

Investigating Student Centered Teaching

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Abstract

It is imperative that teachers instruct students in such a way that their knowledge is challenged, deepened, and applied. My study investigates one teacher's perspective about the importance of engaging students in the mathematics classroom using an approach termed "student centered teaching." The benefits, questions, and struggles in implementing student centered teaching will be discussed along with how to practically apply this concept in the classroom.

Classroom teachers have been researching for years on how to teach in a way that leads students to deep understanding of concepts. I believe engaging students in what they are learning is crucial to a student's understanding. How are students to be engaged, though? What does 'understanding' equate to in a classroom? First, we must consider the greatest goal of the classroom: that students become proficient in a subject. My goal in this paper is to discuss the most effective way to facilitate a mathematics classroom such that students are led to a deeper knowledge of the subject. I believe a deeper knowledge of concepts can be defined as an ability to verbalize topics/ideas, teach concepts learned, apply previous knowledge when learning, and make connections between ideas. When a class reaches proficiency I believe conceptual understanding is reached as opposed to instrumental understanding. For example, conceptual understanding can be explained as understanding addition of fractions in terms of a real life situation. However, an example of instrumental understanding can be explained as knowing how to compute addition of fractions without understanding what fractions represent or how addition of fractions can be applied to daily life.

I believe facilitating classrooms that are student centered will lead to conceptual understanding. The chart below from "DreamKeepers" explains the difference between student-centered classrooms and teacher-centered classrooms.

Student Centered*	Teacher Centered*
Knowledge is continuously recreated, recycled, and shared by teachers and students. It is not static or unchanging.	Knowledge is static and is passed in one direction, from teacher to student
Knowledge is viewed critically	Knowledge is viewed as infallible
Teacher is passionate about content	Teacher is detached and neutral about content
Teacher helps students develop necessary skills	Teacher expects students to demonstrate prerequisite skills
Teacher sees excellence as a complex standard that may involve some postulates but takes student diversity and individual differences into account	Teacher sees excellence as a postulate that exists independently from student diversity or individual differences

DreamKeepers, Ladson-Billings, 1947, p.89.

*Student Centered is changed from Culturally Relevant. Teacher centered is changed from Assimilationist.

My interest in the idea of teaching with a student-centered focus began in Project Focus with Dr. Connie Rickenbaker. The class is discussion based and Dr. Rickenbaker uses many questions throughout class to bring students to self-discovery of what they are learning. Dr. Rickenbaker facilitates discussion and allows students ideas to bring meat to the conversation. Dr. Rickenbaker would connect our ideas and steer us to new realizations from our experiences in the classrooms.

During my Project Focus experience I was placed at a middle school. My host teacher's method of teaching often involved allowing the students to build on their previous knowledge through activities and assignments to arrive at new concepts. My host teacher gave the students the opportunity to discuss their ideas openly and she built off their ideas to teach material. In Maed 3121 and 3119 we use material that promotes self-discovery where students build on their previous knowledge to arrive a new concept. I began to observe in class how Dr. Abney would ask questions to encourage us to bring our ideas to the table and engage us in the learning process. I felt the freedom to offer my

suggestions regardless of their complete accuracy. I saw that even when I was off base with my ideas this opportunity allowed me to learn from my response and showed me how to change my line of thinking. I believe this is the basis of learning.

I believe my research will provide the math education community with knowledge about classrooms with a student centered focus. My hope is that my research will convince educators of the benefits of such a classroom and give them practical applications to begin implementing. Taking a closer look at the effects of teaching style can help teachers become more observant of their classrooms and the responses of their students. While many educators and future educators may not be convinced of student centered classrooms I believe my paper will be of benefit to these groups as well. The main purpose of my paper is to learn what will benefit students and their learning the most. My hope is that educators and future educators will be convinced of asking themselves daily, “What will benefit my students learning the most?”

I believe student centered classrooms can support the focus of the Georgia Department of Education. The department expresses the following focus of the Common Core Standards, “Georgia Mathematic curriculum focuses on actively engaging the students in the development of mathematical understanding by using a variety of representations and working independently and cooperatively to solve problems...” (Barge, 2011). There is a new stress on students’ understanding concepts as opposed to following a sequence of steps. Common Core Georgia Performance Standards are focusing on problem solving, reasoning, representation, connections, and communication (Barge, 2011). I will show in my research that the Common Core Standards focuses can

be implemented with student centered classrooms. The following Mathematical Practices from the Common Core Standard further explain the goals of Georgia math classrooms.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning. (Barge,2011).

Phrases in the mathematical practices such as: interpret, create, understand, and explain the reasoning and relationship reveal a goal of deeper understanding in Georgia math classes. I will show student centered teaching can lead to such understanding.

Define Student Centered Classrooms

The components that make up a student-centered classroom are plentiful, varied, and constantly changing. There are principles that I believe can be found in most classrooms that I would define as “student centered”. Such classrooms are to be discussion oriented. Students are involved and fill the classroom with their ideas on topics. The teacher draws students out and finds connections between their ideas by acting as the glue in the discussion (Paley, 1986, p. 77). The teacher points out when students make great points and often he or she explains the validity of such beautiful statements (Paley, 1986, p.77). A student may not realize the process or principle they are exhibiting but a teacher is one who can realize this and affirm it in students such that

students can then draw on such a skill another time. An example within a classroom could consist of students reviewing their work and finding common mistakes they keep making in their work. The teacher can then reveal to the students the skill they are exhibiting with a compliment such as, “What great analyzers my students are! This is a wonderful problem solving skill. I love how you all are observing your work in detail and thinking critically.” As students begin to observe their work and state ideas about their findings “allow for distractions, this might be sounds of children thinking” (Ladson-Billings, 1947, p.67). Often students can appear to be thinking about something off topic but if their thought is dug into a little the teacher can see how their mind connected the comment to their work. Perhaps the student discovers a new point to the topic that has been previously unconsidered. Without such discussions in the classroom students cannot take on the identity as an independent thinker and problem solver. A few tips to generate discussion include “generate open ended questions, the kind that seek no specific answers” (Paley, 1986, p. 77). Also consider ways to include the 3 F’s in subjects that are relevant to your students’ age group. Fantasy, fairness, and friendship are topics that a teacher found always increased students’ focus (Paley, 1986, p.79).

Components to a Successful Student Centered Class

Further components that add to a successful student centered classroom involve the following ideas. In “DreamKeepers” it is encouraged teachers teach with “big ideas and powerful concepts” (Ladson-Billings, 1947, p.23). This allows students to connect concepts to real life and dream about the possibilities of the purposes of classroom topics. This gives me the notion that the depth of understanding of concepts is more important than the quantity. Often when students are pushed to know large amounts of information

they begin to memorize and not apply what they are learning. However, when the amount of information learned is not the focus, but how well students understand concepts, learning is not overwhelming and students tend to not focus on rote memorization. Often if students can be encouraged at the beginning of a course to focus on a few concepts and truly understand them well they can then begin to discover much of the material later in the class. This allows teachers to “ask broad provocative questions” (Ladson-Billings, 1947, p. 25) that stirs students’ creativity and challenges their understanding of material. Often if a teacher asks broad provocative questions then the students are forced to come up with ideas instead of fishing for what they believe the teacher is looking for. I believe students truly desire to be challenged because often when students are asked obvious questions all the students remain quiet. Teachers must encourage students to think about topics and allow students to initiate with ideas as opposed to reacting to specific, obvious questions (Ladson-Billings, 1947, p.27). A great way to implement this principle in the mathematics classroom is by giving students hands on models to work with first and discover concepts. Once students are comfortable with concepts then ask the students to give symbols to the concepts (Philipp, 2000, p.11).

Another great way to give students independence and platform for creativity in the classroom is allowing them to create real life story problems that allow for every aspect of the concept to be thought through as students realize their successes and errors in understanding of concepts (Philipp, 2000, p. 12). These situations create teachable moments where students feel the need to listen to the teachers’ words of wisdom. These situations also create a platform for teachers to observe students’ strengths and

weaknesses and can take advantage of where students' focus currently is, build off of it, and teach in the moment (Philipp, 2000, p. 13).

Teacher's Role in a Student Centered Class

A very important aspect to consider when evaluating student-centered classes is observing the teacher's role. I have found there are many general principles that are crucial to fostering a student centered classroom. I believe the principle in which the students' needs are put to the forefront, is most important. This principle may come across as obvious but can easily be forgotten in a classroom. Student-centered teachers must know their students' backgrounds-culturally, educationally, relationally, and emotionally. Beginning with educational backgrounds; if a teacher begins each semester learning about his or her students and their previous knowledge, the teacher can then use concepts students have already learned and build off of them to lead into new concepts. Philipp says when dealing with relational, emotional and cultural backgrounds there are some helpful guiding questions to consider. These include, "What real life situations would be relevant to students" and "what possible contexts could be used for different types of students?" Each student has different interests, home environments, and backgrounds" that can inform teachers' instructional decisions (Philipp, 2000, p.13).

When a teacher continually focuses on the student's needs in learning mathematics the teacher will be better suited to help the students learn. When the teacher takes the focus off of high-stakes testing, off of other teachers' grades, off of their performance as a teacher and onto the students, the surrounding problems will be more easily answered. According to "DreamKeepers", "successful teachers travel a different route to ensure growth and development"(Ladson-Billings, 1947, p.35). The outcome we

are looking for in the classroom is growth and development and a teacher's role is to figure out how this will best occur in each individual classroom. "DreamKeepers" also encourages that teachers give students a place to display their intellect in the classroom (Ladson-Billings, 1997, p.36) in which opportunities are created for students to ask questions, think independently, and generate questions for the teacher. When students are involved in class as just described it is important that teachers allow flexibility in order to respond critically to students (Ladson-Billings, 1997, p.37). This allows the teacher to respond accordingly and with creativity in order to meet the need exposed and link it to the topic being discussed.

Student's Role in a Student Centered Class

The benefits to having a student centered class have one outstanding common theme: the students' best interest. As students demonstrate what they know in writing, speaking, and a variety of exhibitions they will be able to build an identity as a learner who can express what they know (Weimer, 2002, p.23, 46). As students begin to take responsibility for their learning they will begin to make connections between their in-school lives and their out-of-school experiences (Weimer, 2002, p.23).

Keys to implementing student centered classrooms

The change from a teacher centered classroom to a student centered classroom is one that is gradual and must be done carefully. There are four principles I believe are crucial to implementing student centered values in the classroom. The teacher first must be prepared to respond to resistance from students, parents, administrators, and other teachers (Weimer, 2002, p.149). Weimer says, "If faculty understand the sources of resistance, their knowledge can be used to enlighten students who may not fully

understand their own reaction” (Weimer, 2002, p.150). Often students will resist student centered implementations because they are required to be more involved and realize the responsibility they have in the classroom (Weimer, 2002, p.95). The responsibility of the student is the second key principle of implementing student centered classrooms. Weimer explains, ”this involves developing the intellectual maturity, learning skills, and awareness necessary to function as independent, autonomous learners” (Weimer, 2002, p.95). When students are responsible for their own learning the next principle can be implemented that the teacher must express to students that “learning matters more than grades...students should take from exams, assignments, and ultimately the course itself something more enduring than the grade” (Weimer, 2002, p.125). The fourth principle to be implemented in a classroom switching from teacher centered to student centered is the idea that evaluation is necessary (Weimer, 2002, p.119). The teachers must evaluate themselves, what is working in the classroom, and involve the students in the evaluating process of the students’ work. When students learn how to assess their own work they “develop skills that independent, self-regulating learners need” (Weimer, 2002, p.119). I believe these are key principles to beginning the transition from a teacher centered class to a student centered class.

A Case of a Student Centered Teacher

Interviewing an 8th grade math teacher gave me further insight to a student centered classroom. I would define this teacher as student centered because she describes a good lesson in her class as “...challenging yet engaging. It should revolve around the different types of learning. To me, a good lesson includes time for individual work, small group work, and whole group discussion”. Her focus on engaging the students and

catering to their learning types puts the students' needs and goal of learning at the forefront. She is more concerned with how she can best facilitate the classroom such that the students are able to learn best. A typical lesson in this classroom is described as follows:

A typical lesson includes a warm-up, an opening, a work session, and a closing. The purpose of the warm-up is to allow the students to have time to engage their brains in the mathematics while I take care of the bookkeeping aspects of the class. The opening is usually a mini-lesson in which I introduce the students to the learning target and model/explain the process used to solve whatever we are working on. The work session is a time for students to work on/struggle with the information. During the work session, I walk around and provide one-on-one assistance to the students who are struggling. The closing is usually students working and explaining problems on the board from the work session

Main principles to pull from this classroom's typical lesson that support my idea of a student centered classroom are: engaging students, allowing students to work and struggle with concepts, provide one-on-one assistance, and students work and explain problems verbally and visually.

This classroom focuses on student participation, in which the teacher's role is to, Ensure students are provided with all the information they need in order to learn the material. Most of the time instead of direct teaching, I serve as a facilitator to allow the students to be the main teacher. The role of the students is to work hard to understand the material that is being taught. Students need to focus and prepare

both inside and outside of class. Students are often asked to take on the role of being the teacher so that they will retain more of the information.

There are many great principles for a student centered classroom at work here as well in which this teacher: facilitates class, lets students be teachers, students are required to work hard, students are required to prepare before class, and students are required to focus in class and apply pre-existing knowledge.

When asked how to involve her students in discussion, the teacher explains,

I am constantly asking questions of students. I work hard in my classroom to create an environment where it is okay for students to be wrong. I even model that by creating situations in which I am wrong so that students can see that it is okay to be wrong. I work hard to let students understand that the discussions are the practice. I praise students who are wrong by thanking them for showing us a common mistake that is made and showing that we can use mistakes to adapt and learn the correct process.

The principle that learning is not about perfection is set up well in this classroom. Students are encouraged to innovate ideas and learn from mistakes. The students can see the classroom is not a place to judge performance but rather a platform for creativity, discovering, and practice. To encourage a learning atmosphere in the classroom, this teacher allows students to discover concepts on their own. She believes they “are assimilating a thinking process similar to the person who originally discovered the concept being learned”. This thinking process can then be integrated into the students’ problem solving processes and drawn on later and applied in other situations. She also describes discovering concepts as a way to encourage students’ self-efficacy and that

students “have a more positive attitude toward learning when they are constructing their own learning”.

Discussion and Conclusions

After researching student centered learning I have realized several principles that I would implement in my classroom. The principles are as following: give my students probing questions that are broad and make them think creatively, build classroom discussion off of students ideas, use students ideas to tie back into the main concepts, take time at the beginning of a term to learn about my students as individuals, learners, and their academic background, and give my students projects to discover concepts and then generalize math theorems afterwards. I would also like to continue researching classrooms to see what techniques are most effective. I have enjoyed asking questions about the classroom and searching for answers. My research has answered general questions about student centered learning such as, what is the teachers role, what is the student’s role, and what are techniques to engage students in the classroom. However, I have more questions about running an effective student centered classroom. Some of my new questions are: how can a future educator prepare to run a student centered classroom and how can the Georgia standards be ensured to be covered in a student centered classroom. The two main principles I learned from investigating student centered teaching is that a teacher must be adaptable to each classroom to meet their student’s needs in order to help them learn and teachers must learn to structure the classroom such that students are highly involved in order to maximize learning. Student centered teaching is a concept I believe must continually be researched. Teachers must continually revisit the concept of student centered teaching in order to grow and adapt as an educator.

References

- Barge, J. D. (2011, 8 19). *Common core georgia performance standards*. Retrieved from <https://www.georgiastandards.org/Common-Core/Pages/Math.aspx>.
- Gussin Paley, V. (1986) *On Listening to What the Children Say*. *Harvard Educational Review*, 56(2), 77-131.
- Ladson-Billings, G. (1947). *The dreamkeepers: Successful teachers of african american children*. San Francisco: Jossey Bass.
- Local 8th grade Teacher. (2012, 10 25). Interview by K Austin [Personal Interview].
Investigating student centered teaching.
- Philipp, R. (2000). *Unpacking a Conceptual Lesson*. Informally published manuscript, Center for Research in Mathematics and Science Education, San Diego State University, San Diego. 11-12
- Weimer, M. (2002). *Learner-centered teaching*. San Francisco: Jossey Bass.