

## Investigating Perceptions of Teachers and Teaching Using the Draw-a-Teacher Checklist

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Pre-service teachers enter teacher education programs with a fairly well-formed set of beliefs about teaching. These beliefs were formed while being students in their K-12 classrooms (Lortie, 1975; Minor, Onwuegbuzie, Witcher, & James, 2002). Learning experiences shape our beliefs and our actions. Some pre-service teachers have entered the education field because they had a wonderful teacher(s) who took interest in them and made learning fun and meaningful. Others entered the education field because they had negative experiences and want to make a positive change for other students. Some of their teachers provided only lecture, while other pre-service teachers have experienced a more hands-on approach to learning (Ryan & Cooper, 2007; Sadker & Sadker 2005). This research began with a desire to better understand and identify the mental images and beliefs pre-service teachers bring to their education methods coursework. In addition, this research examined current classroom teachers' drawings to determine their perceptions about teachers and teaching.

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### Theoretical Framework

Identifying how pre-service teachers and in-service teachers perceive themselves as teachers is important, as beliefs tend to direct classroom practices and teacher behaviors (Hart, 2002). However, uncovering what teachers' believe is not always easy. Drawings allow teachers to know themselves from the inside out, as drawings help teachers convey emotions and ideas they might not say in words (Zambo, 2006). Adler (1982) found that drawing provided people with a good opportunity to reflect on their personal feelings and attitudes and to express what they value. Honest self-evaluation of our mental images helps us to determine the reasoning behind what we teach, how we teach, and why we teach (Schlechty, 2009; Moore & Whitfield, 2008).

Beliefs guide our actions and have been closely associated with Bandura's theory of self-efficacy. Bandura's theory suggested that life experiences guide our actions and our perceptions of our ability (Bandura, 1986). Individual beliefs help to form either positive or negative mental images (Norman, 1983). Calderhead and Robson (1991) found that pre-service teachers held vivid mental images of what they believed to be true about good teaching from their own experiences as students. In 1988, Goodman found that teachers and pre-service teachers were influenced by their mental images, which had been formed by past events. Barnes (1992) determined that our beliefs are shaped by the experiences we have had, as well as our expectations and our values. Our beliefs significantly influence our perceptions and judgments about our teaching and how others teach (Clark, 1988; Goodman, 1988). Thus, examining pre-service teachers' mental images may provide valuable insights into their beliefs about what good teaching looks like, as these mental images guide their actions and reveal their pedagogical beliefs, which informs their approach to instruction (Hart, 2002). This mental image insight can also provide information about teachers with various years of classroom experiences.

Calderhead and Robson (1991) said a respected teacher reinforces what a pre-service teacher thinks is a good teacher. Thus, pre-service teachers have a mental picture of what a "good" or "bad" classroom teacher looks like through their years of personal classroom experiences as students. Thomas, Pederson, and Finson (2001) recognized that teacher beliefs inform such teacher's behaviors in the classroom which can range from strictly *teacher-centered* to primarily student-centered teaching. Most classrooms do not reflect either extreme end of this continuum, but rather fall somewhere in between these polarities.

### Teaching and Learning Philosophies

Explaining the teaching and learning process can be like exploring both sides of a slate. One side is blank (environmentalist theorists) and the other side carved with the writing only unveiled once dusted with chalk (developmentalist and humanistic theorists). The environmentalist theorist such as Locke, Skinner, and Pavlov “believe that children become what we make them. It is our job to teach them, to correct their mistakes, to provide good models and to motivate them to learn” (Crain, 2000, p. xi). With this outlook, theorists believe that someone or something within his or her environment teaches everything that is done or accomplished by a person. However, the developmental theorist such as Rousseau, Montessori, Gesell, Kholberg, Piaget, and Maslow “are less impressed by our efforts to teach or otherwise influence children and are more interested in how children grow and learn on their own” (Crain, 2000, p. xi). Vygotsky and Dewey noted the importance of integrating the developmental and environment perspectives.

***Teacher-Centered Learning.*** “Locke argued that people are largely shaped by their social environments, especially by their education” (Crain, 2000, p. 5). “Locke’s ideas on education are pretty much those of the contemporary educator. Most teachers use rewards and punishments as external motivators and believe that it is up to them to teach children the right things” (Crain, 2000, p. 10). This stimulus response approach (behaviorist theory) to teaching and learning in the classroom is commonly referred to as the traditional approach to teaching where the learning activities are teacher directed. In a teacher-centered classroom, the teacher is the center of all teaching and learning in which the curriculum is focused on specific knowledge outcomes. The teacher provides the knowledge to the students primarily by lecture or reading the textbooks (Segall & Wilson, 1998). Student thoughts and questions are not encouraged and do not alter the curriculum or actions of the teacher.

***Student-Centered Learning.*** “Childhood has its own ways of seeing, thinking, and feeling and we must first learn all we can about the stages of development” (Crain, 2000, p. 13). In addition, Rousseau believed that people could not learn everything they needed to know by themselves and they had to rely on others. This approach (social learning theory) to teaching and learning in the classroom is commonly referred to as the constructivist approach to teaching in which the learning activities are student-centered. In a student-centered classroom, the students are the center of the classroom and the teachers facilitate the learning and activities. Students are encouraged to question and learn by inquiry and

exploration. Students' questions and suggestions drive the curriculum and teacher actions. "Making school student-centered involves building on the natural curiosity children bring to school. Teachers infuse into such kid-driven curriculum all the skills, knowledge, and concepts that society mandates" (Zemelman, Daniels, & Hyde, 2005, p. 9).

***Balanced Learning.*** This teaching and learning approach uses best educational practices from both the traditional and the constructivist learning. This is "the thoughtful, informed, responsible, state-of-the-art teaching where the teacher is aware of current research and consistently offers the students the full benefits of the latest knowledge, technology and procedures" (Zemelman et al., p. viii). This integrated approach to teaching and learning reflects both Vygotsky's notion of zone of proximal development while learning with an educated other and Dewey's collaborative self-regulated learning where the self asked the educated other for clarification. Prominent education reform documents (e.g. NRC 2012, NCTM, 2000; NRC, 1996; AAAS, 1989) stressed the importance of student-centered classrooms as an effective teaching strategy. Although most teacher preparation programs teach the aspects of balanced to student-centered classrooms, this may not be the way pre-service and practicing teachers were taught as students.

### Literature Review

The original Draw-a-Scientist Test (DAST), which was patterned after Goodenough's (1926) Draw-a-Man Test, was created to examine children's perceptions, ideals and thoughts about scientists (Thomas et al., 2001). In this study, children's pictures were analyzed using seven elements, developed in prior research by Chambers (1983). A scoring checklist (The DAST-C) was created in order to assess the range of pictures to determine if they were stereotypical or realistic (Finson, Beaver, & Cramond, 1995). The DAST-C was found to be a valid instrument to assess students' perceptions of scientists. This study led to the development of the Draw-a-Science-Teacher-Test Checklist (DASTT-C) instrument which was used in research to investigate which images and stereotypes were held by students about science teachers as a way to combat stereotypes and improve classroom science teaching (Finson, et al., 1995). DASTT-C also measured teacher-centered and student-centered classroom attributes, thus suggesting the beliefs the teachers held about teaching philosophies.

More recently, Utley and Showalter (2007) developed the Draw-a-Math-Teacher Test (DAMTT), which continued this model of research and expanded it to investigate pre-service teachers' perceptions and

stereotypes of classroom math teachers and Minogue (2010) used the DASTT-C to record perception changes in pre-service teachers following the completion of a science methods course.

### Objective

The purpose of this study was twofold. First, this study examined participant's visual images of themselves as teachers. Second, the researchers modified the Draw-a-Science-Teacher Test (DASTT-C) (Thomas et al., 2001), to create the Draw-a-Teacher Checklist instrument for this study. Drawings made by the study participants and the Draw-a-Teacher Checklist instrument were used to provide insight into participants' perceptions about teachers and teaching, which presumably reflected the participants' beliefs about student-centered and teacher-centered classrooms.

### Method

**Research Questions.** This research focused on the following questions:

1. Does the Draw-a-Teacher Checklist instrument measure participants' perceptions about teaching and learning on a continuum of teacher-centered to student-centered?
2. What kind of perceptions do undergraduates, interns, alternatively certified, and graduate level students in teacher education courses hold about classroom teachers and teaching, as indicated in their drawings?
3. What do the drawing characteristics suggest about the participants' views of student-centered and teacher-centered classrooms?

**Participants.** The participants for this study included 50 undergraduates, 50 interns and alternatively certificated students, and 50 graduate students enrolled in teacher education courses at a four-year university (see Table 1). The undergraduate participants consisted of both elementary and secondary education students enrolled in a required introductory education course. This course gave education majors, freshman through junior level students, a general overview of education as a career by providing information about the structure of state education system and the history of education. This is the first course students are required to complete when seeking a degree in education.

The intern and alternatively certified participants were students who had completed the majority of their education course work, but had not yet started their fieldwork in the classroom. Thus, these students had completed their methods courses, but lacked practical classroom

experience. This group will be identified as “interns” for the remainder of this article.

The graduate participants consisted of first-to-third year graduate level students who were pursuing a master’s degree in elementary, secondary, reading, or early childhood education. Participants were classroom teachers with different levels of teaching experience at a variety of grade levels in rural, urban and suburban school districts.

### Procedures and Instrumentation

***Drawing Procedures.*** Students were provided a blank sheet of white paper and drawing supplies (markers, color pencils and crayons) and were asked to “Draw a teacher teaching.” No other instructions were provided and participants were given approximately 15-20 minutes to complete the drawing.

***Instrumentation Development.*** Prior to this study, one of the researchers used the same drawing activity and procedures in an introductory education course as a way to encourage class discussions about teacher stereotypes; thus, initially, this classroom activity was not intended to become a study. However, after reviewing these initial drawings, the researchers desired to investigate further and designed this research study.

**Table 1**  
***Participant Demographics***

	Undergrads	Interns	Graduates
<b>Ethnicity</b>			
Caucasian	40	35	20
African American	5	9	17
Hispanic	5	5	10
Other	0	1	0
<b>Ages</b>			
18-24	38	25	0
25-29	6	13	7
30-39	4	9	13
40-49	2	3	8
50-59	0	0	3
No response	0	0	19
<b>Gender</b>			
Male	1	2	12
Female	49	48	38

Researchers, who recorded drawing characteristics and frequencies, by using tally marks, viewed the original sample of drawings. The researchers considered the following aspects of each drawing: the physical appearance of the teacher, the physical appearance of the classroom including the students, the implied actions of the teacher (teaching) and the implied actions of the students (learning). The frequency of tally marks indicated patterns of drawing characteristics. From this data researchers created a checklist instrument, based on the Draw-a-Science-Teacher Test (Thomas et al., 2001) in which checks indicated physical appearance and teaching. The same three subsections for scoring were used: Teacher, Students, and Environment. However, the characteristic attributes under each section were modified to focus on the general characteristics of a teacher and teaching, rather than specifics for a science teacher teaching. This new checklist instrument was named the Draw-a-Teacher Checklist and was designed to assess the perceptions of teachers and teaching as indicated via drawings (see Appendix).

The Draw-a-Teacher Checklist recorded checks, which counted as points, for particular characteristics indicated in the drawings in which participants' drew a teacher teaching. The scoring system of the instrument was designed to provide higher scores to drawings that appeared more traditional in physical appearance, and implied actions typical of a teacher-centered classroom. Whereas lower scores indicated a more non-traditional physical appearance of the teacher and classroom and the actions implied were more student-centered.

The checklist was divided into four sections. The "teacher appearance" section included characteristics that had a possible total of six points. Points were given if the drawing indicated the teacher was: female, Caucasian, had a stereotypical physical appearance (shapeless body, frumpy, glasses, smile/pleasant expression), and/or had conservative dress (dress or skirt, high heels or ballet flats, simple hairstyle). Points were also earned if the drawing included a symbol of knowledge (i.e. large teacher desk, diplomas/certificates, teacher books) or a symbol of authority (apple, ruler in hand, names on board, organized classroom).

The "student(s) appearance" section included characteristics that had a possible total of 4 points. Points were given if the drawing indicated that the students were: all Caucasian, were physically smaller than the drawn teacher, had smiles, and wore conservative dress (neat, uniform appearance of clothes/hair). Points were also given if a symbol of learning was drawn near the student, such as books, paper, backpack, pencils. If no students were drawn in the picture, the researchers decided the drawing should be given the maximum four points for this section, as they believed that the deletion of students when asked to "Draw a

teacher teaching” indicated a teacher-centered classroom in which the students were not considered an important aspect of the picture.

The “physical appearance” of the classroom section considered the elements typically included in drawings of classrooms. These indicators received points on the instrument: student desks separated into rows/orderly arrangements (not pods of desks, which would indicate the potential for student group activities), the presence of traditional learning tools (paper/worksheet, rulers, pencil), a chalkboard (if writing was included the researchers recorded the content in a database), and bare walls (no motivational posters or decorations). The maximum score for this section was four.

The final section of the checklist comprised the indicated or inferred actions of the teacher and the students in the drawing. Drawings that appear more traditional or teacher-centered typically showed the teacher at the front center of the classroom and the students sitting in their seats as passive learners. Points were given if the drawing portrayed the teacher located at the front and center of classroom and if the teacher was drawn lecturing or performing demonstration, as the researchers interpreted these characteristics to be more teacher-centered. Student-centered drawings showed the student(s) as an active member of the learning process with the teacher in various parts of the room, doing various activities. Points were also awarded if the student(s) appeared to be passively learning (paper and pencil or worksheets indicated), seated at his/her desk and/or working independently. If traditional teacher dialog was indicated, such as directions, discipline, or low-level questioning, a point was provided and the researchers noted the dialog in a database. The maximum points allowed in this section were six and thus, the maximum score of the entire checklist was 20. Once researchers finalized the Draw-a-Teacher Checklist, a new sample of drawings was collected for use in this study.

## Results

Using the predetermined checklist, the first two authors independently analyzed 30 drawings to determine the type of classroom environment that was depicted by each participant’s drawing. Results were compared and an interrater agreement of 80% was achieved. Questions about scoring details were discussed, which led to minor score sheet revisions and/or scoring clarifications.

The remainder of the drawings was scored together to ensure reliability, with a final interrater reliability of 98% achieved. Thus, to answer the first research question, it was determined by the researchers that

the checklist was reliable, as the checklist did accurately measure the drawing appearance on the continuum from teacher-centered to student-centered.

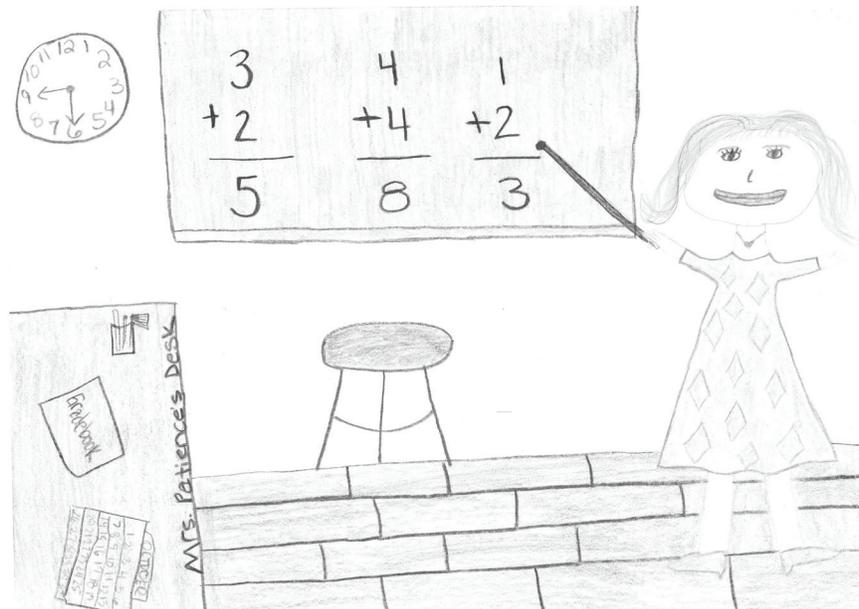
In order to determine if the participants' drawings appeared more teacher-centered, student-centered or somewhere in between both extremes (balanced), the total scores from the checklist were calculated for each drawing (see Table 2).

Teachers scoring from 16 to 20 were classified as teacher-centered (see Figure 1). This example drawing included aspects typical of teacher-centered drawings: traditional teacher physical appearance and dress,

**Table 2**  
*Teacher-Centered vs Student-Centered Drawing Scores*

	Undergrads n (%)	Interns n (%)	Graduate n (%)	Total n (%)
Teacher-Centered	31 (62)	8 (16)	20 (40)	59 (39)
Mixed Characteristics	16 (32)	34 (68)	25 (50)	75 (50)
Student-Centered	3 (6)	8 (16)	5 (10)	16 (11)
Total	50 (100)	50 (100)	50 (100)	50 (100)

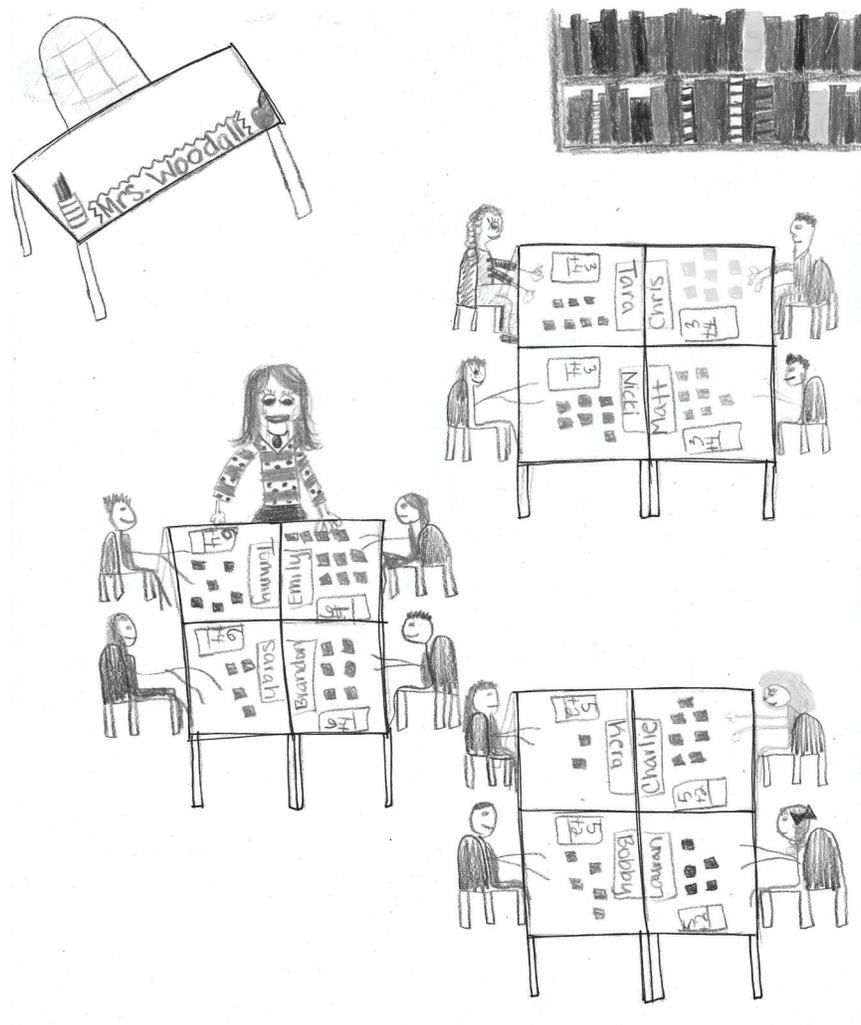
**Figure 1**  
*Sample of a "Teacher-Centered" Drawing*



located in the front of the classroom, no students included in the drawing, and includes a large teacher's desk with gradebook and calendar. This drawing received a checklist score of 19.

Participants with scores from 10 to 15 were considered to have a mixture of characteristics in their drawings, placing them somewhere in the middle of the continuum (balanced) (see Figure 2). This example

**Figure 2**  
Sample of a "Balanced" Drawing



indicates traditional characteristics, such as the traditional appearance of the teacher, and large teacher's desk. However, the students' desks are arranged in non-traditional groupings and the teacher appears to be working among the students, rather lecturing at the front of the room. The students, although sitting in groups, are working individually with manipulatives to solve mathematics worksheets. This drawing received a score of 12.

Finally, participants with total scores of less than 10 drew pictures that were considered more student-centered (see Figure 3). Figure 3 is a sample drawing in which the classroom is student-centered: the students are working in small groups at various learning centers and the teacher is seated on the floor reading to students in the "reading center." This drawing received a score of three.

When examining the total sample ( $n=150$ ), only 11% of the participants' drawings scored as student-centered while 39% received scores in the teacher-centered category. Half of the participants drew pictures of teachers in classrooms that showed a combination of characteristics or

**Figure 3**  
Sample of a "Student-Centered" Drawing



a balanced approach. The undergraduate students tended to have more teacher-centered drawings (62%) than the intern (16%) or the graduate teachers (40%).

After examining the percentages of drawings falling into each of three categories, the researchers computed descriptive statistics (means and standard deviations) for the total checklist score, teacher appearance score, the student appearance score, classroom physical appearance score, and classroom actions indicated/inferred score (see Table 3).

When examining the mean teacher appearance and student appearance subscale scores, it was determined that there was not much difference between the different groups of participants. However, on the classroom physical appearance and classroom actions indicated/inferred subscales, there were differences with intern teachers drawing fewer traditional or teacher-centered classroom appearances and actions than the undergraduates or graduate students.

To determine if the differences between the three groups of participants (undergraduates, interns and graduate) were significant, a one-way analysis of variance (ANOVA) was computed on the Draw-a-Teacher Test total score as well as each of the four subscales (Teacher Appearance, Student Appearance, Physical Classroom, and Actions in the Classroom). Results of the ANOVA indicate that there were significant differences in Teacher Appearance [ $F(2,147) = 7.016, p < .05$ ], Physical Classroom Appearance [ $F(2,147) = 13.639, p < .05$ ], Actions in the Classroom [ $F(2,147) = 6.920, p < .05$ ] and total scores [ $F(2,147) = 7.291, p < .05$ ]. However, there were no significant group differences in Student Appearances (see Table 4).

Significant differences between groups were examined using Tukey post hoc tests (see Table 5). Overall, the interns [ $M(SD) = 12.94(3.02)$ ]

**Table 3**  
*Descriptive Statistics*

	Undergrads Mean (SD)	Interns Mean (SD)	Graduate Mean (SD)	Total Mean (SD)
Total Score (20)	15.22 (3.02)	12.94 (2.74)	14.44 (3.32)	14.20 (3.16)
Teacher Appearance (6)	4.74 (1.21)	4.52 (.81)	3.94 (1.24)	4.40 (1.15)
Student Appearance (4)	3.38 (0.75)	3.28 (.61)	3.30 (.74)	3.32 (0.70)
Classroom Physical Appearance (4)	2.70 (1.02)	1.78 (1.02)	2.82 (1.22)	2.43 (1.18)
Classroom Actions Indicated/Infer (6)	4.42 (1.33)	3.34 (1.71)	4.32 (1.74)	4.03 (1.67)

\*Note: A higher mean indicates more teacher-centered characteristics

tended to have more student-centered drawings than graduate teachers [M (SD) = 14.44 (3.32)] or undergraduates [M (SD) = 15.22 (3.02)]. On the Teacher Appearance subscale, post hoc analyses suggest a statistically significant difference between undergraduate responses and graduate responses as well as between intern teachers and graduate teachers. Graduate students [M (SD) = 3.94 (1.24)] tended to have more student-centered drawings of classroom teachers than intern teachers [M (SD) = 4.52 (.81)] or undergraduates [M (SD) = 4.74 (1.21)]. On the Physical Appearance of the Classroom subscale, post hoc analyses indicate a significant difference between undergraduates and interns and graduate teachers and interns. The interns [M (SD) = 1.78 (1.02)] tended to have less traditional drawings than undergraduates [M (SD) = 2.70 (1.02)] and graduates [M (SD) = 2.82, 1.22)]. Finally, on the Actions in the Classroom Subscale, post hoc analyses indicate a significant difference between undergraduates and interns and graduate teachers and interns. The interns also [M (SD) = 3.34 (1.71)] tended to include more

**Table 4**  
*Results of One-Way Between ANOVA*

Source	Sum of Squares	df	MS	F	p
<b>Total Scores</b>					
Between groups	134.28	2	67.14	7.29	.001*
Within groups	1353.72	147	9.20		
Total	1488.00	149			
<b>Teacher Appearance</b>					
Between groups	17.08	2	8.54	7.01	.001*
Within groups	178.92	147	1.21		
Total	196.00	149			
<b>Student Appearance</b>					
Between groups	.28	2	.14	.28	.753
Within groups	72.36	147	.49		
Total	72.64	149			
<b>Classroom Arrangement</b>					
Between groups	32.37	2	16.18	13.63	.000*
Within groups	174.46	147	1.18		
Total	206.83	149			
<b>Actions in classroom</b>					
Between groups	35.61	2	17.80	6.92	.001*
Within groups	378.28	147	2.57		
Total	413.89	149			

student-centered actions than graduate teachers [M (SD) = 4.32 (1.74)] or undergraduates [M (SD) = 3.34 (1.71)].

### Discussion and Conclusion

This study examined the mental models undergraduates, interns and graduate students hold of teachers and teaching. The development of the Draw-a-Teacher Checklist instrument began with a listing of teacher-centered and student-centered characteristics from drawings of classroom teachers teaching.

Based on the drawing data obtained from the Draw-A-Teacher Checklist instrument and the statistical analysis of the scores, an interesting trend appeared. In general, the undergraduates viewed teachers and

**Table 5**  
*Tukey Post-Hoc Comparisons*

	(I) Group	(J) Group	Mean Diff (I-J)	Sig.
Teacher Appearance	Undergraduates	Graduates	.80*	.001*
		Interns	.22	.580
	Graduates	Undergraduates	-.80*	.001*
		Interns	-.58*	.026*
	Interns	Undergraduates	-.22	.580
		Graduates	.58*	.026*
Student Appearance	Undergraduates	Graduates	.08	.836
		Interns	.10	.756
	Graduates	Undergraduates	-.08	.836
		Interns	.02	.989
	Interns	Undergraduates	-.10	.756
		Graduates	-.02	.989
Classroom Arrangement	Undergraduates	Graduates	-.12	.846
		Interns	.92*	.000*
	Graduates	Undergraduates	.12	.846
		Interns	1.04*	.000*
	Interns	Undergraduates	-.92*	.000*
		Graduates	-1.04*	.000*
Actions in Classroom	Undergraduates	Graduates	.10	.948
		Interns	1.08*	.003*
	Graduates	Undergraduates	-.10	.948
		Interns	.98*	.008*
	Interns	Undergraduates	-1.08*	.003
		Graduates	-.98*	.008

\* The mean difference is significant at the 0.05 level.

teaching as more traditional as their drawings indicated teaching events where the teacher was at the center of the instructional and learning process and the students were passively sitting at their desks, which were in rows, facing the teacher who was doing all the talking (through lecture). If the undergraduates' drawings indicated their past classroom experiences (as students) and their beliefs about teaching and teachers, this suggests that incoming education students have more firmly established knowledge about teacher-centered classrooms and may believe that this is good teaching.

After completing the majority of their teacher preparation coursework, which supported best teaching practices, the interns viewed good teaching and teachers as more student-centered. The student-centered drawings included classrooms and teaching events in which the students were at the center of the instructional and learning process such as, the students were sitting in groups, working collaboratively, and actively participating. These drawings indicated that the interns had learned and embraced the concept of student-centered classrooms regardless of their past classroom experiences. However, the data (in Table 2) showed the interns believed that the balanced approach where teachers use both teacher-centered and student-centered was really the ideal teaching approach.

Overall, the graduate participants viewed teachers and teaching more teacher-centered. Although this study did not investigate the teacher preparation experienced by all graduate participants, since these were practicing teachers, researchers assumed they were familiar with aspects of student-centered classrooms as this was a suggested implementation for education reform. Thus, the drawing data from the graduates leave unanswered questions in need of future investigation.

By examining pre-service and practicing teachers' drawings, teacher educators can gain insight into the beliefs about teaching and teachers held by their students. These drawing characteristics can be used as a self-reflective tool for students to become aware of their perceptions and potentially encourage positive changes toward more student-centered classrooms as suggested by education reform measures. Teacher educators can also use drawings in their methods courses as a way to encourage discussions about classrooms, such as teaching and learning in student-centered and teacher-centered classrooms.

The drawings by the graduates (practicing teachers) in this study suggest that these teachers revert back to more traditional, teacher-centered classroom beliefs, and often indicate frustration in the classroom (i.e. negative statements, angry faces on teachers and students, etc.). Listening to teachers talk, this reverting back to traditional teaching is not always at the instigation of the teacher, but required by the building

principal and the “teaching to the test” approach that has been developed due to high stakes testing (Boggs & Szabo, 2009). However, as this study did not explore this issue, we plan to further investigate the reasons why some teachers return to teacher-centered classroom practices, even when they are aware of the effectiveness of student-centered classroom practices and the need to use the balanced approach in the classroom. As it is important to encourage professional reflection, drawings provide a non-threatening ways to have both pre-service teachers and in-service teachers explore their mental models of what good teaching looks like. This checklist is easy to use and participants can use it to help them analyze their own mental models through self-reflection and self-examination. Clark (1988) suggested that this self-reflection and analysis could rekindle the passion to teach well and create a commitment to self-improvement.

### Limitations

There were a few limitations that need to be considered while interpreting the results of this study. First, like all self-reported data, it is assumed that these participants were forthcoming in that their drawings of teachers teaching actually reflected their beliefs about teaching and learning. Second, while best efforts were made by the researchers to create an effective Draw-A-Teacher Checklist instrument, no instrument is without issue. As Minogue (2010) reported in his study, “as with all assessment rubrics, there was some ambiguity and thus unintended room for subjectivity” (p.776). These issues were addressed, however the limitation is important to acknowledge. Third, it is also noted that studies have indicated inconsistencies in teacher beliefs and their actions (e.g. Fang, 1996; Simmons et al., 1999). Some of these inconsistencies may have occurred because pre-service teachers and interns lack the practical knowledge of the day-to-day actions and responsibilities of classroom teachers.

### References

- American Association for the Advancement of Science. (1989). *Science for all Americans*. Washington, DC: Author.
- Adler, L. L. (1982). Children’s drawings as an indicator of individual preferences reflecting group values: A programmatic study. In L. L. Alder (Ed.), *Cross-cultural research at issue* (pp. 71-98). New York: Academic Press.
- Barnes, D. (1992). The significance of teachers’ frames for teaching. In T. Russell & H. Munby (Eds.), *Teachers and teaching: From classroom to reflection* (pp. 9-32). New York: Falmer Press.

- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Boggs, M., & Szabo, S. (2009). Teachers' talk: Teachers' beliefs about factors affecting their classroom. In F. Falk-Ross, S. Szabo, MB Sampson, & M. Foote (Eds.), *Literacy issues during changing times: A call to action* (Volume 30, pp. 138-150). Commerce, TX: College Reading Association Yearbook
- Calderhead, J., & Robson, M. (1991). Images of teaching: Student teachers' early conceptions of classroom practice. *Teaching and Teacher Education*, 7, 1-8.
- Chambers, D. W. (1983). Stereotypic images of the scientist: The Draw-a-Scientist Test. *Science Education*, 67(2), 255-265.
- Clark, C. M. (1988). Asking the right questions about teacher preparation: Contributions of research on teacher thinking. *Educational Researcher*, 17(2), 5-12.
- Crain, W. (2000). *Theories of development* (4th edition). Upper Saddle River, NJ: Prentice Hall.
- Fang, Z. (1996). A review of research on teacher beliefs and practices. *Educational Research*, 38(1), 47-65.
- Finson, K. D., Beaver, J. B., & Cramond, B. L. (1995). Development and field test of a checklist for the Draw-a-Scientist Test. *School Science and Mathematics*, 95(4), 195-205.
- Goodenough, F. L. (1926). *Measurement of intelligence by drawings*. New York: Harcourt Brace.
- Goodman, J. (1988). Constructing a practical philosophy of teaching: A study of pre-service teachers' professional perspective. *Teaching and Teacher Education*, 4, 127-136.
- Hart, L. C. (2002). Pre-service teachers' beliefs and practice after participating in an integrated content/methods course. *School Science and Mathematics*, 102(1), 4-13.
- Lortie, D. C. (1975). *School teacher: A sociological study*. Chicago: University of Chicago Press.
- National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author.
- National Research Council. (1996). *National science education standards*. Washington, DC: National Academy Press.
- National Research Council. (2012). *A framework for K-12 science education: Practices, crosscutting concepts and core ideas*. Washington, DC National Academy Press.
- Norman, D. A. (1983). Some observations on mental models. In D. Gentner, D., & A. L. Stevens, (Eds.), *Mental models* (pp. 7-14). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Minor, L. C., Onwuegbuzie, L. J., Witcher, A. W., & James, T. L. (2002). Pre-service teachers' educational beliefs and their perceptions of characteristics of effective teachers. *Journal of Educational Research*, 96, 116-127.
- Minogue, J. (2010). What is the teacher doing? What are the students doing? An application of the Draw-a-Science-Teacher Test. *Journal of Science Teacher Education*, 21, 767-781.
- Moore, J. & Whitfield, V. (2008). Musing: A way to inform and inspire pedagogy through self- reflection. *The Reading Teacher*, 61, 586-588.

- Ryan, K., & Cooper, J. (2007). *Those who can, teach* (11th ed). Boston: Houghton Mifflin Company.
- Sadker, M., & Sadker, D. (2005). *Teachers, schools, and society* (7th ed). New York: McGraw Hill.
- Segall, W., & Wilson, A. (1998). *Introduction to education: Teaching in a diverse society*. Upper Saddle River, NJ: Prentice Hall.
- Schlechty, P. (2009). *Leading for learning: How to transform schools into learning organizations*. San Francisco: Jossey-Bass.
- Simmons, P. E., Emory, A., Carter, T., Coker, T., Finnegan, B., Crockett, D., et al. (1999). Beginning teachers: Beliefs and classroom actions. *Journal of Research in Science Teaching*, 36(8), 930-954.
- Thomas, J. A., Pederson, J. E., & Finson, K. (2001). Validating the Draw-A-Scientist-Test checklist: Exploring mental models and teacher beliefs. *Journal of Science Teacher Educations*, 12, 295-310.
- Utley, J., & Showalter, B. (2007). Pre-service elementary teachers' visual images of themselves as mathematics teachers. *Focus on Learning Problems in Mathematics*, 29(3), 1-14.
- Zambo, D. (2006). Using thought-bubble pictures to assess students' feelings about reading. *The Reading Teacher*, 59, 798-803.
- Zemelman, S., Daniels, H., & Hyde, A. (2005). *Best practice: New standards for teaching and learning in American's schools* (2nd ed). Portsmouth, NH: Heinemann Publishing.

## Appendix

### ***Draw-a-Teacher Checklist***

Participant:

\_\_\_\_\_ age, \_\_\_\_\_ gender, \_\_\_\_\_ ethnicity, \_\_\_\_\_ other information

Overall Drawing Appearance:

\_\_\_\_\_ Traditional, \_\_\_\_\_ Non-Traditional

*Teacher Appearance*

Female .....\_\_\_\_\_

Caucasian .....\_\_\_\_\_

Physical (shapeless body, dumpy, glasses,  
smile/pleasant expression) .....\_\_\_\_\_

Conservative Dress (dress or skirt, high heels or ballet flats,  
simple hair style) .....\_\_\_\_\_

Symbol of Knowledge (large teacher desk, diplomas/certificates,  
teacher books) . .....\_\_\_\_\_

Symbol of Authority (apple, ruler in hand, names on board,  
organized classroom).....\_\_\_\_\_

Score: \_\_\_\_\_ of 6

*Student(s) Appearance*

(If no students drawn, award 4 points)

All Caucasian .....\_\_\_\_\_

Physical (smaller than teacher,  
 smile/pleasant expression) ..... \_\_\_\_\_  
 Conservative Dress (neat, uniform appearance  
 of clothes/hair) ..... \_\_\_\_\_  
 Symbol of Learning near Student (books, paper, backpack,  
 pencils)..... \_\_\_\_\_  
 Score: \_\_\_\_\_ of 4

*Classroom and Environment Physical Appearance*

Student Desks separated into rows/orderly arrangement ..... \_\_\_\_\_  
 Traditional Learning Tools (paper/worksheet, rulers, pencil) ..... \_\_\_\_\_  
 Chalkboard (if writing, record on reverse) ..... \_\_\_\_\_  
 Bare Walls (no motivational posters or decorations) ..... \_\_\_\_\_  
 Score: \_\_\_\_\_ of 4

*Actions Indicated / Inferred*

Teacher located at front/center of classroom..... \_\_\_\_\_  
 Teacher lecturing or performing demonstration ..... \_\_\_\_\_  
 Student(s) passively learning..... \_\_\_\_\_  
 Student(s) seated in desks ..... \_\_\_\_\_  
 Students working independently..... \_\_\_\_\_  
 Traditional Teacher Dialog (directions, discipline,  
 low-level questioning..... \_\_\_\_\_  
 (Record on back)

Score: \_\_\_\_\_ of 6  
 Total Score: \_\_\_\_\_ of 20

Other Comments: