Teaching Basketball:
A Study of Learning Hierarchies for Various Populations

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Learning Problem

There is a high school teacher in a small, rural town who also serves as the recreational basketball coach for the local little league. The teacher is an expert in the game of basketball, having been a player in high school and college himself, and a coach for many years. He has coached for all ages, and was integral in the development of the recreational league for younger children. A newly relocated child who is physically disabled wants to learn and play basketball. The child is four, and has a disability of the upper extremity, and does not have the same use of his hands and arms as others. Since it is a small town, the school system is not equipped to handle every disability, but it is making every adjustment to provide equal access to this student by buying assistive equipment and creating inclusive opportunities with eager-to-be trained personnel. The coach is approached by the principal to see if inclusion is possible in the recreational league. Then the parents can be advised whether or not to bring the child to tryouts. There was an adaptive physical education classroom in the city the family previously lived, but the small town does not have enough students to comprise a class. Therefore, the district is working on inclusive, meaningful physical education activities for the child from the beginning of his educational career.

The game of basketball involves many skills that combined give players the ability to strategize plays on the court and perform physical skills that allow them to move the ball on the court. The coach believes he can teach this child to play basketball because he has taught children with learning disabilities and full physical functionality, but he needs to analyze his teaching methods for basketball skills as they apply to physically disabled persons.

I propose that an analysis of the hierarchies used to guide coaching basketball is necessary to see if these learning hierarchies need to be expanded to teach physically disabled children or adults. The learning hierarchies for physically disabled students may be more detailed and expansive than those for other students, but they may exist successfully already. For instance, teaching dribbling might require a prerequisite for a disabled child while it may not for a non-disabled child. Learning to shoot the basketball may require development of some motor skills the coach would never have taken into account in the past.

Learning Goal

The goal is to study what techniques are effective for teaching basketball to children or adults with physical disabilities. We want to understand how the skills of basketball are taught, examine the skills, and then see if these must be expanded to those persons with physical challenges intrinsic to the population.

Any sport can be used because they have many varieties of learning and often are task-based before concept based. Basketball is good setting because it involves fewer team members. The sport includes signal-learning, stimulus –response learning, chaining, verbal associations, and performance.
Design Principles

1. **Use routines of activity for effective transmission knowledge.**

   Basketball is a wonderful environment for routines to transmit knowledge. It has numerous drills for dribbling, shooting, passing, and formation running that would not stand out in a study of teaching methods. As researchers, we do not want to increase pressure or dramatically change the atmosphere of the environment of our subjects because of the subject matter and the ages of the participants.

2. **Establish clear goals, and provide feedback and reinforcement.**

   Daily and weekly goals can be set by coaches and players to acquire a skill. Feedback and positive reinforcement from a coach is an intrinsic mechanism for building skills correctly, and practices involve individual and team encouragement as part of the culture. For young children and maybe especially those with disabilities, these things are very important because nurturing is a part of their growth.

3. **Examine process of learning through a learning hierarchy where performances are benchmarks for measurement.**

   Demonstration of prerequisites and skills are evident in playing a game. Weaknesses can be detected in team play and individual performance, and we will use these performances as parts of assessment.

Proposed Design Study

We will use the coach’s method of teaching skills and concepts because it is possible that what he is doing now does not require complete revision. We will create a learning hierarchy that decomposes his skill goals into simpler prerequisites, and test them in an adaptive physical education classroom and a normal beginner basketball class or team. We will focus on preschooler and kindergarteners because they are still developing psychomotor skills, and the skill differences between populations might not be widely separated on the continuum as with older children. We understand that basketball is a combination of conceptual skills and physical skills, and coaching addresses both types.

Protocols

1. The students in the adaptive physical education classroom must be of similar disability classification of the student that inspired the study because a motor skills comparison of severely handicapped and moderately handicapped persons will have skewed results that might be independent of any teaching method.
2. All students must be in the same age range (4-5) to account for developmental differences based on age.
These two protocol measures serve to constrain our participant population to make subjects as identical as possible outside of any disabilities. Development can be categorized physically, socially, emotionally, and psychologically. Disabled groups are often grouped based on emotional or psychological development and differ in physical development and age. This method of grouping will influence our study and make factors that we have to consider too broad to come to a confident assessment.

3. All students must be first time players to the organized sport.
4. The control classroom and the adaptive physical education classroom will follow the same coaching methods.
5. We will use samples of 10 to 15 students so that we can pair students, run drills, and play basketball games within the classrooms.
6. Students will participate in drills and practices. They will celebrate skill mastery as skills are mastered and coaches will provide reinforcement.
7. Coaches can use video games to teach concepts and allow students to play them. The same technology, with the exception of necessary assistive devices in the adapted physical education classroom, will be used in both classes.
8. Coaches should use child-size equipment, and balloons or soft balls that have sensors, make noises, or a goal that lights up when a basket is made to stimulate the students.

Assessment

1. In the pre-assessment phase, we will create a skill checklist and a concept checklist based on the learning hierarchy to evaluate the students.
2. We will create a ranking system of 1-5 and assign qualities to each number, one being lowest skill and 5 being highest.
3. We will have students watch a basketball game and then we will give them basketballs and allow them to play without direction.
4. On the checklist we will check to see if the child has the skill, and rank their ability from video taping their play.
5. We will create observation interviews of players about terminology and rules of the game by asking them to help researchers commentate or act like narrators on television while they are not playing by formally rotating them on and off court. We will video this as if they were doing a television show so it does not have the formality of an interview.
6. After the pre-assessment, we’ll introduce instructors or coaches and tell the students that we will teach them how to play so that they can participate in a basketball tournament. We will not pose the two classes as competitors, but playing a game will allow us to see the various levels of skills.
7. If coaches use video games to teach or simulate play, classes will be monitored.
8. The students will play games at the end of the course and the same checklist will be used for assessment. Videos and interviews will be done in the same manner.
It is possible that basketball can be broken down into subcategories: ball handling, ball movement, formations and plays, shooting, offense and defense. The diagram below shows a preliminary learning hierarchy for playing in a basketball game with conceptual understanding and physical skills.
If the results from observation, interviews, and checklist assessment show group growth having similar gains, then it might be safe to say that the coaches’ traditional methods for teaching basketball skills is fine the way that it is, and with extra staff, the young boy should successfully integrate into the recreational program. If the groups have very wide gaps in skill acquisition, but not concept understanding, then the coach will have to examine how the mechanics of the game are taught and what prerequisites should be added to help guide instruction. If the two groups have wide gaps in skill acquisition and concept understanding, then it might be appropriate to reconsider the age groups’ developmental abilities as they apply to this sport, and find a sport in which they may be immediately more successful.

Proposed Design Solution

If the results highlight lack of physical skill mastery of disabled students, coaches would have to reconsider the timeline for instruction, reinforcement mechanism, individualized instruction, or assistive devices that first focus on hand-eye coordination, for example, as a prerequisite. Technology such as a game where the ball moves constantly across the screen and when it is lined up to go into the basket, the student must press the ball for it to be shot, or a trajectory-cataapult that shoots the ball after the player has directed it. It may empower the student by giving demonstration to understanding of concepts. If it is determined that organized basketball is not successful for this age group, then the children can take the informal route and continue as they were before the study.