underpinning the study is that the learning and development process is a process of internalisation. Vygotsky (1978) argued that learning and development occurs on two levels: first on the social plane (interactions with others) and then on the psychological plane (within the learner or researcher). The external interaction will then become internalised into a transformed version of interaction and become part of human independent developmental achievement. This internalisation has been applied to the process of data analysis in the study. Based on sociocultural theories (Vygotsky, 1978), the data analysis process is actually a process of internalisation which consists of a series of transformations from interpersonal activities to intrapersonal development and a process of meaning making. Through the external interactions with the participants in both the interview and development phase, knowledge was reconstructed and began to occur internally. Through this internalising process, the interview data and group discussions were analysed by going through an inductive process of making meaning of the co-constructed data. As result of this internalisation, an IL integration model was shaped and gradually developed from the study.

Benefits of adopting sociocultural approaches to information literacy research and curriculum development

The study described in this paper has adopted sociocultural theories both as a research approach and, at the same time, in the process of curriculum design in higher education. All the people who participated in the research benefited from the study in the community of IL practice. The benefits of applying sociocultural theories in the study, which are likely to apply to other studies of IL adopting sociocultural perspectives are summarised below:

- Research understandings were co-constructed

By applying sociocultural theories into IL research, data was co-constructed by the researcher and participants. According to Vygotsky, human cognition is formed through engagement in social activities (Vygotsky, 1978). In the data co-construction process, both researcher and participants collaborate and generate new knowledge through dialogue and interactions. For example, during interviews in this study, both participants and researcher dialogued and shared their experiences of IL integration. IL class activities, assessment tools and samples of IL teaching resources were all used as interactive tools to gain a full understanding of how IL had been integrated into the academic curriculum. New knowledge about IL integration was generated through these communications and interactions, and through the demonstration of learning tools. Progressively, a shared understanding of curricular integration of IL in higher education was reached amongst members of the community of practice.

- A Community of IL integration practice was formed for all members to share knowledge and provide best support to students

Based on sociocultural theories, a community of IL integration practice was formed in the research. The members of community included the academics, faculty librarians, learning designers, student learning advisors, IT support and the researcher. In this community of IL integration practice, people learnt from each other, shared their expertise and provided the

best solution to IL integration and IL curriculum design and also provided best possible support to students.

- IL tools were developed and used successfully in the IL integration practice

Underpinning sociocultural theories, the IL tools were used in the interview phase to obtain better understanding of IL integration and IL curriculum design as indicated under Principle 2. New IL tools were also developed through this study. For example, a *Guideline for an institutional IL teaching strategy* as shown in Table 1 below was developed as an IL tool to enable both academic staff and faculty librarian to understand the importance of IL and why we need to integrate IL into the curriculum.

Accrediting Professional Organisation Requirements	A University Graduate Profile	ANZIIL IL Standards
1.4 Recognise when further information is needed and be able to find it by identifying, evaluating and drawing conclusions from all pertinent sources of information, and by designing and carrying out experiments.	II 5. An ability to recognise when information is needed and a capacity to locate, evaluate and use this information effectively.	1 and 2 and 3. The information literate person recognises the need for information and determines the nature and extent of the information needed; accesses needed information effectively and efficiently. Critically evaluates information and the information seeking process.
1.7 Communicate effectively, comprehending and writing effective reports and design documentation, summarising information, making effective oral presentations and giving	II 7. Ability to access, identify, organise and communicate knowledge effectively in both written and spoken English and/or Maori.	5. The information literate person applies prior and new information to construct new concepts or create new understandings. Communicates knowledge and new understandings effectively.

and receiving clear oral instructions.		
1.8 Understand the role of engineers and their responsibility to society by demonstrating an understanding of the general responsibilities of a professional engineer.	II 4. Intellectual integrity, respect for truth and for the ethics of research and scholarly activity.	6. The information literate person uses information with understanding and acknowledges cultural, ethical, economic, legal, and social issues surrounding the use of information.
1.3 Synthesise and demonstrate the efficacy of solutions to part or all of complex engineering problems.		5. The information literate person applies prior and new information to construct new concepts or create new understandings.
	I 2. An understanding and appreciation of current issues and debates in the major fields of knowledge studied.	2.4 The information literate person keeps up to date with information sources, information technologies, information access tools and investigative methods,
	II 1. A capacity for critical, conceptual and reflective thinking.	3. The information literate person critically evaluates information and the information seeking process.

Table 1: Guideline for an institutional IL teaching strategy

- A Student-centred approach to IL curriculum design and delivery was made possible

Vygotsky (1978) described learning as being embedded within social events and occurring as a learner interacts with other people, objects, and events in the environment. Based on sociocultural theories, with social interaction, students talk to learn, and the affective and subjective aspects of learning are brought into play as students must articulate their viewpoints and listen to the views of other group members (Stacey, 2005). This is a student-centred approach which focuses on what students have learnt. In the IL curriculum design of

the research, all the IL assignments, class and online activities were designed to enable students to learn in a collaborative environment. Students interacted with each other and with the lecturer and the librarian. They also learnt by doing and by discussing questions and finding solutions.

All research approaches have advantages and disadvantages. The sociocultural approach also has its limitations. For example, it relies on social construction of knowledge in a community of practice. Thus, the community members' experiences are very important in co-constructing and generating new knowledge. Different participants in different community may generate different new knowledge and understanding of the same issue. Therefore, when adopting this approach, selecting appropriate participants to suit the aims of the research or course design is very important.

Conclusion

In summary, this article provides an overview of sociocultural theories and their application in IL research and IL integration practice. Sociocultural theories recognise that knowledge is a construction between individuals or between members of a group of people. The recent study showed that sociocultural theories can be adopted in an entire IL research process as well as in the IL curricular design process. It also demonstrated that a community of IL practice can be formed based on sociocultural theories. In this community, learning and knowing are redefined as the activities of 'old timers' – the experienced academics and librarians who are exercising their knowledge and experiences and assisting 'the novices' – the researcher, to participate alongside them (Nuthall, 1997). The researcher has gained much knowledge of IL integration. In the development phase, the members of community included the academic staff, librarians, learning designers, student learning advisors, IT

support staff and the researcher. In this community of IL integration practice, community members learnt from each other, shared their expertise, collaborated and co-constructed the best way for IL integration and IL curricular design; they worked collaboratively by building on each other's knowledge and developing scaffolding teaching material with which to assist students in their learning. In this community of IL practice, the researcher and participants became expert learners within the context of IL curricular design. They developed a new understanding of IL in practice and how to implement it in the curricular design and development process therefore to provide the best possible support for students in their learning.

References

Bruce, C. S. (1997). *The seven faces of information literacy*. Adelaide: Auslib Press.

Bryman, A. (2001). *Social research methods*. Oxford: Oxford University Press.

Cochrane Qualitative Research Methods Group. (2009). Critical appraisal of qualitative
     research.   Retrieved 10 June, 2010, from
     http://www.joannabriggs.edu.au/cqrmg/documents/Cochrane_Guidance/Chapter6_Gu
     idance_Critical_Appraisal.pdf

Dunn, K. (2002). Assessing information literacy skills in the California State University: A
     progress report. *The Journal of Academic Librarianship, 28*(1-2), 26-35.

Elmborg, J. (2006). Critical information literacy: Implications for instructional practice. *The
     Journal of Academic Librarianship, 32*(2), 192-199.

Gross, M., & Latham, D. (2009). Undergraduate perceptions of information literacy:
     Defining, attaining, and self-assessing skills. *College & Research Libraries*(4), 336-
     349.

Hale-Haniff, M., & Pasztor, A. (1999). Co-constructing subjective experience: A constructivist approach. Retrieved 16 Oct, 2009, from http://www.cs.fiu.edu/~pasztora/co-constr/coconstr2.html

Hughes, H. (2007). Critical incident technique. In S. Lipu, K. Williamson and Lloyd,, A. (Ed.), *Exploring methods in information literacy research, Topics in Australasian Library and Information Studies, Number 28* (pp. 49-66). Wagga Wagga: Centre for Information Studies, Charles Sturt University.

Hughes, H. (2009). *International students using online information resources to learn.* Unpublished PhD, Queensland University of Technology.

John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian framework. *Educational Psychologist, 31*(3), 191-206.

Johnson, K. E. (2009). *Second language teacher education: A sociocultural perspective*. New York ; London: Routledge.

Korobili, S., Malliari, A., & Christodoulou, G. (2008). Information literacy paradigm in academic libraries in Greece and Cyprus. *Reference Services Review, 36*(2), 180-193.

Lave, J. (1988). *Cognition in practice: Mind, mathematics, and culture in everyday life*. Cambridge: Cambridge University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Lazarow, M. (2004, 13-16 June, 2004). *Constructing information literacy: A Vygotsky approach.* Paper presented at the 3rd International Lifelong Learning Conference: Whose responsibility and what is your contribution, Yeppoon, Queensland, Australia.

Lemke, J. L. (1990). *Talking science: Language, learning, and values*. Norwood, New Jersey: Ablex Publishing Corporation.

Limberg, L., & Alexandersson, M. (2010). Learning and information seeking. In M. Bates & M. N. Maack (Eds.), *Encyclopedia of Library and Information Sciences* (3rd ed., pp. 3252-3263). New York: Taylor and Francis Group.

Lipu, S., Williamson, K., & Lloyd, A. (2007). *Exploring methods in information literacy research*. Wagga Wagga, NSW: Centre for Information Studies, Charles Sturt University.

Lloyd, A., & Williamson, K. (2008). Towards an understanding of information literacy in context: Implications for research. *Journal of Librarianship and Information Science, 40*(1), 3-12.

Mantero, M. (2002). *Scaffolding revisited: Sociocultural pedagogy within the foreign language classroom*. Retrieved from Education Resources Information Center (ERIC) database. (ERIC Document No ED459623).

Mason, L. (2007). Introduction: Bridging the cognitive and sociocultural approaches in research on conceptual change: Is it feasible? *Educational Psychologist, 42*(1), 1-7.

McAdoo, M. L. (2008). *A case study of faculty perceptions of information literacy and its integration into the curriculum.* Unpublished EdD thesis, Indiana University of Pennsylvania, Pennsylvania. Retrieved from ProQuest Dissertations & Theses database.

McGuinness, C. (2006). What faculty think–Exploring the barriers to information literacy development in undergraduate education. *The Journal of Academic Librarianship, 32*(6), 573-582.

Neely, T. Y. (2000). *Aspects of information literacy: A sociological and psychological study.* Unpublished PhD thesis, University of Pittsburgh, Pennsylvania. Retrieved from ProQuest Dissertations & Theses database.

Nuthall, G. (1997). Understanding student thinking and learning in the classroom. In B. J. Biddle, T. C. Good & I. Goodson (Eds.), *The International Handbook of Teachers and Teaching* (pp. 681-768). Dortrecht: Kluwer Academic publishers.

Palincsar, A. S. (1998). Social constructivist perspectives on teaching and learning. *Annual Review of Psychology, 49*, 345-375

Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.

Rogoff, B. (2003). *Cultural nature of human development*. New York: Oxford University Press.

Saunders, L. (2009). The future of information literacy in academic libraries: A Delphi study. *portal: Libraries & the Academy, 9*(1), 99-114.

Stacey, E. (2005). A constructivist framework for online collaborative learning: Adult learning and collaborative learning theory. In T. S. Roberts (Ed.), *Computer-Supported Collaborative Learning in Higher Education*. London: Idea Group Publishing.

Talja, S., Tuominen, K., & Savolainen, R. (2005). "Isms" in information science: constructivism, collectivism and constructionism. *Journal of Documentation, 61*(1), 79-101.

Tuominen, K., Savolainen, R., & Talja, S. (2005). Information literacy as a sociotechnical practice. *Library Quarterly, 75*(3), 329-345.

Vygotsky, L. S. (1981). The instrumental method in psychology. In J. Wertsch (Ed.), *The Concept of Activity in Soviet Psychology* (pp. 3-35). NY: Sharpe: Armonk.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

Vygotsky, L. S. (1986). *Thought and language*. Cambridge: M.I.T. Press, Massachusetts Institute of Technology.

Wang, L. (2006). *Information literacy courses - A shift from a teacher-centred to a collaborative learning environment.* Paper presented at the 4th International Lifelong Learning Conference: Partners, pathways, and pedagogies, Yeppoon, Central Queensland, Australia.

Wang, L. (2007). Sociocultural learning theories and information literacy teaching activities in higher education. *Reference & User Services Quarterly, 47*(2), 149-158.

Wang, L. (2010). *Integrating information literacy into higher education curricula- An IL curricular integration model.* Unpublished PhD thesis, Queensland University of Technology. Retrieved 11 Sept 2011, from http://eprints.qut.edu.au/41747/

Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action.* London: Harvester Wheatsheaf.

Whiteside, A. L. (2007). *Exploring social presence in communities of practice within a hybrid learning environment: a longitudinal examination of two case studies within the school technology leadership graduate-level certificate program.* Unpublished PhD, University of Minnesota, Minnesota. Retrieved from ProQuest Dissertations & Theses database.

Wright, A. J. (2007). *Preservice preparation programs for academic librarians for teaching information literacy.* Unpublished EdD Thesis, Morgan State University, Maryland. Retrieved from ProQuest Dissertations & Theses database.