

Abstract

This study evaluates the efficacy of an innovative instructional model – Fostering Communities of Learners (FCL) – embedded in an information technology environment. The research examines the effect of the instructional model on the development of writing competence, reading comprehension, and self-efficacy of middle school students.

The learning principles underlying FCL are embedded in Vygotsky's (1962, 1978) language-centered sociocultural and sociohistorical theories of learning that have profoundly influenced educational research. Vygotsky (1962, 1978) asserted that higher mental processes are developed through social speech, discourse, being gradually internalized. The developmental learning process occurs through participation in collaborative activity with an adult or a more able peer. The socio-cognitive approach founded on Vygotsky's theory claims that to meet a child's potential an interactive learning environment must be created. Such an environment encourages the child to apply meta-cognitive skills. The dialogue within the learning community exposes its members to different levels of cognition (competence and knowledge) as expressed by the members of the group and the knowledge that each of its individual members brings. Discourse, therefore, is an authentic learning procedure through which students acquire insights and strategies. Participation in a group of discourse allows each participant to develop his or her understanding and cognition according to his or her pace and individual potential. Furthermore, becoming a group member and sensing success when meeting a challenge contributes to one's self-efficacy and motivation to accomplish future academic challenges.

The FCL model offers an operative learning process that is founded on Vygotsky's principles and the socio-cognitive approach. It is embedded in a disciplinary content and includes a system of interacting activities that result in a metacognitive environment. The three activities that are central to FCL are, *research*, *information sharing*, and *performance* of a consequential task. *Research* is performed in small groups focusing on an aspect of the general, broader, topic. The newly gained knowledge/expertise by each group is then *shared* with the classmates. To motivate shared learning students are required to *perform* a consequential task that requires them to learn all aspects of the joint topic. In addition, the FCL model includes the implementation of reciprocal teaching, a group activity geared to promote reading comprehension. Four strategies are regulated while reading a paragraph, *question generation*, *summarization* of the paragraph, *clarifying* unclear expressions or unfamiliar words, and *predicting* the content of the following paragraph. A qualitative

assessment is given to each student on his or her writing. These qualitative assessments, provided by the teacher or an expert fellow, include comments that explain what needs to be corrected while encouraging the student to progress to higher-levels of functioning.

In addition to studying the application of the FCL model, a main facet of this study is the examination of the effects of computer skills and information technology on the development of literacy and self-efficacy. The World Wide Web (WWW) offers an immediate and indirect access to a variety of sources of information, thereby facilitating the research process within the FCL instructional model. Nevertheless, the vast amount of information that students come across on the WWW requires them to skim the information online, to evaluate its relevancy, and make informed decisions through the filtering and controlling of the information. This process takes place with a simultaneous activation of problem-solving and decision-making strategies that contribute to the formation of a self-regulated learner who is capable of facing learning challenges on his own. Furthermore, the use of word processing tools can simplify the revision and version-management of an essay.

The FCL model is compared in this research to the "skill acquisition" approach that is based on traditional behaviorist principles. According to the skill acquisition approach, instruction is geared toward the acquisition of preset targets. Students are exposed to discrete, decontextualized, skills that are taught sequentially and are mastered through repeated practice and drill performed solitarily by the students. The teacher is the major source of information and is responsible for transferring knowledge and teaching the required discrete skills. The interaction in this model is, therefore, one-directional (uni-directional).

The participants are 90 students enrolled for one semester in three heterogeneous language art classes in a junior-high school. Each class was randomly assigned to one of three conditions. Two experimental groups were exposed to literacy instruction within communities of learners. One experimental group was exposed to literacy instruction within communities of learners only, while the second experimental group was exposed to literacy instruction within communities of learners in an information technology environment. The control group was exposed to traditional literacy instruction.

This research applied quantitative and qualitative methods of data collection and analysis. In order to evaluate the influence of the FCL model on reading comprehension, writing skills, and self efficacy, quantitative measures were used. These included, Standard

Progressive Matrices (Raven, 1947) that evaluates the cognitive level of the students; two measures of reading comprehension: a standardized measure, the Ortar Reading Test (Ortar, 1987) and experimenter devised reading assessments; a writing measure with a semi-holistic scoring method; and self-efficacy questionnaires in the realm of reading comprehension (Patterns of Learning Survey, Urdan, Roeser & Midgley, 1996) and writing (Pajares, Miller & Johnson, 1999). The qualitative methods examined the effects of the FCL instructional model on students' self-regulation, motivation, academic engagement, and cooperation with fellow students. In addition, qualitative methods such as classroom observation and portfolio analysis examined the role of discourse in student understanding.

The research asserted a number of hypotheses. The main hypothesis asserted that the intervention program would improve students' literacy achievement, compared to the control group. Another hypothesis claimed that students' of the two experimental groups will improve their scores on measures of reading comprehension, writing and self efficacy over the phases of intervention. The third hypothesis asserted that the use of computers will improve the literacy competence and self efficacy of students. Therefore, the hypothesis asserted that students exposed to the FCL instructional model within an information technology environment would benefit most from the intervention manifesting the highest improvement in reading comprehension writing and self efficacy from prior to after the intervention.

An analysis of the achievement measures, administered prior and after the literacy intervention, verifies the main hypothesis, namely that the FCL instructional model indeed fosters students' literacy performance more than traditional literacy instruction. All students exposed to the FCL instructional model portrayed a significant improvement on the writing measure from prior to after the intervention while students exposed to traditional literacy instruction showed no improvement at all. Further analysis of the results demonstrated that students exposed to FCL within an information technology environment improved their performance on the reading comprehension measures more than the other two groups. However, it was found that on the writing measure students exposed to the FCL intervention improved their performance more than students exposed to FCL in an information technology environment. The maintenance phase, which occurred six months after the intervention ceased, showed that both experimental groups continued to improve their performance on both reading comprehension and writing measures while students of the control group showed no improvement at all.

Observations made over time show that working in small groups contributes to the students becoming active learners; it allowed them to express themselves freely, to become involved and to contribute to the group discussions. Furthermore, it appears that the intimate work in small groups helped raise the confidence among the slower students allowing them to take an active part in the schoolwork. Students with a passive tendency manifested active interest in the collaborative work and performed the assigned tasks, this, in turn, helped raise their sense of belongingness and enhanced their self efficacy. Their change in attitude appears to be attributed to their sense of responsibility for tutoring their peers, and the publicity of their writing assignments. The observations also show that the collaborative engagement raised the level of discussion among students and that insights made by the group members led to a deeper analysis expressed in the writing of the text. An analysis of the portfolios show that skilled writers made use of the insights they had gained during the discussions within the group. They included in their essays conflicts regarding the subjects they studied and reached deeper conclusions (this is in contrast to novice "knowledge telling" writers). An assessment of the influence of the qualitative assessment on students' writing competence shows that students responded to the differential feedback made by the teacher manifesting higher skill in their next revision. Hence, it appears that the written dialogue, formed between teacher and students, improves the students' writing skills.

In sum, the research supports the hypothesis that the FCL is indeed a dynamic and interactive model that allows students to develop their understanding and cognition according to their pace and individual potential.