

Using *Dance Dance Revolution* in Physical Education

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FIGURE 1 Playing DDR; notice the Playstation 2 in front of the players and the electronic dance pad beneath their feet.

Sedentary lifestyles are often to blame for overweight and obesity, which is the second leading cause of preventable deaths in the U.S. (USDHHS, 2001). While video games have historically been identified as the culprit of inactivity, new *interactive* video games make participants break a sweat. Some physical educators have begun integrating this technology into the physical education setting.

Like heart rate monitors and pedometers, *Dance Dance Revolution* (DDR) promotes physical activity by enriching the learning environment. DDR requires player(s) to step on arrows on a dance pad based on

cues from a screen (see Figure 1). DDR requires a Playstation2 or Xbox connected to a television or projector. Players dance to any one of a large variety of songs at a slow, medium, or fast pace. Dancing on the pads requires students to engage in moderate to vigorous levels of physical activity. This article suggests strategies for DDR implementation and assessment.

In 1998, DDR was first introduced in Japan as a coin-operated arcade game. Popularity there resulted in its release in the United States, with both arcade and home versions. As testament to its popularity in the States, DDR has been featured on Fox News, CNN,

BBC News, Tech TV, "The Early Show" on CBS, and ABC News. There have also been articles in *USA Today*, *New York Times Magazine*, *The Wall Street Journal*, *Reader's Digest*, and countless other newspapers across the country. Many of these reports depict DDR as a fun weight-loss tool, as well as a device for increasing physical activity among youth.

Some American physical education programs have already made DDR part of their curriculum. A California school was featured in a newspaper article titled "Video game psychs up students to get fit" (Doyle, 2004). In the article, the physical education teacher says, "The kids love [DDR]. I wish we had more [dance pads]." A student agreed, "It's fun. It's what teenagers want." On the "Early Show" on CBS, a physical education teacher from another program using DDR said during an interview, "[Students] just don't want to leave it alone. It's addictive" (Smith, 2002).

To date, no empirical studies have been published regarding the use of DDR in physical education. This illustrates how new DDR is to physical education. Ideas in this article are derived from my own teaching experience rather than experimental data. My colleagues and I have taught numerous lessons to fourth graders using DDR as a tool to help them understand rhythm and tempo; to promote teamwork, cooperation, fair play; and even to enhance creative dance choreography. Perhaps the most desirable trait of DDR, from the perspective of a physical educator, is that most children enjoy it so much it can be used as a reward.

DDR Implementation

Students in third grade and higher will likely understand and enjoy DDR most. The complexity of the tasks are too cognitively demanding for most K-2 students. Initial lessons leading to use of DDR should focus on developing rhythm and tempo. Students must learn to step to the beat of a song before they can be successful playing DDR. After learning rhythm and tempo, use the *Lesson Mode* to guide students through a process of learning to play the game. This thorough tutorial is an option on the main screen and can be helpful in the transition from rhythm lessons to actual game play.

Designing physical education lessons to include all students in a large class requires creativity and organization. Figure 2 shows a sample layout and rotation pattern for *Lesson Mode*. It also works for game play with a class of up to 20 students. In this example, two groups of ten students take turns dancing on the electronic dance pad. Students not on an *electronic* pad dance on a rubber *practice* pad (see Figure 3). After each song, students rotate. This ensures that all students get an opportunity to play the game.

If a tight budget limits the purchase of enough rubber practice pads (\$20 each), use masking tape or floor tape to make the practice pad design on the floor.

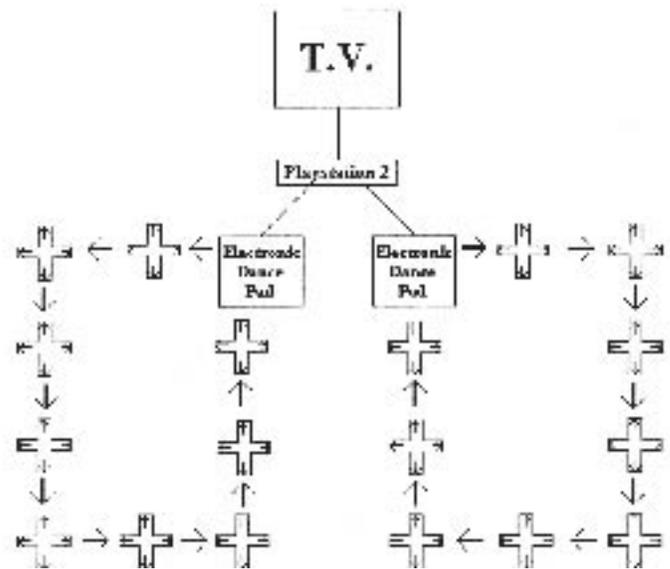


FIGURE 2 DDR rotation. The crosses indicate rubber practice pads.

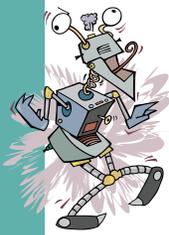
Or, students might simply dance in self-space, stepping forward, backward, to the right, or to the left. A safety note worth mentioning is that children tend to initially step with very strong force on the dance platforms. This can damage the platform, but, even worse, it can injure students' feet. The platform is designed to register a step made with even light force, so *pounding* it is unnecessary. Normal step force will help students avoid pain or injury to themselves, not to mention damage to the platform.

Is It a Limitation, or an Opportunity?

At first glance the cost of DDR appears prohibitive: television or projector (\$200 - \$1,000), Playstation2 or Xbox (\$150), DDR game disc (\$40), one or two electronic dance pads (\$15 - \$280 each), and rubber practice pads (\$20 each). However, using school funds, or external sources such as a Physical Education for Progress (PEP) grant can help defray these costs. In fact, some schools actually use DDR as a means of generating revenue. One physical education teacher makes DDR, "free to students during class. At lunch or after school, it's 25 cents a dance" (Smith, 2002).



FIGURE 3 Rubber practice pad.



Some lyrics and background video in the game may not be suitable for children. A way around this problem is to only allow songs that do not contain questionable material. There are also several versions of DDR, including a Disney Mix more suitable for children.

Designing a well-planned unit appropriate for all skill levels and organizing students to maximize the time they spend engaged in physical activity can be challenging. But ideas presented in this article, as well as a website and book (see Resource List below), should help.

DDR instruction is not only fun for children, it also allows teachers to provide an exciting and innovative way for students to learn. The following ideas include introductory lessons, a progression of skills in DDR, and lessons for higher skilled students. Many of these ideas integrate academic subjects such as math and spelling, as well as artistic concepts.

Getting Started

When learning fundamental DDR skills in physical education, students first need to gain a basic knowledge of rhythm and beat. This concept can be addressed by simply having students clap, step, snap, or use percussive instruments on specific counts of a basic 4/4 beat. Students can make their own percussive instruments during art class to use in physical education. Once students are able to recognize and produce desired actions on a beat, they can progress to stepping with either the left or right foot to a musical beat. Start beginners with a lesson on recognizing a 4-count beat, then a lesson on stepping in the four directions required by the game (right, left, up, and back).

Rhythmic awareness and physical demonstration of the ability to match a 4-count beat are prerequisites to using DDR; a pre-test of student knowledge and ability should be conducted prior to DDR implementation. This promotes success and limits frustration. As variations and new challenges are introduced, pay special attention to how students progress; see if they are experiencing success or not. For example, challenge higher skilled students to dance through a song without missing an arrow, but allow lower skilled students to simply march to the beat of the song and incorporate their own unique movements.

From Lesson to Game Mode

The lessons provided in the *Lesson Mode* of DDR are helpful for preparing students to participate in *Game Mode*. The lessons work on stepping in synchronization to the beat. They progress to recognizing and mastering movement combinations necessary to participate in higher levels of the game. All the lessons provide a good warm-up and review previously learned skills at the beginning. Use *Lesson Mode* to assess whether or not students are ready to move to *Game Mode*, then

continue to provide performance feedback as they play the game.

The decision to move from *Lesson Mode* to *Game Mode* can be made by either the teacher or the student. Using a *guided discovery* instructional strategy, students might make their own decision when selecting the task difficulty. For example, give students a task such as creating a short DDR dance routine based on simple criteria and a rubric.

As students progress through the DDR unit, some will be ready to move to higher levels while others still need more practice, making a two-station practice session useful. Set one pad at Beginner or Light Mode and the other pad at Standard or Heavy Mode.

As students grasp basic concepts such as the 4/4 beat and stepping in all four directions, integrate other strategies into the lessons to make them more holistic. Basic DDR lessons provide an ideal platform to introduce fitness and/or interdisciplinary concepts. Place heart monitors or pedometers on students to help them gain

HEART RATE WORKSHEET

How hard should I exercise?

As a general rule, you should be able to talk during exercise. If you are exercising so intensely and are out of breath to the point that you cannot talk, you should slow down.

A healthy target heartrate zone for you would be 118-163 beats per minute. This is based on an exercise intensity range of 60-80%. This means that if your heart rate is below 118, you should try to exercise more intensely. If your heart rate is above 163, you should slow down and exercise less intensely.

Take your pulse (or look at your heart rate monitor) every minute and record your heartrate in the chart below.

Reading #	BPM	Reading #	BPM	Reading #	BPM
1		6		11	
2		7		12	
3		8		13	
4		9		14	
5		10		15	

Were you ever below your target heartrate zone? _____

Were you ever above your target heartrate zone? _____

What do you think would help you to reach and stay in your target heart zone during DDR? _____

FIGURE 4 Sample assessment.

an appreciation of how dance can be a strenuous physical activity. These tools provide feedback to students that can also be used for assessment, such as evaluating attainment of fitness goals (e.g., number of steps in a physical education lesson). Integrate other subject matter, such as math or language arts, into lessons by keeping score or spelling words.

Advanced DDR Lesson Ideas

Upper elementary students will progress more quickly than younger students. This allows a greater scope of concepts to be covered. For example, after students have mastered a 4-count beat and stepping left, right, up, and back, they can begin to explore their creativity by choreographing original dance moves to DDR. They may also learn concepts in the health-related fitness domain such as estimating caloric expenditure while playing DDR. In *Workout Mode*, for example, the

screen displays an estimate of calories burned while dancing. This helps students understand how much energy is required to burn a certain number of calories. Caloric expenditure can also be estimated using a heart rate monitor that features a calorie counting function. Students can also learn more about Target Heart Rate (THR) Zone during physical activity. Figure 4 illustrates a sample cognitive assessment.

Once confident in their DDR skills, a DDR round robin tournament is a fun way for students to demonstrate their psychomotor learning. Though for a more holistic approach, combining the affective and psychomotor domains, students might work with a partner, providing feedback (Himberg, Hutchinson, & Roussell, 2003) based on a task sheet (see Figure 5). This contributes to psychomotor skill practice as well as learning how to provide classmates with constructive feedback.

Students at this level are typically capable of participating in divergent discovery to develop more complicated choreography to DDR songs. They are also ready to learn some strategies necessary to advance to higher levels of the game, such as mastering more complex step sequences.

To conclude, well-planned classroom organization and meaningful lessons are the key to teaching and learning DDR. Creative physical educators can easily overcome the perceived barriers to using DDR in the curriculum. This article has tried to present strategies that can be employed to facilitate the process. This interactive arcade game has the potential to capture the interest of children, thus providing a new avenue for exercise. DDR is certain to become a valuable tool in helping children develop rhythm, appreciate dance, and become physically active for life.

Resource List

- <http://lightbridge.sonoma.edu/lightbridge/lessons/publish/115/main/introduction.html>
Video clips of DDR physical education lessons and other supplemental materials
- DDR lesson plan book: 60-page guide including six progressive lesson plans each for grades 3-5, 6-8, and 9-12. Available for purchase from the authors: call 530-898-4314.

References

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- Smith, T. (Writer). (2002, June 14). *Video game that's good for you* [Television broadcast]. New York: Columbia Broadcasting System.
- United States Department of Health and Human Services. (2001). *The Surgeon General's call to action to prevent and decrease overweight and obesity*. Washington, DC: U.S. Government Printing Office. ©



PARTNER FEEDBACK TASK SHEET

The purpose of this task sheet is to help you improve your DDR skills and your ability to communicate with a partner.

1. Get one set of practice pads for each of you and find an unoccupied spot in the room.
2. Decide which partner will go first.
3. One partner will be the coach and one will be the dancer.
4. Coach is to give dancer feedback during the song.
5. Complete chart below and then switch partners.
6. Fill out a feedback sheet for each song.

Dancer: Feel free to be creative, as long as you make specified steps to the beat of the music.

Coach Commands	Dancer is Perfect And On Beat With Every Step	Dancer Needs More Practice
Right, left, front, back, repeat		
Right & left (at same time)		
Front & back (at same time)		

Coach: Did dancer stomp on pads or step?

Step _____ Stomp _____

Did dancer use creativity? Yes _____ No _____

Comments: _____

FIGURE 5 Task sheet.