Literature Review

Student-Centered Classrooms

Over the past century, society has required schools to prepare students for an increasingly complex set of social and economic realities (Christensen, 2008; National Academies of Science 2007). In response to these changing educational conditions, educators and researchers have developed new approaches to the systematic provisioning of learning. One line of inquiry and theory sought to develop an approach that provides an active, individualized, and engaging learning experience: an experience which the teacher facilitates, but does not dominate. One of the more popular descriptors of this approach is student-centered learning.

The theory and practice of student-centered learning has been built over the past century. Piaget, Dewey, and Vygotsky, among many others, have made influential contributions to the understanding of learning and how best to maximize human potential through education. As these theorists and practitioners saw it, learning involved a careful coordination between the individual’s capacities, abilities, and tendencies and the learning environments in which new information and skills were presented to them.

All learning environments combine psychological, pedagogical, technological, cultural, and pragmatic elements (Land & Hannafin, 1996). Student-centered learning environments shift the focus of these elements from the person communicating new information—the teacher—onto the person integrating new information, the student. In addition to reorienting the focus of information integration, a student-centered approach recognizes that learning is best accomplished when intrinsically directed and when new information is made available in ways that reflect the unique experiences, backgrounds, and learning styles of each student.

There is a great deal of research on the attributes of student-centered classroom. Most of the research is reported in the form of studies based on observation. Froyd and Simpson (2008) referenced the National Research Council (2000) that synthesized research on learning and recommended organizing the learning environment around four foci: knowledge, learner, assessment, and community. Although the research and theory on student-centered learning is complex and diverse, McCombs and Miller (2006) provide a description that sufficiently summarizes how student-centered learning impacts the relevant components of a school system.

The core of the Learner-Centered Model (LCM) is that all instructional decisions begin with knowing who the learners are—individually and collectively. This is followed by thoroughly understanding learning and how best to support learning for all people in the system. Finally, decisions about what practices should be in place at the school and classroom levels depend upon what we want learners to know and be able to do. The LCM puts the person domain—the learners—at the heart of a system dedicated to learning and leading. It brings
the educational system back into balance with what we know about learners, leading, and living systems (McCombs & Miller, 2006).

As the description suggests, student-centered approaches orient themselves continually toward what individual learners need given their backgrounds and abilities. Johnston (2004) stated, “Learning is not about passivity and order; it is about the messy process of discovery and construction of knowledge” (p. xxii). Constructing knowledge for oneself leads to genuine learning and mastery. He believes student-centered classrooms start with the question: What should students know and be able to do, and what will be the evidence of learning? The focus shifts from absorbing content to demonstrating skills and providing evidence.

Attributes of Student-Centered Learning

Experts in the field of psychology and education have come to consensus regarding the most important attributes of a student-centered classroom. Essential attributes of the student-centered learning environment rooted in a constructivist approach can embrace a blending of instructional practices and learning attributes including:

- Construction of learning
- Collaborative learning
- Metacognition
- Educator/student partnerships
- Authentic assessment

Construction of Learning

Constructivism is a philosophy of learning founded on the premise that, by reflecting on our experiences, we construct our own understanding of the world we live in. The result, according to Brooks and Brooks (1993), is a deep understanding. Problems are structured around big ideas to provide a framework with which to gather information and build knowledge. Within a student-centered framework, teachers develop relevance by deliberately designing classroom activities with the student’s needs in mind and are able to guide the differentiation of individual learning.

Concept Oriented Reading Instruction (CORI) is an example of such a framework (Guthrie, Wigfield, & Perencevich, 2004). CORI teachers situate a conceptual goal within a unit and solicit questions from students (Guthrie, 2004). These questions indicate the background knowledge of the students relevant to the unit, and students are able to answer their questions through reading and hands-on activities (Guthrie, 2004).

Rallis (1995) argues that teachers in student-centered schools “learn who their students are; they ask what talents and life experiences each child brings and what each child needs” (p. 226). Moreover, “if a child does not meet a ‘standard,’ the child is not dismissed as a failure; rather the teacher considers what can be done to enable this child to learn” (p. 226). For example, CORI teachers use multiple levels of scaffolding, small group instruction, and
simplify strategy instruction, when necessary, to enable struggling readers to learn (Guthrie, 2004).

Research on constructivism is prevalent. Marlowe and Page (2005) concluded that research on active constructivist learning is both extensive and consistently supportive. While the earlier research tended to be generalizations based on observations, later studies are grounded more clearly in empirical evidence (Donmoyer, 1996, referenced in Marlowe & Page, 2005). “Although the work done in constructivist thought is quite recent, it is essentially in harmony with the earlier thinking of the progressives” (Ellis & Fouts, 1994, p. 153).

While many psychologists accept that the brain constructs knowledge actively, the educational community’s acceptance of constructivism remains controversial. The concept of constructing knowledge or “constructivism” is frequently misunderstood. Critics of constructivism believe it is so child-centered that schoolwork caters only to student interests. Bransford et al. (2000) discussed a common misconception of constructivists, which is that teachers should never tell students anything directly. Adopting a constructivist theory does not imply that all learning is discovery learning and that direct instruction of basic skills are not incorporated into the classroom.

In reality, constructivists assume that all knowledge is constructed from previous knowledge, irrespective of how that knowledge is gained. Previous knowledge or background knowledge serves different purposes in CORI. Soliciting student background knowledge through questioning informs the teacher of the supports each student needs in terms of the content and comprehension strategies (Guthrie, 2004). Activating background knowledge is an explicit strategy in CORI to help students connect background knowledge to new content (Guthrie, 2004).

**Collaborative Learning**

For the purposes of this review, collaborative learning should be clearly defined. Collaboration is a philosophy of interaction and personal lifestyle where individuals are responsible for their actions, including learning, and they respect the abilities and contributions of their peers (Panitz, 1999). Cooperative learning, a more teacher structured and highly recognized process of collaborative learning, is a practice that encourages collaborative behaviors among groups of individuals. Knowledge of the brain’s function has been confirmed by neuroscientists promoting the theory that Vygotsky (1978) asserted, that learning is highly social and thus influences the development of the brain. “What children can do with the assistance of others is even more indicative of their mental development than what they can do alone” (p. 85). Researchers agree new meaning comes through social interaction.

Although more research is needed to parse the specific ways in which collaborative learning affects student performance, there is evidence suggesting its benefits. Collaboration can be intrinsically motivational to students (Guthrie, 2004). When teachers support students in collaborative activities such as checking each others use of a new comprehension strategy, students learn “the importance of give-and-take, speaking and listening, and respect for
others” (Guthrie, 2004, p. 18). Students accrue benefits when the learning environment supports them working collaboratively, sharing insights and assisting each other in metacognitive processes (Vye et al., 1998). The National Research Council’s report (2000) states that some research indicates that group problem solving is superior to individual problem solving (e.g., Evans, 1989; Newstead & Evans, 1995), and that developmental changes in cognition can be generated from peer argumentation (Goldman, 1994; Habermas, 1990; Kuhn, 1991; Moshman, 1995a, 1995b; Salmon & Zeitz, 1995; Youniss & Damon, 1992) and peer interaction (Dimant & Bearison, 1991; Kobayashi, 1994) (p. 280).

Marzano, Gaddy, and Dean (2000) provide a synthesis of similar studies focusing on cooperative learning. Their brief summary of effect sizes suggests that “organizing students into cooperative learning groups has a powerful effect on learning” (p. 96). Collaborative learning, therefore, has potential to improve some fundamental aspects of students’ engagement, knowledge transfer, and success.

Second Chance Reading implements collaborative learning in many strategies. For example, in the Numbered Heads Together strategy, partners study the meaning of new vocabulary by building associations with new words and collaborating to respond to questions about the new words. In the Dictated Writing strategy, students work in collaborative groups to write to prompts provided by the teacher. Following a teacher think aloud/read aloud, students work in collaborative groups to discuss and record responses to comprehension questions. The research based supporting these collaborative learning experiences is extensive. A meta-analysis of research on cooperative learning (Rolheiser-Bennett, 1986) found an effect size of .3 for simple strategies on standardized tests and .5 on criterion-referenced tests. More complex cooperative learning strategies often achieved effect sizes greater than 1.0. Alfassi (1998) and Fuchs et al. (1999) all note the power of cooperative learning for reading comprehension. As mentioned earlier, Kucan and Beck (1997) find the contribution of cooperative learning (which they label “social context”) so powerful for comprehension that they suggest it may be the major contributor to positive effects for many of the more powerful comprehension strategies.

However, as with any broad learning concept, it is important to clarify and distinguish the needs of learners at different points in their development and education (National Research Council, 2000). Particularly in earlier grades, the nature and requirements of collaborative learning may be detrimental to some students. For example, younger students in collaborative learning settings may depend more on stereotypes, classroom reputation and temperament when determining who leads, follows and contributes. This does not in itself undermine the benefits of collaborative learning, but requires consideration and adjustment on the part of the teacher.
Metacognition

Metacognition is fundamental to the ability of individuals to learn at all ages and “involves three aspects: control or self-regulation; knowledge of one’s own thought processes; beliefs and intuitions” (Schoenfeld, 1992, in Holton & Clarke, 2006, p. 132). Put simply, metacognition is the ability to monitor (i.e. reflect on) one’s current level of understanding, decide whether it is adequate, and seek out and develop new approaches to understanding (National Research Council, 2000). For example, if a student who can successfully utilize metacognitive thinking fails to successfully complete a math problem, that student might note his mistake, hypothesize about how he failed, consider alternative strategies and then re-engage the problem. In contrast, if a student who does not utilize metacognitive thinking fails to complete a math problem, he might become frustrated and give up.

In order to help a student who is less practiced in metacognition, a teacher might guide the student to think through the constraints of the problem, break the problem into different components, recall alternative strategies, and attempt the problem again. By guiding the student toward alternate perspectives of the problem and utilizing his skills in new ways, the teacher “is acting as an external ‘brain’ to provide the consciousness and control that [he] could have provided for [himself] had [he] been aware of what might have been useful” (Holton & Clarke, 2006, p. 141).

Researchers and practitioners alike have become interested in the degree to which metacognitive thinking can affect student performance. Thomas (2006) describes how the range of interest in and evidence for metacognitive thinking has grown over the past three decades.

It has been repeatedly argued over the past 30 years that developing and enhancing students’ metacognition is a key to improving their learning of all subjects at school as well as their dispositions and abilities in relation to learning in diverse and emerging contexts in their time beyond formal education. (p. 2)

Recently, researchers have explored the benefits of metacognitive thinking in science education (Abell, 2009), geography (Kriewaldt, 2006), and special education (Hessels et al., 2009). One study involving mathematical reasoning attempted to parse the effect metacognitive training has on learning from other aspects of the classroom environment.

Kramarski and Mevarech (2003) compared four different treatment groups of a total of 384 eighth grade math students in an effort to better determine the differential impact metacognitive training has on student learning apart from an individual or cooperative learning environment. The four treatment conditions were cooperative learning with metacognitive training, cooperative learning without metacognitive training, individualized learning with metacognitive training, and individualized learning without metacognitive training. Structuring the study this way enabled the researchers to evaluate the degree to which metacognitive training affected student learning independent of the conditions of the learning environment. The authors found that students receiving cooperative learning with metacognitive training outperformed all other groups and that individual learning with
metacognitive training outperformed treatment conditions without metacognitive training. This suggests that metacognitive training can have a positive effect on student learning irrespective of the learning context.

A key requirement for promoting the development of metacognition is to incorporate it into both teacher training and classroom practice. The report How People Learn from the National Research Council (2000) argues that “integration of metacognitive instruction with discipline-based learning can enhance student achievement and develop in students the ability to learn independently... and should be consciously incorporated into curricula across the disciplines and age levels” (p. 21). Of course, changes to curricula and teaching practice depend on changes in teacher education, certification, and professional development. Therefore, in order to ensure that metacognition is properly incorporated, the report states that “developing strong metacognitive strategies and learning to teach those strategies in a classroom environment should be standard features of the curriculum in schools of education” (p. 21).

Metacognition is found in many of the comprehension strategies that are used in Second Chance Reading. For example, in the teacher think aloud/read aloud strategy, teachers model their own thinking and ask student-to-student pairs to practice the teacher-modeled comprehension activity. Inductive thinking is a Second Chance Reading strategy that is used to teach students a process for determining author’s central themes and main ideas. Students compare and contrast passages from a literary form, categorize the passages by a common meaning, and form generalizations about their categories. This is a fundamental higher-order thinking activity. Support for the modeling of comprehension strategies during read aloud and think aloud activities can be found in the work of Brett et al., 1996; Baumann, et al., 1992; Carr, 1988; Dole et al., 1991; Pressley, 2000; and Shaw, 2002. In addition, the efficacy of strategy instruction and questioning strategies, so often incorporated into the think aloud process, is well established (Alfassi, 1998; Lysynchuk et al., 1990; Rosenshine & Meister, 1994). Kucan and Beck (1997) in a meta-analysis of research on read aloud and think aloud strategies, build a persuasive case for their use in the teaching of comprehension strategies. Furthermore, they note the importance of social context (cooperative structures) and suggest that this variable is so important it may be impossible to determine the strengths of various comprehension strategies alone (e.g., questioning strategies, reciprocal teaching) because of the powerful contribution of cooperative structures.

**Educator/Student Partnerships**

The relationships teachers and students develop during the learning process aligns with a greater recognition of individual student differences. As with collaboration between students, a more equal relationship between teachers and students may facilitate differentiated instruction. A Rallis (1995) point out that student-centered learning allows “teachers in these schools [to] see individual children, not categories” (p. 226). These more attentive and responsive relationships have the potential to improve learning for some students.
In a CORI unit, for example, teachers and students work closely together. They engage in the scientific method. Teachers discuss with students how to turn their questions into research questions and how to design experiments to test them (Barbosa & Alexander, 2004).

Jones (2007) defined the student-centered classroom as a place where needs of students are considered and students are encouraged to participate in the learning process at all times. It is not a place where students make random decisions about what they want to learn. The teacher becomes a member of the team as a participant in the learning process and functions as a facilitator, who guides, manages activities, and directs. Goodlad (1984, 1994), among others, concluded that teaching must be collaborative, interactive, and relationship-based.

In later work, Darling-Hammond and Bransford (2005) determined teachers need to understand child development, motivation and management in their role as a facilitator. By taking into account student development and understanding key concepts, teachers can plan instruction according to their student’s needs. Classroom management is strengthened through learning communities, which give children a chance to work together. By using developmental interests as a motivator, students become more engaged in their learning.

Just as the research for collaborative learning had not yet produced effects that are able to be generalized, so too is the research on partnerships between teachers and students.

**Authentic Assessment**

Assessment for learning (or formative assessment) is one process that identifies the differentiation of individual learning as a central component of student learning. The process entails that teachers establish learning progressions, identify the gap between student’s current knowledge and the learning progression, and utilize various assessments to provide individualized feedback (Heritage, 2008). In other words, a continuous cycle of student feedback through various forms of assessment enables teachers to tailor instruction to individual needs, which are often designed by the teacher in collaboration with the student. A growing body of research literature suggests that significant student learning progress can be made when teachers engage in this process. Since the late 1980s, review articles (Crooks, 1988; Natriello, 1987), theoretical work (Sadler, 1989), and meta-analyses (Black & Wiliam, 1998; Fuchs & Fuchs, 1986) all indicate that teachers who adhere to the assessment for learning process improve student achievement substantially.

Newmann’s *Authentic Achievement* (1996) provides an example of how to conceptualize and conduct meaningful assessments in real-world contexts. Educators face challenges in developing real-world assessments. These challenges derive in part from the need to operationalize abstract goals. As Simon and Gregg (1993) argue, “Performance-based or authentic assessment consists of tasks requiring students to apply knowledge in real-world situations, given specific performance criteria within a scoring rubric for the evaluation of the performance” (p. 18). Newmann identified the construct of “intellectual quality” as the criteria to operationalize and evaluate education in the future.
Methods of Practice

Teachers may use different methods of practice to execute and implement the theoretical teaching and learning approaches related to student-centered learning. These methods include problem-, inquiry-, and challenge-based learning. Each of these methods applies the shared foundation of student-centered learning theory with slight variations of emphasis. Hmelo-Silver et al. (2007) argue that there is no clear variation among this “broad variety of instantiations” (p. 100). Readers, too, will likely find that these practices share many components and may, for the most part, seem indistinguishable in practice. The advocates of these practice methods, however, argue that the slight variations do matter and provide distinct learning experiences and outcomes.

- **Problem-based learning** shifts the teacher’s role from “dispensing information to guiding the construction of knowledge by his or her students around an initially ill-defined problem. Students refine the problem, develop research questions, investigate the topic using a wide variety of primary source material and work out a variety of possible solutions before identifying the most reasonable ones” (Johnson 2009, p. 8).

- **Inquiry-based learning** has “its origins in the practices of scientific inquiry and places a heavy emphasis on posing questions, gathering and analyzing data, and constructing evidence-based arguments” (Hmelo-Silver et al., 2007).

- **Challenge-based learning** is “a collaborative learning experience in which teachers and students work together to learn about compelling issues, propose solutions to real problems, and take action. The approach asks students to reflect on their learning and the impact of their actions, and publish their solutions to a worldwide audience” (as quoted in Johnson et al., 2009, p. 10).

Conclusion

The ultimate goal for student-centered classrooms is for students to gain independent minds and the capacity to make decisions about their life-long learning (Brown, 2008). “What makes learner-centered education transformative is that meaning is co-constructed and that self-regulation occurs through interdependence, with a focus on being and becoming fully functioning (McCombs, 2009, p. 7). There is both research-based and evidence-based support for student-centered learning. The evidence of the benefits to learning in construction of learning, collaborative learning, metacognition, teacher/student partnership in learning, and meaningful assessment in real-world contexts are that children in learner-centered environments achieved more and at higher levels while being more engaged.

Teachers often fear the change associated with adopting a student-centered approach (Prensky, 2008). That fear may be based on a misconstrual of student-centered approaches that views them as synonymous with unguided or experientially-based learning. Advocates for student-centered learning agree that “there is little evidence to suggest that [such approaches] foster learning” (Hmelo-Silver et al., 2007, p. 100). Student-centered learning, in contrast, relies heavily on expert instructors—though in roles that teachers familiar with direct instruction may find novel. While it may produce some hesitation, the novelty of new
forms of teacher-student interaction need not be unfulfilling for teachers. Student-centered learning allows teachers to work more one-on-one with students who need “just-in-time” instructional guidance as well as guide whole classes toward deep and relevant understanding of subject material.

According to Wise and O’Neill (2009), the debate between the “constructivists and instructionists” has focused much of its energy on determining whether constructivist approaches provide sufficient guidance to be effective. Wise and O’Neill believe this focus both misses the point and results in the two sides talking past each other. The authors argue instead that the debate should focus not simply on the quantity of guidance, but also the timing and context of the guidance teachers give students. They argue convincingly that relying simply on the quantity of guidance ignores the complex relationships between teachers, students and learning.

Sources


