

A Sociocultural Analysis of Evolving Motivation in the Study of Computing Knowledge and Skills

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Within the cognitive paradigm, learning motivation is often investigated either as antecedents to or consequences of learning using standardized self-report instruments. Such conceptualization often fails to capture the developmental nature of motivation and loses sight of the possible impact of different contextual influences originated from the social milieu in which learning occurs. Drawing on sociocultural theories concerning social interaction and learning, this study provides evidences showing how motivation to learn is developed through collaborative participation in learning, and therefore, forming an inherent part of the learning process. The learning experiences of a selected group of elderly learners studying computing knowledge and skills at a social centre were described. Data generated from classroom observation, interviews were used to develop a model of evolving motivation that explains how this group of anxious novices has gradually developed into motivated experts capable of showcasing their computing achievement to the public in various occasions. The model highlights the significance of scaffolding derived from the extended social network in helping elderly learners make sense of their learning and develop lasting interest in computing.

Background

Elderly people in Chinese societies, probably in other places as well (Ryan, Szechtman, & Bodkin, 1992), are usually perceived as technophobic and slow to adapt to technological change. However, a recent TV documentary broadcasted in Hong Kong told a very different story and challenged the general perception that "elderly people don't do IT". The film provided a vivid description of the thrill, joy and success of a group of elderly people in their course of learning. This group of elderly people seemed to have rejuvenated their desire for learning and demonstrated strong motivation in acquiring the new skills. Being an educational researcher in the field of motivation and learning, I was perplexed and eager to explore how and why this group of elderly learners had been successful in learning computing skills. While the film provided little information about the design of the computing courses, it revealed in a subtle way that active classroom participation, interaction with classmates and participation in other virtual communities might be crucial for the successful learning of computing skills among these elderly learners.

The need for a sociocultural perspective on motivation

Cognitive theories dominate most of the current research on motivation to learn. The emphasis is placed on understanding what kind of perceptions or mental entities motivates students to learn and how individual students differ from each other on these constructs. The major weaknesses of this theoretical perspective are that the developmental nature of motivation is often ignored and the effect of contextual influences seldom explored. Furthermore, applying this research perspective to understanding the development of motivation among this group of elderly learners may be problematic. First, given the lack of previous research evidence, it is not known if a specific cognitive motivational construct will apply to this particular sample; and second, predetermined self-report scales or controlled experimental designs, commonly used among cognitive motivational studies, will not be effective in eliciting elderly learners' feelings, opinions and experiences in learning computers; further still, these unfamiliar data collection procedures may arouse unnecessary anxieties and doubts among elderly people.

Because the current study focused on exploring the motivated learning processes of this group of elderly learners, a theoretical framing that is sensitive to the emerging or dynamic nature of motivation will be more instrumental. Sociocultural researchers like Turner (2001) and Volet (1999 & 2001) have advocated a situative or contextual perspective on motivation. They draw heavily from the work of Vygotsky, who maintains that the development of higher mental functions is derived from social life and mediated by tools and signs. In line with a Vygotskian perspective, other sociocultural theorists on motivation have considered the role of tools, intersubjectivity and zone of proximal development (Brophy, 1999; Hickey, 1997; Sivan, 1986). In general, motivation is conceptualized as socially constructed or appropriated through social interaction and relationship. For example, Forman & McPhail (1993) have shown how social interaction fostered the development of motivation in solving complex problems. Lave and Wenger (1991) demonstrated how engagement in activities was situated within the relationship and interaction between experienced and novice learners of a specific community. In other words, sociocultural researchers are more interested in understanding the processes that explain how and why individuals become engaged in various learning activities and gradually being accepted as legitimate members of the associated community. According to Turner (2001, p.88), this type of motivated learning process 'depends on interpersonal, or social, relations in learning communities and the continuing development of personal identities'.

The Current Study

The current study is part of a research project about IT learning experiences of elderly people in a large social services organization in Hong Kong. This study explored how and why a selected group of Chinese elderly learners developed deep interest in the learning of information technology skills. Several studies have shown that elderly people's attitudes towards computer and their use may become more positive after some controlled computing experiences (e.g. Dyck & Smither, 1996; Jay & Wills, 1992; Morris, 1994). What is not known is how far these controlled experiences would last. In other words, exposing to computer for a limited period of time does not guarantee the development of lasting interest and motivation in learning IT. The current study involved a group of Chinese elderly learners who demonstrated a genuine interest and motivation in IT skills. Their learning experiences will enable us to learn more about the development of motivation over time and various factors contributing to this development.

Method

As the researcher knew little about how a social centre runs IT programs for elderly people, it was crucial to get hold of some important informants that could offer assistance at various stages of the research, including the provision of relevant background information, the selection of interviewees, the arrangement of interviews and classroom observation. The centre supervisor and the social worker responsible for the IT program were deemed to be perfect guides.

The interviews

Selecting interviewees

The selected interviewees (N=10) were "core members" of the IT program, IT Club for Elderly. They were among those in the first two cohorts of learners enrolled in these computer courses. In other words, they were experienced learners (over 2 years) in the IT program offered by the social centre. Most of them have participated in various computer exhibition programs. Some of them also joined the centre's initiative to promote the use of IT in schools. However, prior to the studies at this social centre, their experiences in using IT were extremely limited. The age of this group of learners ranged between 57 and 88. Four were male and six female. Most of them finished secondary school education.

Interviews & Observations

Each interview lasted for an hour. The interviews were arranged by the social worker and were held at the social centre. During the interviews, interviewees were asked to share their experiences, feelings and opinions about learning IT. The format of the interviews was semi-structural. Before starting the interviews, the researcher explained the importance of the study and assured the interviewees of their right to quit or to refuse answering any question. In addition, permission was sought with the interviewees for taping the interviews. The recorded interviews were then transcribed and a copy was sent back to the elderly learners for verification.

During the interviews, interviewees were encouraged to share their experiences in learning computing. The following were the key questions asked during the interviews:

1. Why were you interested in learning computer at the beginning?
2. Describe a typical computing lesson.
3. Describe any difficulties you had during the course of learning computing skills.
4. Describe the computing skills you have acquired.
5. How did your family members and friends feel about your learning of these computing skills?
6. Does the learning of these computing skills affect your daily lives in any way?

Observation was conducted after the interviews. Notes were taken, which were used for triangulating the information gathered from the interviews.

Survey

A questionnaire was designed to validate the interview findings and to further explore the learning experiences of different groups of elderly learners. The items in the questionnaire were designed after consulting initial analyses of the interview scripts. 25 elderly learners enrolled in different computing courses offered by the center were asked to complete the questionnaire. These elderly learners consisted of both experienced (N=7; over 1 year) and

new learners (N=15; less than 1 year). Their age ranged between 57 and 75, with a mean of 64.4. 10 were male and 5 female. 10 finished secondary school; 5 completed junior secondary school; 8 finished primary schools; and 2 did not have any formal schooling experiences. The purposes of this survey were to confirm the interview findings and to reveal possible inconsistencies. The questionnaire contained the following sections: initial feeling about learning computing skills; reasons for learning computing skills; experiences about learning computing skills; learning attitudes; learning strategies; learning outcomes and perceived importance of learning outcomes. With a few exceptions (4 items), most of the items (N=99) were set in a Likert scale (1=very unlike me; 5=very like me). With the assistance of a social worker, a research assistant administered the survey at the social center in two different sessions. In the first session, 12 elderly learners participated and 13 participated the second one. At the beginning of each session, the research assistant explained the purposes of the study and led elderly learners to do a few sample items so as to familiarize them with the format of the questionnaire and the scoring procedure. After the brief training, the research assistant read aloud each item and explained the options. The social worker attended to whoever needed clarification and assistance. Each survey session lasted for about 45 minutes.

Results & Discussion

The analyses followed largely the grounded theory method (Strauss & Corbin, 1998). A coding system was developed after a thorough analysis of the tapes and the transcripts. The interview data were then coded and categorized. After careful comparison across different cases, major themes were generated. These themes were cross validated with observation notes and survey results. Based on the generalized themes, "evolving motivation" was chosen as the core concept for the development of a model explaining the motivated learning processes. The following sections described these themes and the model deduced from the analyses.

Major themes:

1. *Initial problems in learning computing skills*

Elderly people had the following worries or concerns when they first engaged in a computing course:

- They might not have the necessary knowledge to do a computing course;
- Their limited knowledge of English language might hinder the learning process;
- They disliked learning computing skills together with young people for several reasons, including slowing down the pace of a lesson, not wanting to show their lack of ability, considering that young people would usually have more serious purposes, for example, career development);
- They considered that their limited prior knowledge of computing might cause learning difficulties.

The following quotation succinctly shows these concerns in a vivid way:

At the beginning, I couldn't even control the mouse, and was very frightened to touch it.
(LLP)

1. *Evolving motivation*

From all accounts, these interviewees' motivation to learn computing skills was quite low at the beginning. Most of them reported a general interest in understanding computer at the beginning of these courses (to learn what a computer is and what it can do). Their initial interest in learning computing knowledge and skills had a social background. Three social factors contributed to the formation of their initial interest in IT.

a/ encouragement from family members and friends;

"In the beginning of the course, I didn't know how to complete the exercises. My daughter said she would help me out. Once, she took a day off and helped me with the exercises. Now, I don't need much help. She said, 'mum's smart, learning well.'"(WSM).

b/ a general surge of interest in IT and its application in Hong Kong (mean=4.32; 3 items);

"First I want to learn something; second, I don't want to be cut off from the society, because when people talk about computer, but you know nothing, it then seems that you are left behind." (CSF)

"I come here to learn computer everyday. I really want to learn because it's the most advanced technology and I've heard that the future's a computing age." (CCY)

c/ the Centre started offering computing courses specifically designed for elderly people

"I, um, by chance I heard that computing courses were offered here. I always wanted to learn; those run by private centres are very expensive. I cannot afford it and they are usually for young adults, not for elderly people. If you go, you may make a joke of yourself there." (LWN)

After engaging in the learning of computing for some time, these interviewees showed a strong motivation in mastering computing skills and knowledge. This strong motivation could be demonstrated through the followings:

a/ their time devoted to learning and practising computing skills;

b/ a strong intention to further their learning;

c/ a great interest in computing skills and knowledge (e.g. reading books on computing; participating in computing exhibitions);

d/ sharing their knowledge with others;

e/encouraging friends to do computing.

The selected excerpts below are indicators of their strong motivation:

"It's hard to say; I anticipate that it takes me 1.5 hours (to come to the centre); sometimes it may take less time but sometimes, it takes me 2 hours to come because of the jam. After finishing the one-hour course, I'll stay here all day long. If a computer is available, I'll play as long as possible, if not, I'll watch people playing." (LWN)

"I am obsessed, yeah, I am." (KTM)

"It's fun." (WSM)

"My friends were retired. They are now living in Canada. I always ask them to learn to use the computer. They just ask their sons to send messages and photos to me. I urged them to do it themselves." (WSM)

The survey findings also confirmed these positive learning outcomes or attitudes. Nevertheless, it was surprised to find that elderly learners responded positively to items assessing their level of anxiety, which means that they still felt anxious about learning computing and worried about their ability to do well. The contradictory results suggested that anxiety and feeling of efficacy are not good indicators of learning outcomes. Probably, while some gradually overcame the problems of anxiety and low efficacy, others might still remain affected despite how well they have learnt. Another reason for this contradiction between qualitative and quantitative data may have been resulted from the inclusion of new learners in the survey, who might still be bothered by these problems.

2. A typical learning session

A typical learning session of computing skills according to these elderly learners involved two parts: the lesson and the practice session. Interviewees put more emphasis on the importance of the practice part. During a lesson, the tutor would explain the main task while the students paired up to do the note and practised the examples following the tutor's demonstration. Individual help were given whenever required.

"The tutors are very patient. Ah, I remember the one teaching the basic course, he's only 17 years old, named Chiu. He's very good. A 17-year-old, should be restless, but he's very patient. People asking him questions, he would patiently answer them. He did not feel irritated. Every tutor is very good. You know, elderly women are forgetful." (CCY)

Lesson notes were not normally given to students when these computing courses were first offered. Elderly learners needed to jot down detailed notes and they often compared notes with each other or requested others for help during the practice period.

During the practice period, students would follow their notes to finish the learning tasks. Helping others to learn and collaborating with others were two major characteristics of a practice period. Some interviewees would book a practice period together in order that they could help each other out.

3. *The importance of collaboration*

Collaboration was reported as a major process contributing to the successful learning of computing skills. Two different forms of collaboration were discussed:

a/ student initiated collaboration: Requesting help from a capable peer during the practice period; observing how other students finish a task; discussing with classmates; practicing together; sharing notes and results; distributing tasks during the lesson (one jots down notes; another follows the demonstration).

While survey results confirmed the importance of the first five forms of collaboration (mean=3.21; 7 items), the last one was not considered significant (mean=2.36; 1 item). This form of collaboration might be confined to core members only, as notes were not normally distributed when computing courses were first offered. The following excerpts show the importance of collaboration.

"Yeah! Yeah! Yeah! It's very good. Always having discussion with classmates...for example when I have a problem, I'll just ask, "Mr. Ip, come, my big brother, please help me." If he knows, he'll come over to teach me. If I know, I'll help him. So helping each other out, it's quite good." (LWF)

"Playing yourself at home? I don't know why playing yourself at home is not that fun. Playing it together here is much more interesting...we discuss together, whenever you don't know something, you just ask the classmate sitting next to you." (LLB)

"The most important thing is... the time we learn together. You help me and I help you; we can learn faster." (KTM)

b/Centre-initiated collaboration: Participating in various exhibitions and seminar. As indicated in the interview excerpt below, a lot of chances of collaboration could be found during the exhibition.

"Mr. Leung told us that there would be an exhibition and we would be having a counter there. He asked if we were interested in participating in this activity. He suggested that we could take turns and hoped we all could go. We shared the work and everyone helped a bit, cutting, drawing, running a website, putting up the board. We helped out in whatever ways we could and chipped in our time." (LWN)

In addition, interviewees recognized social benefits gained during the collaboration-developing friendship. The following excerpt shows how friendship was developed in the course of learning.

"I am very happy to see others coming to the class. Because we are kind of helping each other out when our memory does not serve us well. Gradually, we became good friends, like primary kids together studying things that we should have learnt ages ago. We always remember each other, and if someone miss the class for a while, we'll go 'oh, haven't seen you for long...'. I feel the warmth and the closeness here." (KTM)

While collaboration was considered important, the survey results showed that practicing on their own was still considered as an important learning strategy.

4. Difficulties in learning computing skills

The following are the difficulties in learning computing skills generally reported:

- Technical problems: small display; inconsistent settings of the computers in the Centre; different settings between home and Centre computers;
- Teacher problems: failing to adjust to the learning pace of elderly people; failing to build on elderly people's prior knowledge of computing (a knowledge gap); failing to offer detailed notes;
- Resources problems: a lack of computers; enduring a long wait before being accepted to a course

1. Benefits gained from learning computer

Three different types of benefits were reported. These benefits were also confirmed in the survey results.

- Personal development: Interviewees considered learning and mastering computing skills developed their sense of efficacy and achievement. The following two excerpts are examples of how these interviewees explained their sense of achievement.

"We were invited to an exhibition, a stall was given to us. All of us, twenty something classmates put our works up on the board...and a lot of people visited our stall. They go, "wow! These elderly people are very smart, know how to get online, everyone has their own web pages." They took a good look. We were very happy. Do you think so?" (LLB)

"I can show that I am smart, no need to always say "I don't know" (WSM)

- Educational development: As shown in the following excerpt, the acquisition of computing knowledge and skills provided interviewees with a chance to maintain and develop their cognitive functioning and gain new socially valued knowledge.

"It's kind of forcing yourself to learn what you should have learnt before. I've been a housewife for over twenty years. Until now, when I am already 67 years old, I got the chance to enroll (in this course)." (KTM)

- Social development: Interviewees considered that computing skills and knowledge provided them with a novel form of social networking (sending emails to family members local and overseas; making cards and e-cards for friends). These newly acquired skills also enabled them to contribute to the well-being of others (e.g. sending cards to earthquake victims in Taiwan). In other words, mastering computing skills helped this group of learners develop a sense of social cohesion and a new identity.

"With computers, and em, after mastering the skills and email, as KTM said, relationships among people are much closer...if my nieces and nephews want to go

"yum cha" with me, they will send me an email, asking when I'll be free for lunch or dinner. They put down the details and I'll know how to reply. I'll tell them which day is better for me and they will reply. You don't even need to pick up the phone. It's better than using the phone." (WSM)

"After learning computer, we have more things to talk about." (LLB).

A model of evolving motivation

To search for an explanation for the development of lasting interest or steadfast motivation in learning computing skills among this group of elderly learners, "evolving motivation" was chosen as the core concept and a model was developed. The model development process basically involved the search for the relationships and links between different themes through constant comparison. The resulting model was therefore grounded in the data and could be considered as a viable explanation for the development of strong motivation in learning IT of this group of elderly learners. Figure 1 shows the model.

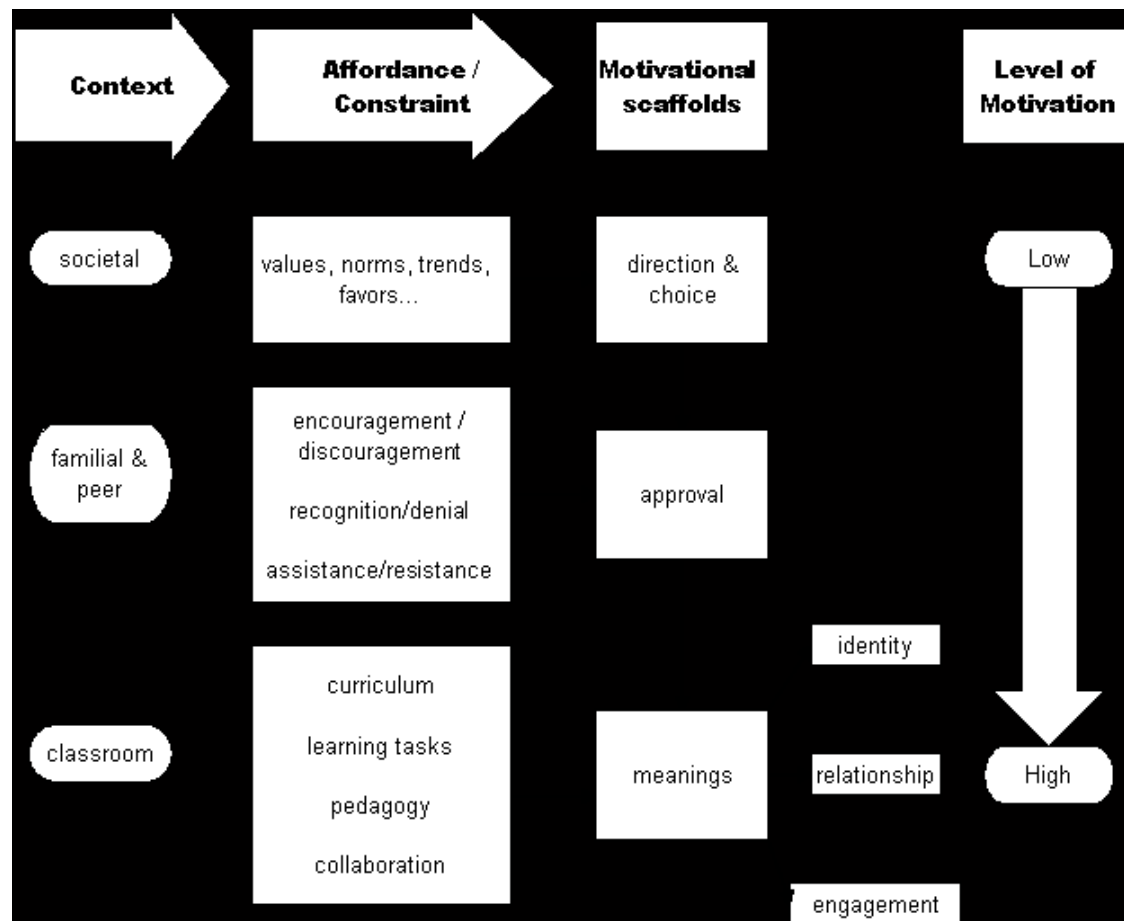


Figure 1: A Model of Evolving Motivation

The model explains the motivation of this group of elderly learners in terms of affordance (and constraints) provided within networked social contexts. Each layer of social support provides learners with different forms of motivational scaffoldings. For example, at the most outskirts layer lies the general societal influences; prevailing values and norms of a society provide a general direction or choice for learning. Some kind of learning may be considered

more valuable, important, or prestigious than others within a specific society. In this case, elderly learners considered that learning IT skills was more important than taking other interest courses.

Familial and peer supports are found in the second layer. Encouragement and support of family members are extremely important for this group of elderly learners. Most of the interviewees explained how their family members encouraged them to take these courses. Some of them also reported how pleased they were when their family members proudly spoke of their significant IT achievement in different social settings. Peer supports are always significant. Most of the participants in the survey reported that they came to know about the computing courses through their friends.

Tutors and classmates are the key members forming the most immediate layer of social support. Various forms of supports were reported. Through selecting suitable materials and learning tasks, pacing teaching to suit the progress of elderly learners and encouraging participation in decision-making processes, tutors constructed a learning environment that was warm, responsive and autonomous for this group of learners. In addition, as discussed above, collaboration with classmates during a lesson or a practice session was crucial to the successful learning processes. The enabling learning environment helped elderly learners to find personal meanings in their learning; engagement in learning computing skills maintained their cognitive functioning and satisfied their needs for educational development; the mastery of these skills also helped them develop novel ways to maintain relationships (with friends, classmates and family members), and foster an identity that they were capable of using IT to meet their daily needs, to contribute to the well-being of others and to link up with people in different communities.

Taken together, these motivational scaffolds gradually contribute not just to the development of motivation among individual learners but also to the development of a learning community, which is characterized by a strong sense of purpose, commonness, and belonging. Without continuous collaboration and interaction, it would have been difficult for these elderly people to open up their motivated zone of proximal development. As indicated by the interviewees, collaboration and interaction not just enabled them to learn fast, but also contributed to the building of a close relationship between them. In addition, the creation of such a community is important for these elderly learners in several senses: first, learning experiences, including difficulties, joy and achievement are shared; second, drawing elderly learners' focus away from their anxieties, lacks and concerns to learning, mutuality and collaboration; third, alleviating problems related to loneliness and isolation elderly learners often face.

One point of interest is that a very high level of consistency is found in the motivational messages conveyed by different members in various social layers (represented by the arrows connecting the motivational scaffolds), which is certainly conducive to the reinforcement of lasting motivation. Nevertheless, this high level of consistency may not be always found. It is highly likely that one may experience contradictory messages from different social contexts or within a specific context. In this sense, it is important for a model of motivational development to consider simultaneously the influences of constraints, contradictions and even oppositions. Bringing the discussion back to the current research, it means that it is essential to study another group of elderly learners who are not lucky enough to have experienced consistent supports from different social contexts.

References

- Brophy, J. (1999). Toward a model of the value aspects of motivation in education: Developing appreciation for particular learning domains and activities. *Educational Psychologist, 34*, 75-85.
- Dyck, J. L., & Smither, J. a. (1996). Older adults' acquisition of word processing: The contribution of cognitive abilities and computer anxiety. *Computer in Human Behavior, 12*, 107-119.
- Forman, E. A., & McPhail, J. (1993). Vygotskian perspective on children's collaborative problem solving activities. In E. A. Forman, N. Minick, & C. A. Stone (Eds.), *Context for learning: Sociocultural dynamics in children's development* (pp. 213-229). New York, NY: Oxford University Press.
- Hickey, D. T. (1997). Motivation and contemporary socio-constructivist instructional perspectives. *Educational Psychologist, 32*(3), 175-193.
- Jay, G. M., & Willis, S. L. (1992). Influence of direct computer experience on older adults' attitudes towards computers. *Journal of Gerontology: Psychological Sciences, 47*, 250-257.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Morris, J. M. (1994). Computing training needs of older adults. *Educational Gerontology, 20*, 541-555.
- Ryan, E. B., Szechtman, B., & Bodkin, J. (1992). Attitudes toward younger and older adults learning to use computers. *Journal of Gerontology, 47*, 96-101.
- Sivan, E. (1986). Motivation in social constructivist theory. *Educational Psychologist, 21*, 209-233.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Grounded theory procedure and techniques*. Thousand Oaks, CA: Sage.
- Turner, J. C. (2001). Using context to enrich and challenge our understanding of motivation theory. In S. Volet & S. Järvelä (Eds.), *Motivation in learning context: Theoretical advances and methodological implications* (pp. 85-104). Amsterdam: Pergamon.
- Volet, S. (1999). Motivation within and across cultural-educational contexts: A multi-dimensional perspective. In T. Urdan (Ed.), *Advances in motivation and achievement: The role of context* (pp. 185-231). Stamford, CT: JAI Press.
- Volet, S. (2001). Understanding learning and motivation in context: A multi-dimensional and multi-level cognitive-situative perspective. In S. Volet & S. Järvelä (Eds.), *Motivation in learning context: Theoretical advances and methodological implications*(pp. 57-84). Amsterdam: Pergamon.