

## REFEREED ARTICLES

### Designing Intentional Transfer of Knowledge for the Purpose of Deeper Understanding

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#### **Abstract**

*Teachers and administrators must embrace the paradigm shift that has occurred with regards to student engagement, and expectation of teachers. The roles of both the student and the teacher have shifted. Because of increased student access to information, the teacher is becoming a facilitator who prepares the classroom for exploration and questioning. Teaching must centre on cultivating metacognitive thinking by students, making an awareness to them and then connecting prior knowledge to existing schema. Information is readily available to students, and teachers must be intentional in connecting the depth of the students' knowledge.*

A fundamental purpose of education is to provide opportunities for students to build greater understanding through knowledge transfer. Teachers and administrators must therefore prioritize deeper learning in classrooms. Specific teaching strategies encourage deeper understanding by accessing student schema, modelling metacognition to demonstrate reading strategies, facilitating inquiry through projects, and pairing reciprocal learning with peer tutoring. Fostering quality instruction with metacognition at the core begins with teacher candidate preparation and professional development of current teachers. Intentional knowledge transfer occurs when teachers and administrators set a school's goals and mission with knowledge building at the core, thus enabling deeper, inquiry-based learning.

#### **Teaching Strategies**

Deeper understanding occurs when students use higher order thinking during classroom activities that require them to make connections with their existing schema. Extending students' thinking beyond remembering, by motivating them to analyze, evaluate, and create, takes forethought, immediate feedback, and modelling by the teacher (Wilson, 2016). Traditionally, silent reading occurred in isolation and was accompanied by answering chapter questions based on recall. Silent reading, when paired with journaling, activates the students to extend thinking beyond mere recall, and to make connections with their schema. Double entry journaling connects students' reading with prior knowledge or reading strategy prompts.

Students who become aware of the connection between their existing schema and new knowledge are creating deeper understanding. Teachers who recognize this process can capitalize and facilitate deeper, inquiry-based learning. Recently, in a Reading Is Thinking class, students were working on their independent reading: while they read, they made entries in their double entry journals. Jonathon<sup>1</sup>, who was reading *Animal Farm* by George Orwell, became very excited and instead of journaling his discovery he raised his hand and asked, "Ms. Abbott, is Pinchfield supposed to be like Hitler?" Ms. Abbott smiled, and asked, "Why do you think Frederick Pinchfield might represent Hitler?" Jonathon listed several reasons using his recall of prior knowledge, comparing the character of Pinchfield with that of Hitler. Ms. Abbott praised Jonathon and then encouraged Jonathon to write his extended comparisons down in his double entry journal for future consideration. Ms. Abbott could have merely confirmed Jonathon's connection, but instead she seized an opportunity to engage Jonathon in an analysis that used

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<sup>1</sup> In order to protect individual identities, pseudonyms have been used throughout this paper.

his prior knowledge. Ms. Abbott recognized a student's understanding and then through questioning pushed the student to engage in analysis and evaluation, encouraging higher order thinking. Classroom lessons that promote students to make connections with their existing schema create a safe atmosphere for questions that nurture deeper learning.

Teachers who plan activities with a clearly set purpose facilitate student learning through the levels of cognition to include metacognition. Tools such as conferencing, think-pair-share, Talking to the Text with a partner, and double entry journals make thinking visible. They recognize the learners' existing schema so that students can make sense of new information (Akinde, 2013; Rissman, Miller, & Torgesen, 2009; Schoenbach, Greenleaf, & Murphy, 2012). Ms. Abbott knew that Jonathon loved revolutionary history. When planning independent reading, she and Jonathon conferenced about his interests and challenges. Teachers who understand that students must be allowed to process will plan and scaffold activities so that both the teacher and the student can recognize the transfer of knowledge to new learning. A student uses metacognition when he/she identifies his/her thinking processes by expressing challenges and connections. Teachers and administrators who value metacognition know that a student who recognizes his/her understanding is a student who is in control of his/her learning, and that planning activities to promote metacognition is imperative to deep, inquiry-based learning.

Metacognition must be planned, recognized, and modelled. Teachers who model a Think Aloud strategy reveal their thinking to their students and demonstrate how experts interact with text (Rissman et al., 2009; Schoenbach et al., 2012). When teachers of all disciplines share their expert reading strategies with students, they model metacognition and share connections about the discipline. Administrators are responsible for ensuring that teachers are qualified and continually exposed to professional development centered on the procedures that foster metacognition while reading. Leaders need to make sure that teachers are aware of the revised Bloom's Taxonomy (Wilson, 2016) and that they use classroom questioning strategies that engage higher order thinking such as analysis, evaluation, creation, and metacognition.

Teachers who build lessons to facilitate deep knowledge transfer have the ultimate goal for learners to engage in inquiry. Teachers want students to "formulate their own questions, and possess the tools to pursue them" (Fisher, Frey, & Hattie, 2016, p. 107). Their goal is to "teach with intention making sure that students acquire and consolidate the needed skills, processes, and metacognitive awareness that make self-directed learning possible" (Fisher et al., 2016, p. 107). When pairing metacognition with inquiry projects, students are positioned to create questions with the goal of self-directed research. In an inquiry-based pilot project for grade nine English students, teachers require students to participate in a seed text of each student's choice. The students then develop a series of questions that lead to a discovery of new knowledge. After researching, using multiple mediums (peer-reviewed journals, books, videos, newspaper articles, etc.), the students write an expository paper that explains their newly formed thesis. Following the writing of their paper, they reflect on their new understanding and express how their thinking has changed or how their research reinforced their original position. The next step is for students to create an artefact that represents their thesis. They then present their artefact to their classmates, using the evidence they have discovered. Students then write a reflection on their writing, and their artefact, reviewing possible improvement or insights of self-discovery during the inquiry process. Educators must facilitate opportunities for higher order thinking in classrooms and schools; creating inquiry and cultivating metacognition will breed success in knowledge transfer, which underpins the creation of new schema.

Another powerful means to provide immediate feedback, and therefore stimulate deeper understanding, is the practice of reciprocal learning. A math study used an RPTMC (Reciprocal Peer-Tutoring-enhanced Mathematical Communication) strategy to make thinking visible by establishing fluent progression between teaching and questioning that used computers and peer tutoring (Yang, Change, Cheng, & Chan, 2016). Combining reciprocal learning, peer tutoring, and computer usage during knowledge exploration significantly raised students' mathematical

language development. This study reinforces how quality teaching encourages making thinking visible while enhancing knowledge transfer with the power of peer tutoring and questioning.

Quality instruction encourages students by scaffolding new information with their existing schema. Rich lessons include teachers modelling their metacognition. When teachers facilitate inquiry and engage students in reciprocal learning with peers, they demonstrate that deeper understanding can be designed for and guided by quality instruction.

### **Fostering Quality Instruction**

Inquiry and metacognition have not been historically used in the pedagogical preparation of teacher candidates. Instruction on developing inquiry and revealing visible thinking is necessary for the post-secondary education of novice instructors and professional development of current teachers. The pedagogy of instructors must be improved to match the expectation of increased engagement in our students (Wilhelm, 2009). In the past, instruction has focused on teaching behaviours, as opposed to preparing for teacher purpose and problem solving. Positioning the student to build essential questions places the student in a stance to build knowledge through inquiry (Wilhelm, 2014). For this reason, educators must rethink the pedagogical practices and include inquiry and metacognition in daily planning. They must empower each other to create classrooms that use strategies to build deeper understanding.

Professors and administrators must provide a system that encourages visible thinking by building a community wherein visible learning is the norm. Visible learning occurs when students and staff become accustomed to the rituals of writing and speaking, questioning connections and misconceptions without fear of judgment. Everyone in the system, from the students to administrators, has to build an environment wherein visible learning is safe (Schoenbach et al., 2012). This safe environment ensures that immediate feedback, by teacher or peer, builds connections between prior knowledge and new knowledge. Intentional transfer of knowledge becomes visible when thinking is revealed and reinforced. Leaders must model and uphold visible thinking and create this as the norm within the education system.

For the inquiry-based project previously mentioned, the English department is given time to meet monthly to discuss how metacognition encourages students when formulating questions and researching. Teachers mentor each other by sharing students' work and examining how to ensure that higher order questions are formulated. The process leads students into more direct and thorough research. This mentoring is an example of teachers as the catalysts that uphold the highest levels of knowledge transfer in students. The visible metacognition then reveals student understanding. The teacher then provides the next steps quickly through why and how questions. The process of ensuring active pedagogy that focuses on teacher behaviour encourages transfer of knowledge, guiding the student toward deeper understanding. Instruction that focuses on making metacognition visible is a powerful tool within the classroom, and teachers and administrators must make it a part of daily teaching and learning.

Knowledge transfer is maximized within quality education. Quality instruction can improve when teachers understand that the position of the teacher is as powerful as the attitude of the student. The educational system needs teachers and administrators who say, "We want students to move from declarative knowledge (what is it), to procedural knowledge (how to use it), to conditional knowledge (when to use it)" (Fisher et al., 2016, p. 12). During the transfer of knowledge, teachers need to be engaged in the process as much as the students. All participants need to have a clear learning purpose at the centre of the lesson. Teachers who engage students in "Low-Road Hugging and High-Road Bridging" techniques strategically scaffold new knowledge with the schema of the student, in order to maximize knowledge transfer (Fisher et al., 2016). These methods encourage students to engage in conditional knowledge when they are creating and evaluating. They are making artefacts that express and represent their learning. Quality instruction facilitates higher order activities that result in artefacts, an actual demonstration or testimony of deep transfer knowledge.

Quality education pushes students to become empowered learners. How educators manifest metacognition in their classroom is critical to students engaging in higher order thinking (Rissman et al., 2009). The “what and when are equally important when it comes to instruction that has an impact on learning” (Fisher et al., 2016, p. 21), and when educators activate the schema of students and then strategically introduce new knowledge, deeper understanding transpires. It is the “what and when” of teaching that influences the intentional design of knowledge transfer, advocating students to empower themselves. Pedagogical preparation of teacher candidates and professional development of teachers are essential to ensuring that inquiry and metacognition strategies are used in our educational system.

### Conclusion

Planning, encouraging visible thinking, and engaging both student and teacher produce the atmosphere that cultivates deep knowledge transfer, which engenders deeper understanding. Quality educators use strategies that access students’ schema in order to ensure connections between prior and new knowledge. Instruction that models metacognition unveils the mystery behind subject area strategies. Quality instruction grounded in inquiry-based learning enlists students to question and to seek new knowledge. Reciprocal learning and peer tutoring also assist higher thinking. When effective pedagogy and intentional goals scaffold new knowledge, and students participate in the inquiry, learning and understanding deepen.

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