RESEARCH REPORT

Teacher Metacognition: Teacher as Curriculum Maker with Metacognition at the Centre of the Classroom

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This study examined teacher awareness and teacher use of metacognitive practices in Canadian schools within Manitoba. The literature on teacher metacognition was limited because the majority of the literature centred on student metacognition and there was a call for more research regarding teacher metacognition. Four participants from urban and rural Manitoban schools, who had taken Reading Apprenticeship (RA) training, were interviewed in this narrative inquiry. This research created reflective stories through an analysis of transcripts of interviews. The Metacognitive Awareness Inventory (MAI) tool activated the participants' thinking, which helped to tune their reflections and the qualitative transcripts of the interviews, revealing trends in metacognitive vocabulary and reflective story. The primary research question was as follows: How does a teacher's understanding of metacognition influence the development of metacognitive skills and metacognitive conversations in classroom practices and routines?

The participants' reflections highlighted six threads of teacher practices, employing metacognitive strategies and metacognitive conversations in the classroom that helped to increase their perceptions of student achievement. The analysis wove together the three main ways teachers influence their students' metacognition, as found in the literature review, with the six threads of teacher metacognitive practices that were found in the current research. This created four unique tapestries revealing evidence that the teachers' understanding of metacognition can influence the development of metacognitive skills in their practices and routines.

The conclusion is that a teacher's awareness around metacognitive strategies did influence the participants' decision making within planning, classroom set up, and daily routines. Therefore, a teacher's understanding of metacognition can influence the development of metacognitive skills and metacognitive conversations in classroom practices and routines. This research suggests that collaborative work around improving metacognitive strategies and conversations within the classroom would greatly benefit teachers' personal practical knowledge. Therefore, more training is recommended to help to solidify and improve the use of metacognitive strategies and conversations, increasing the personal practical knowledge of teachers. It is recommended that secondary institutions' courses and professional development opportunities within the school divisions of Manitoba build collaborative efficacy around implementing metacognitive strategies. This study's results have reinforced the fact that metacognitive strategies and conversations can be successful agents in helping students achieve higher quality standards from the teachers' perspectives. However, further research is recommended that includes teachers who have not taken RA training; more extensive studies are required to seek teachers' understanding of metacognitive practices.

Weaving the Tapestry

Six threads weave a tapestry of how metacognitive strategies and conversations support deep learning, helping to increase teachers' perceptions of student achievement. Teachers are readying students for learning which activates existing schema in students. Teachers are more explicit regarding student learning goals. Teachers are checking for understanding as formative assessment. Teachers are asking more impactful questions. Teachers are creating equality. Teachers are increasing their awareness and ability to employ gradual release of learning.

First Thread:
Teachers are readying students for learning by activating existing schema.

The participants' reflection revealed their perspective that the importance of readiness to learn had a direct correlation to student achievement. They each spoke of how they helped to develop their students' mental processes or cognitive dimension through problem-solving strategies (Schoenbach et al., 2012). They all spoke of knowing who their disengaged or reluctant and engaged or eager students were, which helped them to recognize and regulate their thinking in real time (Hughes, 2017). Their reflections unveiled students' refining individual schema (Kallio et al., 2017). Within their reflections, the participants identified the social dimension, the "community building in the classroom, including recognizing their resources brought by each member and developing a safe environment for students to be open about their reading difficulties" (Schoenbach et al., 2012, p.24). Moreover, each teacher's reflection revealed the need to make connections personally and to help scaffold the readiness to learn, in order to ensure that students were engaging their existing schema and sharing what they knew. A connection must be noted to the personal and knowledge-building dimensions within Reading Apprenticeship training as working to benefit students.

Addison voiced her growth in understanding procedural and conditional knowledge. She spoke of knowing the KWL (Know, Want to know, and Learn) strategy for years, but she had not fully employed it until the year after her RA training. She also distinguished that she had a more profound understanding of how she would be using it to benefit the students: "I see why this activation matters and how I can productively use this to benefit students." Addison's metacognitive reflections around the importance of activation, and specifically her more in-depth understanding of the metacognitive process, improved the engagement of her students with the KWL strategy. She planned, monitored, and managed her thinking around the use of the activation for the students' benefit. This reflection revealed Addison's understanding that activating students' existing schema was needed to inform her students' metacognition better.

All participants displayed their knowledge of cognition through their use of activating the existing schema of their students. They displayed their ability to support regulation of cognition when they scaffolded time for individual thinking. They facilitated an increased knowledge building through the metacognitive conversations and pairing, and small-group sharing of ideas. Their activation routines accommodated fixups of misunderstandings and, therefore, they saw better success in writing after their lessons.

These reflections around the importance of activation were echoed by all participants, which displayed their willingness to apply metacognitive strategies to activate and better prepare students' readiness to learn because they, the teachers, understood the importance of having knowledge about cognition and also modelling the regulation of cognition so to help student achievement.

These reflections demonstrate how the first thread (Teachers are readying student for learning by activating existing schema) has been influenced by teacher understanding of self-regulated learning, which shapes the metacognitive space for students.

Second Thread:
Teachers are more explicit regarding student learning goals.

Interestingly, the reflections around sharing one's metacognition with the class revealed the participants' awareness of how much they were thinking and how quickly they were thinking (comprehension monitoring and evaluation), which created Ah-Ha moments that led them to understand why sharing metacognition helped to make explicit learning goals. The participants' reflections demonstrated a connection to Abromitis' (1994) findings that metacognition encourages "flexible and adaptive thinking" and "modification" (p. 5), which in these reflections helped teachers to define explicit learning goals. These reflections bring to light the idea that the

curriculum-as-plan (Aoki, 1993), and a teacher's understanding of what makes success, might need a shift or change in the next moments of curriculum-as-lived (Aoki, 1993). Many of the shared reflections revealed a learning and recognition to increase the practice of metacognition in order to expand on teachers' personal practical knowledge while teaching students to read challenging texts in their classrooms.

Daniella's reflection of how her inferencing skills were fast and automatic reflects Karpicke and Grimaldi's (2013) research around retrieval-practice. She spoke to how a majority of her students had missed the tone of an article and, had they not taken the time to share their thinking before their independent work, the students would have missed an essential aspect of the article, causing them possible confusion and frustration. However, she was able to shift and be explicit about the students' learning goals because she accommodated and planned for shared metacognition and group sharing of ideas. Daniella's shift in explicit learning goals came from her ability to hear misconceptions, which then directed the next steps. Scaffolding her students, in order to focus on the author's tone, deepened their understanding and their writing.

Bradan revealed how overwhelming tracking metacognition could be as he reflected on one of his first attempts of sharing his metacognition. This exercise of metacognition led him to a more concise sharing of one aspect of his metacognition, as noted by Ozturk (2017), who spoke of highlighting awareness of cognitive activities and utilizing them most effectively. Bradan then gave the students multiple experiences for practising that one metacognitive aspect of questioning when reading. He had an awareness of how his metacognition was "knowledge-intensive" (Kallio et al., 2015, p. 102); therefore, he applied the dimensions taught during his Reading Apprenticeship training, in order to more powerfully increase the students' capacity. He adjusted the initial goals, and became more explicit and concise, which gave his students more opportunities for success in tracking their thinking.

These reflections demonstrate how the second thread (Teachers are more explicit regarding student learning goals) is influenced by two themes as highlighted in the literature: teachers modelling their thinking to support students' understanding, and teachers understanding the self-regulated learning that shapes the metacognitive space for students.

Third Thread:
Teachers are checking for understanding as a formative assessment.

Each reflection demonstrated a form of metacognitive conversation in real time, which spiralled the students' thinking deeper into subject-specific criteria, connecting their existing schema to new knowledge and thereby deepening their understanding and increasing their success right then (Hughes, 2017; Bing-You et al., 2017; Akman and Alagöz, 2018). Utilizing metacognitive conversation in the classroom makes implicit thoughts explicit (Jones, 2007), and there is "a focus on reading and talking about reading during classroom lessons (which) gives teachers the opportunity to mentor students in the reasoning and problem-solving skills they need to master" (Schoenbach et al., 2012 p. 24). More specifically, participants shared that metacognitive conversations enable teachers to hear more student ideas and more student perspectives, and they hear misconceptions early so that metacognitive conversations can guide students to fix their misunderstanding.

Addison observed, "I just feel like they can hear so many more ideas and perspectives than they would if they stayed in their head all the time," empowering them to deepen their understanding. Bradan reflected that including metacognition "slows the whole process down," which he saw as a benefit because "you can see more where students are." Christopher recalled, "I go through the thinking process to get different tools, or I need to learn a technique or look at this idea up to get a deeper connection. I think the same is true in the classroom. The students must think about this for themselves. My job is trying to get them to just think about that a bit more often." Daniella's story of a misconception highlighted the importance of checking for understanding in order to deepen learning. Her story revealed how the personal

and social dimensions worked together to support context and knowledge-building. Several students had a misunderstanding around the word Indian within a short story they were reading. She stated, “They were so confused about what an Indian meant in this story.” A safe exchange ensued, with moments of humour and light-heartedness that facilitated a deeper understanding of the author's intent and specific language use. This formative assessment helped to engineer a respectful conversation around word choice, meaning, and context. Had this exchange of ideas not occurred, many students would have written a response completely missing the central theme of the story. Danielle's ability to use formative assessment created moments of listening and sharing, which solidified meaning for many students.

These reflections demonstrate how the third thread (Teachers are checking for understanding as a formative assessment) is interwoven with the teacher awareness of reading strategies broadening the reading experiences for students, and with the teacher understanding of self-regulated learning shaping the metacognitive process for students.

Fourth Thread:
Teachers are asking more impactful questions.

Each participant designed learning moments that wove powerful text and students’ thinking by posing questions and creating metacognitive conversations. Conversations focused on how or why students think, probing the students to discover new connections. The teachers were not only modelling the metacognitive process, but they were also doing as Jones (2007) advocated, making real-time connections, encouraging students to consider how or why they accept or reject ideas. This shift in teaching stance has moved the teacher to a facilitator of discovery. Addison and Bradan asked their students to reflect during metacognitive conversations, encouraging the students to check themselves for understanding. Daniella spent significant time improving her questions in order to activate deeper thinking by her students. Her questions helped to shift her students' stance, placing them central in the inquiry at the inception of discovering how or why they would make choices as they engaged in literature elements. Christopher spoke of the messiness of discovering, and how creative it feels when students can be in the moment, making choices that deepen their understanding.

This thread of impactful questions comes from an increased awareness of the importance of metacognition within the personal practical knowledge of each research participant. Each participant believed that heightening students' metacognitive awareness increased the students' achievement. This reflects the assertion of Akman and Alagöz (2018) that building knowledge within students requires activating both the cognitive regulation skills and the cognitive knowledge.

The participants reflected on how they modelled metacognitive conversations with probing questions, empowering their students to participate more deeply in their knowledge building. The participants spoke of their role shifting away from the giver of knowledge to the facilitator of student engagement. This shift was not created by happenstance, but with intention. Each participant spoke of engaging the students to activate their existing schema, not just determining what students already knew, but ensuring that students were aware of why they were thinking in that particular way.

These reflections demonstrate how the fourth thread (Teachers are asking more impactful questions) has been influenced by teacher understanding of how self-regulated learning shapes the metacognitive space for students.

Fifth Thread:
Teachers are creating equality.

The RA training actively engages teachers in understanding the importance of the social domain. This understanding acknowledges Charles McMurry’s powerful declaration that “the

teacher is working at the very smelting process, the point of difficulty where new, uncomprehending knowledge meets this tumult of the child's mind" (Clandinin, & Connelly, 1992, p. 378), which when matched with metacognitive conversations and strategies provides equality for students. The social dimension entailed the research participants creating safe places for learners to share their idea production, "integrating the relationship between literacy and power" and developing voice around a text (Schoenbach et al., 2012, p. 25). By modelling and employing metacognitive conversations and encouraging tracking of student metacognition, each participant created equality in the classroom. Each participant spoke of a safe place where students could critically and creatively think, problem solve, make mistakes, and speak through their thinking free of ridicule (Aktag et al., 2017). Each participant spoke of the routines that built student confidence, allowing everyone to express their voice and building a learning community that heard multiple perspectives. Each participant spoke of class conversations' importance, which ensured that each voice was heard, making procedures and norms that supported individual thinking and small- and large-group thinking. The common thread between the participants was that they each believed in building a positive social community. This reflects Borko et al. (2000) and Richmond et al.'s (2017) premise that learning is an active and social construction. Students have more achievement in shared experiences. Active learning is more powerful than direct instruction.

Bradan's reflection spoke of the diverse needs that were impacted when purposefully building routines around the social dimension. He believed that his students needed this social learning. He had two separate and different class situations that required the scaffolding of how to think and share thinking: the first being a chatty few who monopolized conversations, and the second being an extremely quiet group. In both scenarios, he used his routines of think, pair, share to create equitable learning moments for all. In the one year, this routine helped to quiet some voices and share learning through equitable distribution of voice. In the previous year, this routine built confidence in a group of extremely quiet thinkers.

Daniella spoke of the tracking routines that supported individual and group thinking, which led to better student writing responses. Her scaffolding of productive activation followed by individual reading was supported by her modelling of how to track and support meaningful connections between writers' intent and student understanding. Students were encouraged to share thinking through pairs, small-group and large-group conversations. Students made posters together and then presented their ideas. Students engaged in gallery walks, adding to their thinking and building a deeper connection between the author's choice and readers' understanding, which then supported student writing with evidence of more in-depth understanding.

These reflections demonstrate how the fifth thread (Teachers creating equality has been influenced by teachers modelling their thinking), supporting students' understanding and teachers' awareness of reading strategies, broadened the reading experiences for students. Each research participant used the thread of building a social climate to create equality within the classroom. This required each participant to have the will and confidence to release control, facilitating their students to create their new knowledge through guided, purposeful practices.

Sixth Thread:
Teachers are increasing their awareness and ability to employ gradual release of learning.

The four participants in this study believed that by scaffolding metacognitive strategies, they were building the skills needed for students to gain control over their learning, releasing them to engage fully in the act of shifting between their knowledge about cognition and their ability to regulate their cognition. This goal of releasing the students was evident in all of the participants' perfect learning scenarios. The participants had the goal of creating a space where their students could engage in conversations, creating inquiry that was supported by a social

culture within their classroom. These active learning lessons reflect the research by Richmond et al. (2017), which found that active learning instruction produces higher academic performance than lessons that use direct instruction as formal pedagogy. Schoenbach et al. (2012) expressed how this all starts with the teachers modelling their metacognition to demystify the thinking process for students. Then, following modelling comes gradual release to the student with social supports, echoing Borko et al.'s (2000) research that spoke to teachers releasing control to students. Gradual release implies that the teachers build reading and thinking routines that employ the students to engage their thinking with the teacher and other peers, with the eventual goal of having students lead learning scenarios. This reflects the notions of Fletcher's (2018) research on "help seeking" strategies within the classroom. The participants spoke of students becoming more independent and the feeling created within the classroom when gradual release was successful.

Christopher spoke to the loss of time when the learning space was full of engaged and responsive learners. He reflected on how he felt a little out of his comfort zone, releasing control and having different stations, with students getting up and moving around the classroom. However, he concluded with his delight in how engaged the students were. Bradan recalled that his routines of clarifying conversations were happening without him: students probed each other deeper into their inquiries. Addison spoke to the release of the learning process, reflecting on when the students take total control of their learning and claim their learning. Daniella's metacognition around her teaching practice shifted. "My professional reading has helped me build bridges within the thinking process: critical thinking, higher-level thinking, reading and writing. I see the value of setting up the students and then releasing them right into the metacognitive funnel." All of these reflections echo the research of Borko et al. (2000) that the teachers they were following "talked about 'giving up control' to students as they organized the learning environments in their classrooms to enable students to take a more active role in their own learning" (p. 296). These experiential learning scenarios highlighted how the participants' use of metacognitive strategies and metacognitive conversations within their classrooms led their students to increased control over their learning.

These reflections demonstrated how the sixth thread (Teachers are increasing their awareness and ability to employ gradual release of learning) is influenced by the teachers' understanding of how self-regulated learning shapes the metacognitive space for students.

This research found that teachers elicit powerful strategies to improve students' engagement with the use of metacognitive strategies or conversations, which then led to their students' meeting or exceeding the teachers' perceived ideas of success.

Recommendations

These research findings have been conclusive. Teacher awareness around metacognitive strategies influenced the participants' decision making within planning, classroom set up, and daily routines. Therefore, a teacher's understanding of metacognition does influence the development of metacognitive skills and metacognitive conversations in classroom practices and routines. The findings also had indicators that implementing metacognitive practices within a classroom increases a teacher's perception of student achievement because these practices make visible the students' thinking, therefore making visible the students' journey to new understandings.

However, this research had a limited quota sample with four participants selected from a group of teachers with Reading Apprenticeship (RA) training. This purposive sampling had a unique perspective because of their training. This RA training created a sampling bias because these teachers had an insight to understanding the significance of student engagement, and each had a unique mastery in creating a class climate that promoted connections between prior knowledge and new knowledge.

The involvement in this study also affected the attitudes that the teachers had toward student engagement. They voiced how the participation in this research heightened their reflective practice, which made them more aware of their influence and therefore enhanced their practices during this research period. Thus, it is thought that the following recommendations for practice and further research be made.

Recommendations for Practice

Three out of four participants expressed that their personal practical knowledge was enhanced by the initial RA training and the collaborative efficacy with other staff members, focusing on improving metacognitive strategies and conversations within the classroom. The fourth participant expressed that although she was not in a formal group, she believed that metacognitive practices were known by a majority of staff. This research suggests that collaborative work around improving metacognitive strategies and conversations within the classroom would greatly benefit teachers' personal practical knowledge.

Three out of the four participants expressed a desire to retake RA training. Their reflections indicated that their practices were influenced by the training and then again by being involved with this research. They expressed that the initial training was good because it created a shift within their teaching stance. However, they thought that more training would help to solidify and improve their use of metacognitive strategies and conversations, increasing their personal practical knowledge.

There was also discussion around highlighting the need to take metacognition awareness and strategies during the preparation of becoming a teacher within secondary education institutions. Therefore, it is recommended to build collaborative efficacy around implementing metacognitive strategies within secondary institutions' courses and within professional development opportunities in the school divisions of Manitoba. Educational leaders would play a critical role in putting this recommendation into practice.

Recommendations for Further Research

These qualitative research findings were limited to reflections from participants. A deeper understanding of teacher awareness around metacognition could be accomplished if quantitative data from the MAI were used to compare the teachers' awareness of metacognition with their reflections on their practices.

However, these research findings identified the positive impact of the metacognitive strategies and metacognitive conversations within the qualitative reflections of teachers who revealed their perspective that "students are able to catch up in critical reading skills if provided with additional, sustained instruction in small, focused instructional groups" (Torgesen et al., 2008, p. 63). Therefore, it could be stated that the results of this study improved teaching methods, which in terms of the participants' perspectives improved students' reading skills and knowledge building. This study's results have reinforced the fact that metacognitive strategies and conversations can be successful agents in helping students achieve higher quality standards from the teachers' perspectives. However, further research is recommended that includes not just teachers who have taken RA training; more extensive studies are required to seek teachers' understanding of metacognitive practices.

Further research should also include teachers who have no official training in metacognitive strategies so that a control group can better identify teacher awareness of metacognition and the implementation of strategies based on teacher awareness.

This research also was specific to tracking the teachers' metacognition without the voices of the students. Further research is needed to elicit metacognition from both the teachers and the students in order to appreciate the impact that metacognitive strategies and conversations have on student achievement.

Conclusion

Through each tapestry woven in this research, it is apparent that metacognitive practices and conversations impact teacher planning, class set-up, and routines, thereby positively impacting teachers' personal practical knowledge.

Therefore, the current study's focus on teacher awareness should open an avenue in the literature, which has so far been mostly engaged around students' metacognition as it relates to their academic performance. Making the teachers' tapestry of metacognition visible has revealed the relationship between modelling metacognition and increasing teachers' perceptions of student achievement. This upholds that "high quality instruction enables students of all ages to construct domain-specific and domain-general strategies, metacognitive knowledge about themselves and their cognitive skills, and how to better regulate their cognition" (Schraw, 1998, p. 123). Therefore, we must promote that high-quality instruction includes metacognitive strategies and conversations.

The literature review spoke to a need to investigate teacher metacognition. Now the research findings support the need for more research regarding teachers as experts in implementing metacognitive strategies and metacognitive conversations within their classrooms, increasing their personal practical knowledge.

About the Researcher

Barbara Engel fosters a respectful and inclusive learning environment in her grade two/three Strathmillan classroom. She is creative and dedicated to developing and implementing school programming to enhance student achievement. She obtained her M.Ed/B.Mus. and B.Ed. at Brandon University. She is continually inspired by her partner Rick and sons Weslee and Owen.