Teachers' Knowledge About and Use of Teaching Models

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Abstract

Teacher knowledge is a key to effective teaching. Understanding teacher knowledge can help educators understand teacher practices. It was the purpose of this study to examine teachers' knowledge about the use of direct, peer, and inquiry teaching models. Thirty-two teachers, representing both elementary and secondary levels, were interviewed. Data were analyzed via constant comparison and analytic induction methods. All teachers had some knowledge about the models and that knowledge was gained through a variety of sources. Key to that knowledge gain, however, was experience with the model. The decision to use a model depended on a variety of factors including control, time, and knowledge. Direct instruction was self-reported as the dominant model used at both elementary and secondary levels.

Research on effective teaching has evolved through a number of different eras of focus. Early attempts to explore effective teaching focused on teacher characteristics and processes (Connelly, Clandinin, & He, 1997). The field moved through process-process designs in the 1950's and 1960's and then into the process-product focus of the 1960's and 1970's (Rink, 2002). The 1980's saw a rejection of the search for single variables and their influence on learning and as a consequence, new conceptual frameworks were explored to understand teaching. One of those frameworks still influencing research on teaching effectiveness is that of teacher knowledge. As Schempp (1993) suggests, understanding teaching requires an understanding of teachers' knowledge bases.

A number of frameworks have been proposed for categorizing teacher knowledge (e.g., Carter & Doyle, 1987; Shulman, 1987). Although each system is unique, most include some version of the following knowledge domains: (a) pedagogical knowledge; (b) subject matter knowledge; and (c) pedagogical content knowledge. General pedagogical knowledge is not subject matter specific and includes "generic" teaching knowledge (e.g., management, instructional strategies) about effective teaching that might be applicable in a wide variety of educational settings. Subject matter knowledge is a teacher's knowledge of and about the content to be taught. Pedagogical content knowledge is an integration of general pedagogical and specific subject matter knowledge. Although Marks (1990) suggests a precise distinction between types of knowledge is somewhat arbitrary, the distinctions have and continue to serve as a useful research heuristic.

Regardless of the specific type of knowledge, the importance of teacher knowledge is widely acknowledged. There is some evidence that more experienced physical education teachers' knowledge varies from that of novices (Dodds, 1994; Griffey & Housner, 1991) and those experiences may allow for more effective teaching (Barrett & Collie, 1996; Chen & Rovegno, 2000). Preservice teachers' knowledge seems to be influenced by field experiences (Rovegno, 1992, 1993) while experienced teachers' knowledge change seems to be a function of individual perspectives (Rovengno & Bandhauer, 1997b) and school context factors (Dyson & Sullivan, 1998; Rovengno & Bandhauer, 1997a). Understanding how teacher knowledge develops and the specifics of knowledge content are keys to understanding teacher action.

This investigation explored teachers' pedagogical knowledge of instructional strategies from the teachers' own perspectives. For the purposes of this investigation, Metzler's (2000) definition of teaching models was used:

> ...a comprehensive and coherent plan for teaching that includes a theoretical foundation, statements of intended learning outcomes, teacher's content knowledge expertise, developmentally appropriate and sequenced learning activities, expectations for teacher and student behaviors, unique task structures, assessment of learning outcomes, and ways to verify the faithful implementation of the model itself. (p. 12)

The specific instructional models explored were direct, peer, and inquiry teaching models. The models were selected to represent a range of teaching options with different basic approaches to teaching, including moving from teacher centered to student centered. Direct instruction is characterized by teacher centered decisions and class structure. A typical lesson might include some or all of the six steps identified by Rosenshine (1983): (a) review; (b) presentation of new material; (c) student practice; (d) feedback; (e) independent practice; and (f) periodic reviews. Although still direct instruction, peer teaching is less teacher centered. Students are given the responsibility to complete some of the teaching tasks and decision making and serve as teachers for one another. For example, students may work together during practice time and provide feedback for one another. In contrast, inquiry models are much less teacher centered with the learner as the problem solver of questions framed by the teacher. Whether inductive or deductive in focus, students arrive at their learning outcome via different routes where the teacher serves as a guide.

Despite their theoretical importance and presumed used by teachers, little research on the decision making process teachers use when selecting and using models exists. The research questions that guided this study were: (a) To what do teachers attribute their teaching model knowledge? and (b) What influences teachers' use of teaching models? Understanding what teachers know and how they came to know it should provide insights into both pre-service and in-service education. For example, if teacher use is related to experience with models then professional development opportunities need to include experience as well as theory. Similarly, if depth of knowledge is a key to model use then prolonged and extended exposure to models to build teacher knowledge would be suggested. Additionally, understanding which teaching models are currently used can provide useful information about context and influences on student learning.

Methods

Participants and Setting

Thirty-two physical education teachers from the Midwestern United States shared their experiences with different teaching models. Thirty of the teachers reported a Caucasian heritage while one teacher was African American and one was from a multi-racial/other background. There were 20 males and 12 females who ranged in age from 26-60 and in teaching experience from 1-31 years. Sixteen of the teachers were secondary educators (grades 6-12) while the remaining 16 taught at the elementary level (grades K-5).

All the teachers taught in suburban schools in a large metropolitan area. Their schools served primarily students from middle class socio-economic homes. The elementary teachers taught their students once or twice a week, depending on the school, for a total of 45-60 minutes. The secondary teachers usually taught their students every day for 45-60 minutes, although a few schools were on block schedules resulting in longer class periods fewer days per week.

Data Collection and Analysis

The research team consisted of eight graduate students and two faculty members. The graduate

students were enrolled in a course focused on teaching models and engaged in this project to increase their understanding of how teachers use different teaching models, as well as to gain research experience. Each of the students was also a physical education teacher in a local public school. The two faculty members were both experienced researchers and one of the faculty members served as the instructor for the course.

The participant teachers were interviewed individually by a member of the research team during a convenient time and place that the participant selected. An interview guide (Patton, 2002) structured the conversations which lasted from 45-75 minutes. Topics included in the interview were general overview questions related to teaching philosophy and curriculum, teaching model knowledge, and contextual factors. Specific questions were developed from reviews of literature in these fields and are provided in Appendix A.

An additional component of the interview was to share three scenarios with the teachers representing direct, peer, and inquiry teaching models. Each scenario was one, single spaced page in length and designed to represent the key characteristics of each model as detailed by Metzler (2000). These scenarios are presented in Appendix B. After development, the scenarios were sent to three pedagogy specialists who had: (a) public school experience using various teaching models; (b) university teaching experience with pre-service teachers in courses about teaching models; and (c) familiarity with the Metzler (2000) text. All three experts agreed that the scenarios were valid representations of the teaching models. After reading a scenario, teachers were asked to comment as to whether they had used this style of teaching and their perspectives on benefits and challenges of such an approach. Scenarios were presented in a counter-balanced design to limit any order effect.

The entire interviews were recorded and later transcribed. The transcribed interviews were returned to the teachers for a member check on the data. Only a few teachers returned their interviews with any recommended changes and those were strictly grammatical in nature. Their recommended changes were made and the corrected transcripts used for data analysis.

The interview data were analyzed using constant comparison and analytic induction methods to identify and extract common themes across participants (LeCompte & Preissle, 1993). The data analysis process began with each of the graduate students working alone to develop a list of initial themes. Each then shared their initial coding system with the other investigators. Next, those initial themes were discussed, reviewed, and compared to the data. Themes specific to individual or small groups of teachers were eliminated and the discussions and data review focused on themes that cut across a majority of the participant teachers. The faculty members engaged with the students in these discussions and were then primarily responsible for the written report of the investigation.

After theme development, the data were reviewed for negative cases that might prompt reconsideration of the developed themes. In addition to a search for negative cases, triangulation was used to increase the trustworthiness of the data collected. Denzin (1978) notes there are different types of triangulation including data, investigator, theory, and methodology. The data that forms the basis of this report relies primarily on investigator triangulation in which different investigators worked independently and then together to examine the data. Although the data source (i.e., interviews) was the same, the use of teachers in varied sites and grade levels, was in one sense, data triangulation as multiple contexts could be examined and compared.

Teachers and Teaching Models

In general, teachers had some knowledge of all three models and that knowledge was gained in a variety of ways. Although knowledgeable about multiple models, their self-reported practice was dominated heavily by direct instruction. Their reliance on direct instruction and rejection of peer

and inquiry approaches focused on issues of control, time, and knowledge.

Teaching Model Knowledge

All of the teachers were familiar with the three teaching models, although the depth of their knowledge base, particularly related to inquiry, was varied. Most teachers reported some exposure to different models during their teacher preparation programs, but actual experiences with children and other teachers were seen as key knowledge sources. Amy explained:

> Obviously the knowledge of those styles are presented to you within your course work through the university. And it comes out of the textbook and the lectures from my professor but I think that the majority of it comes from actual field work, when I was actually getting in and practicing my teaching with the kids seeing what worked, seeing what wouldn't, combining certain types of styles with different groups. So I learned about it initially in the textbook situation through my college but the most benefit that I received from the knowledge was the field work.

As Amy noted, teachers gave primary credit for their working knowledge base to personal experiences. For some teachers, that personal experience began when they were students. Gary reflected on his high school physical education, "I had a great high school teacher. It's [direct] just basically how everybody taught. It's just the way it was." Joe, one of the few teachers to experience peer teaching as a K-12 student, was similarly influenced by a favorite high school teacher, "Coach Perry taught the team class and that's to me how good coaches teach. He is probably the one I try to go by the most. He was a very good teacher and he taught to that style."

Student teacher supervisors and colleagues also served as valuable resources for teaching model knowledge as Angela explained, "I learned mainly from hands on with my other teachers and my supervising teacher. I have little bits and pieces from each one of them. I took them all and combined them into who I am now." The "bits and pieces" that teachers collected from one another were based on one over-riding key–what worked. Bob explained how he chose what approach to take in class, "It's whatever works. That's the bottom line."

When asked how teachers might be persuaded to try a new style, the same what works theme was repeated. John told what would need to happen to make him try a new style:

> I think being able to see it work. Watching a videotape or something like that if I saw an actual class that was not pre-exposed to this or not told ahead of time what was going to take place but were taught this approach and I was able to monitor or watch that. If I've seen evidence that it worked that will tell me that it would lend, I guess, I would be very inquisitive if I was shown that it worked.

Mary agreed and reflected on how current professional development would need to change:

> You need to expose teachers to it and show the teachers that it actually works. A lot of teachers when they go to these staff meetings and they are presented with stuff lecture-wise, they don't like it any more than the students do. So I think if you get more hands on and the teachers are able to understand how it's utilized and they actually get to do it themselves and they see firsthand how it can be useful and very valuable for the students then I think that's going to be your best bet of trying to get teachers to try it.

Factors Influencing Model Use

Despite having knowledge about all three teaching models, there was a very heavy reliance on direct instruction. Teachers' decisions about model use depended on the factors of control, time, and knowledge.

Control. Doyle (1986) notes that teachers have two primary goals, learning and order. The two goals are complementary and paradoxically, at times in conflict. Gail reflected on this tension:

> It's [peer teaching] self-directed and not me standing and talking so there's more student responsibility. I have a hard time with that. I have a hard time letting go of that control thing. My being in control of what's going on in the class and having students do things. It's hard to have it both ways.

It is hard to have it both ways and the teachers in this investigation clearly prioritized order and control in their teaching. Direct instruction provided the control they sought. Sheila explained:

> I think it [direct instruction] gives you a tighter handle on what you're trying to get accomplished. Whether that's good or bad, you know, that's debatable as this is much more teacher directed in this style but the thing is that it keeps a tighter control.

Samuel also described the advantages of direct instruction, "You really have control over the group. They are pretty much doing the same thing at the same time."

With both peer and inquiry models, teachers were worried about students being off task. Suzy, who had tried some inquiry, noted, "Sometimes the kids go off in one way or the other and totally lose the focus. Some kids get really frustrated with it." Amy cautioned about the use of peer teaching, "It can turn into a disaster. You can get a lot of kids that are not on task. They're not doing what they are supposed to. They're bored. They're restless so you really have to monitor."

Time. Model use was also influenced by time. Teachers felt pressured by limited course time and worried that models other than direct instruction were not efficient. Greg discussed the curricular pressure:

> I have expectations of a curriculum to fill. I need them on task all the time. I've got to utilize every space I have. I have to be quick, decisive, organized, planned out, and making sure they're on task so I can get those three days of exercise at 30-40 minutes of constant movement and in their target heart rate.

The elementary teachers were also concerned about time as Walter explained:

> I recognize the value of the peer method and even the inquiry method but I think that for the time frame in our situation then the direct usually works the best for me. Time is of the essence here. Every half hour I have a new group of students coming in. I have students coming in one door and students leaving out the other door.

Teachers' time concerns were also related to control as they discussed how increased off task behavior lead to wasted time in lessons. Karen commented on peer teaching, "There's more arguing and the task at hand does not get done as quickly. Even when they work together it's just a much longer process." Adam expressed similar concerns about the problems with inquiry teaching with his students, "I think it would just take forever. Plus you'd have to spend the time keeping students motivated, making sure they stay on task."

Knowledge. A final factor in teachers' decision to rely on direct instruction was their belief that only teachers had the knowledge necessary for student learning to occur. Julie commented:

> Well, I want to know that they're learning the right thing so if I rely on peers to teach it sometimes they might not be learning proper usage. With direct instruction I know that what they're hearing from me and what I'm showing them is the correct method.

Gary agreed:

> I haven't ever used it [peer]. It will probably work in some classes but my

> fear has always been that the kids just take a check-off list and go "Okay, you're good." They won't take the time to really focus on what the other person is doing right and wrong.

Phil had similar concerns about inquiry use with his students, "Asking students questions about something they haven't read anything on and expecting them to answer questions is probably unfeasible. I don't see them giving me the answers I need to facilitate discussion."

Understanding and Changing Teacher Practice

Within research on teacher knowledge, two approaches have been what Clandinin (2000) has called "knowledge of teaching" and "teacher knowledge". A majority of the research on teacher knowledge falls within the "knowledge of teaching" framework in that knowledge is viewed as a possession, which can be identified, transferred, accumulated, and measured via standard assessments. Clandinin suggests that a more promising approach is to explore teacher knowledge which she describes as knowledge that "...comes from experience, is learned in context, and is expressed in practice....it is a form of knowledge embedded in teachers' lives, acquired through living, and expressed in context" (p. 29).

The results of this investigation provide insights into teachers' knowledge of teaching specific to their knowledge and use of teaching models. The first insight to be gained from these teachers' reports is that teachers rely on and most value what Shulman (1987) has called "wisdom of practice", a process of learning from doing. Teachers believed strongly in their wisdom of practice and the wisdom of other colleagues' practice. Similar reports related to curricular change are offered by Cothran, McCaughtry, Kulinna, and Martin (2006) with regard to the need for "practical" and "experiential" change programs. Further support for the importance of experiential learning of teaching techniques was provided by Garrahy's, Cothran's and Kulinna's (2005) examination of how teachers gain class management knowledge.

For pre-service programs, that means that teacher education programs should provide progressive, well-defined field experiences with opportunities for students to interact with numerous educators using a variety of teaching models. Pre-service teachers need to see models used by teachers as well as have experiences teaching the models themselves in school settings. By combining these observations and experiences with college course theory, teacher educators can help pre-service teachers interpret and integrate their new knowledge with prior experiences. In-service teachers need similar professional development opportunities to observe others and to have experiential learning when presented with new model knowledge.

A second insight into teachers' thinking and decision making is the importance of class management and its relationship with instructional decision making. Teachers of all experience levels find class management to be their most pressing concern (Edwards, 1993). Teachers may need more and better management strategies or they may need help in designing better learning experiences that provide clear guidance and structure to students. For example, Supaporn (2000) and her colleagues (Supaporn, Dodds, & Griffin, 2003) reported a link between disruptive student behavior and participation within a weak instructional and managerial task system.

These findings provide intriguing initial insights into teachers' pedagogical knowledge and use of teaching models. Future research is needed to better clarify the content, development, and use of teachers' knowledge in this and other areas like designing tasks, management, assessment, and motivation. Additional information is also needed in relation to teachers' knowledge bases at different grade levels and in differing contexts. Context does seem to affect teachers' reactions to new curricular knowledge (McCaughtry, Martin, Kulinna, & Cothran, 2006) and use of teaching styles (Cothran, Kulinna, Banville, Choi, Amade-

Escot, MacPhail, Macdonald, Richard, Sarmento, & Kirk, 2005) so it seems likely that it also affects other knowledge areas. Schempp, Manross, Tan, and Fincher (1998) claimed, "To teach one must know" (p. 342). The key to future research would seem to be, what must teachers know? This study provides some insight into possible answers for that question and with additional work in this field, teachers can be better prepared with the knowledge needed to maximize the effectiveness of the teaching-learning process.

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Appendix A

Sample Interview Guide Questions

1. Tell me about your school and program. What would you say the major goals of your program are?
2. If I visited your class on a typical day what might I see?
3. A teaching model is a basic approach to your lesson that includes your goals, how you structure the lesson, specific tasks, and the role you have for yourself and your students. I'm going to share with you a short description of three models and ask you to comment on each one. Let's start with this one….show description.
4. Scenario questions
   - Have you ever done anything like this to teach?
   - Ever experienced it as a student?
   - What outcomes did you have/think you'd have?
   - Strengths/weaknesses of the model?
   - Are there certain kinds of students who would respond well? Not so well?
   - Particular content areas that might be particularly good or potentially negative to use this model?
   - What kind of teacher skills are needed to be successful with this model?
5. How do you get new information about teaching innovations?
6. What's most important in influencing you to try something new in your teaching?
7. If I were a new teacher what advice would you give me about using teaching models?

Appendix B

Direct Instruction

Lynn's (the physical education teacher) class enters the gym and quickly reads their initial assignment from the blackboard which states, "Select a basketball and dribble around the gym. When you come to a line, change the hand you are dribbling with." Lynn moves around the gym providing individual feedback and after a short period of time signals for the students to all sit down at the middle circle. Lynn compliments the students on their skill performance and asks them what previously learned cues they were using while dribbling. The class quickly reviews those key ideas from previous lessons. Lynn then asks "Who is the best dribbler you know?" and the class calls out the names of several famous basketball players. Lynn agrees that those are all good dribblers and then says, "One of the things that makes those people such good dribblers is that they can dribble with either hand. We've been working on that in our unit, but we haven't worked on a good way to move the ball from one side of the body to the other while dribbling. We need to know how to do that so that we can get around the defence. Today we're going to learn a good way to switch hands and keep control of the ball. It's called a crossover dribble and I'm going to show you how to do that right now." Lynn demonstrates a crossover dribble at full speed from various angles, then says, "Let's break that down into parts and learn it in slow motion." Lynn demonstrates the skill again at a much slower speed and introduces the learning cues "Get low, push across, and palms" to represent the key skill phases of keeping the ball at a low level beneath the knees, using the dribbling hand to push the ball across the body, and for the receiving hand to be low with the palm facing inward in order to receive the ball. Lynn asks the students to turn and tell a partner the three cues for the crossover dribble then has the class stand up and perform the skill without the ball in their personal space.

When satisfied that everyone understands the basic skill, Lynn asks the class to find a good personal space and to work on their crossover dribble. Lynn walks around the gym providing encouragement and feedback. After a minute or so Lynn notices that many of the students are not keeping the ball low so the class is asked to stop and Lynn provides another demonstration and asks the class to notice how low the ball is when the teacher performs the skills. Lynn then tells the students to practice until they can get their ball as low as the demonstration showed. When Lynn notices that a vast majority of the class is being successful at this task, another task is presented. Lynn quickly puts out a large number of cones around the gym and tells the class that the cones are defenders and it is the students' job to get around the gym and avoid defenders by using their new crossover dribble skill. Lynn continues to move around the gym offering feedback. As students become successful at negotiating the cones, Lynn encourages the class to increase the speed of performance.

About 3-5 minutes before class is over, Lynn calls the entire class back to the middle circle. A student who can perform the skill well is asked to demonstrate for the class and the students review the cues and match them up to what the student is doing. Lynn previews what will happen in tomorrow's class and mentions how the crossover dribble will help them be successful in learning the new skill. The class is then dismissed.

Peer Instruction

Pat, the Physical Education teacher, starts the class with a quick review of what happened in the last class where the students worked on the chest pass. They review the learning cues and what they achieved. Pat explains to the class that today they'll work on a bounce pass that allows them to pass another way when there is a defender. Pat provides a demonstration of an effective bounce pass and

emphasizes the learning cues of " Elbows and fingers wide, step, 2/3 of the way bounce, and thumbs follow through down". Pat then checks for student understanding by completing bounce passes in front of the class while intentionally not using one of the cues for effective passing. Pat asks the students to turn and tell someone what they think was performed incorrectly in the demonstration. The class as a whole discusses the error, what problem the error might cause during a game, and what to tell someone that was making a similar mistake.

Pat puts students in pairs who will work together for the rest of the lesson. Each group is given a basketball, a checklist, and a pencil. The checklist has a series of 4 tasks written down the left margin for the students to perform: 1) "air pass" without the ball 2) pass to the wall from the cone 10 feet away, 3) pass to the wall from the second cone 15 feet away, and 4) dribble up to the first cone and pass to the wall. Across the top of the task sheet is written the cues for effective bounce passes. One student is assigned to be the "coach" while the other student is assigned to be the "player". Pat explains to the class that it is their job to help each other learn to master these passing tasks. The player must perform each task correctly, meaning they use all 4 cues while performing the task. When the coach sees that the player has completed the task while exhibiting all the cues, the coach can check off the player on the task sheet. The coach then explains to the player what the next task is and they work together to accomplish it. If the player is not performing the skill correctly, it is the coach's job to provide feedback and encouragement as the player tries the task again. Cones and wall targets are set up around the gym and the student pairs choose an area where they want to work together. The pair moves to their learning station and begin to work together.

Pat circulates around the gym monitoring student work and stops to watch Parker and Erik work together. Pat notices that Erik, the player in the partner group, is not stepping when he passes. Pat walks up to Parker, the assigned coach, and says, "I think Erik is having some problems with his passes. Watch him carefully and see if you notice something his lower body might be doing wrong." With the prompt, Parker identifies that Erik is not stepping and Pat asks, "Why isn't that a good idea?" Parker thinks for a second and then says that by not stepping Erik can't pass the ball very far. Pat says, "Good observation and thinking. Now help Erik fix that problem and keep watching him so he does not do it again." After the partner groups have completed their task sheet, they change roles and repeat the task sheet.

About 3-5 minutes before the class is over, Pat calls the class to the middle court. Pat asks them to discuss what they learned as movers then asks them to discuss what they learned about passing while coaching another mover. During this time, Pat tries to tie together the big ideas of skill learning, skill teaching, and partner interaction for the class.

Inquiry

Chris, the Physical Education teacher, starts the class with a question, "What does it mean to balance?" Students give various answers related to being able to stay in a position without moving. Chris then asks the class to show a balanced position and then another one, and finally asks them to demonstrate a third and different balance position. Chris asks, "What did you try to do to keep your balance?" One student describes using multiple points of contact, another adds a wide base of support, and a third says that holding out your arms makes you more balanced. Chris then asks, "When do you use balance in basketball?" The students provide a variety of different answers and Chris agrees that those are good examples and asks what happens if you don't have good balance. Students provide responses ranging from falling down to poor skill performance. Chris replies "Good. You know a lot about balance and we're going to use that balance knowledge to work on our rebounding skills today.

In basketball, rebounding is very physical and people are always trying to push you out of your spot, a spot you want to stay in so you need balance to stay there. I want you to get a partner and some self space. One partner should stand behind the other. The partner in back should give the partner in front a gentle push. Switch places and give another gentle push. What happened?" Students quickly respond that they were pushed out of their spot and fell forward. Chris asks, "What would happen if you were in that same position in a basketball game trying to rebound?" Students describe being pushed out of bounds or under the goal and unable to get the shot. Chris responds, "Think of one thing you could do to make a more balanced position. Try it out and have your partner give you a gentle push while you're in this new position." The pairs try out new positions and take turns giving each other a gentle push from behind to see how balanced they are. Chris asks the class what they tried and several students claimed that by moving their feet apart they were better balanced. Chris responds, "It seems like many of you tried to broaden your base of support. That might be a good idea, but how far apart should your feet be? Experiment with different widths while your partner gives you gentle pushes." Throughout the lesson, Chris moves around the gym watching the different partner pairs work and asks them what is happening and why they thought their solution might work. After a few minutes, Chris asks the class what they think is the best distance for their feet to be apart. Many of the student pairs respond that shoulder width or a little wider was most stable. Chris asks, "Think about the first balanced shapes you made for me today. Is there anything else you tried then that we can try now?" Various students raise their hands to respond and Chris waits several seconds before calling on one who suggests that lowering the center of gravity is a way to get better balance. Chris instructs the class to try it out and see if they agree with the student suggestion. The pairs work together again to experiment with lowering their center of gravity. Chris asks, "How low can you be and still be able to jump?" The groups experiment with different solutions and start to settle into some preferred positions. Chris questions, "What angle are your legs bent in this new balanced position that allows you to jump?" After group discussion and experimentation, they reach a consensus that their knees are bent somewhere between 45 and 60 degrees. Chris responds, "Good, we're building a really balanced position. Are there other body parts that can help us be balanced jumpers?" Chris waits several seconds while students think about the question and possible answers. Chris then calls on a student who suggests that arms might be helpful. Chris asks the pairs to experiment with different ways that the arms might help balance and jump.

About 3-5 minutes before the class is over, Chris calls everyone into the middle circle. Two to three groups are asked to demonstrate their best balance rebounding position. The group is asked, "How are these positions similar to our first positions we made in class?" and "What would happen if we tried this position in a basketball game?" Questions focus on what students learned about balance and Chris states, "Remember these keys to good balance because tomorrow we will be adding a ball and some defenders and we'll work on getting rebounds in a small group game setting."