

New Technology, New Possibilities in Piano Teaching: What Can We Learn from Video Modeling in Sport and Physical Education?

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1. Purpose of the Study

Video modeling not only displays an important role for professional athletes to improve efficiency and precision of motor performance, but also facilitates beginning and inexperienced learners' acquisition of motor skills. Exploring the effectiveness of using video modeling in sport and physical education suggests new possibilities for piano teachers in resolving issues involving advanced motor skills.

2. Definition of Video Modeling

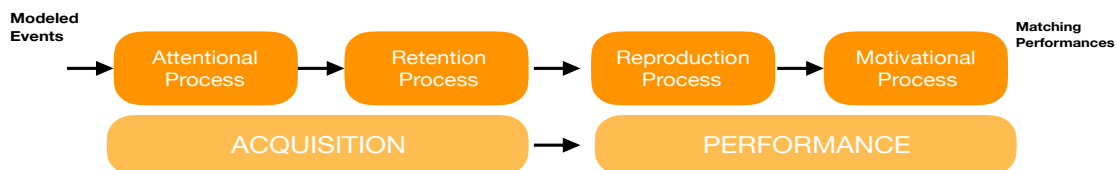
- Modeling can be live, filmed, or through any other medium (Dowrick and Jesdale 1991). Video modeling means that learners watch a video recorded demonstration, and utilize the information acquired from the video to imitate, modify, and improve targeted skills or behaviors.
- Alternative terms: film, television, or videotape modeling

3. Six Broad Categories of Video Modeling in Use (Dowrick and Jesdale 1991)

- Professional training (e.g., teaching skills, human services, and counseling skills)
- Social skills (e.g., verbal behavior, social competence, and alternatives to undesirable behavior)
- Parents training and child self-management
- Preparation for treatment in medical settings
- Motor performance (e.g., sport)
- Special populations (e.g., people with autism, and handicaps)

4. Supporting Theory: Observational Learning

- Learning is more efficient by observation through modeling, from where most human behavior is acquired (Bandura 1977).
- Albert Bandura (1976) proposed four sub-processes of observational learning.



5. Advantages of Video Modeling

- Allows multiple viewings
- Watched at learners' own pace
- Used without time and space constraints
- Provides a clear visual representation of a motion pattern through slow motion
- Used as an aid for feedback, assessment, and self-evaluation
- Increases motivation, concentration, and engagement

6. Three Forms of Video Modeling in Sport/Physical Education

- *Self-Modeling (SM)*: observation and evaluation of learners' own performance
 - It presents a realistic view of learners' performance (Baudry, Leroy, and Chollet 2006)
 - Novice learners are less likely to perceive goal performance and perfect executions from SM videos (Zetou et al. 2002).
 - It is more beneficial for skilled athletes because they have more knowledge to relate their errors to potential performance outcomes (Hazen et al. 1990).
 - SM with prompt and effective feedback from teachers increases students' learning outcome (Palao et al. 2015).
- *Expert Modeling (EM)*: demonstration by professional and skilled athletes
 - It shows a more significant effect on beginning learners than SM (Boschker and Bakker. 2002; Zetou et al. 2002).
 - In comparison to SM, it sets a higher standard and achievement goal for learners, provides more accurate information, and visually assists observers to develop appropriate body movements (Zetou et al. 2002).
- *Model's Superposition*: simultaneous motion analysis between SM and EM
 - It facilitates the recognition of essential differences between two performances (Baudry, Leroy, and Chollet 2006).
 - It is usually combined with video feedback through motion analysis software, which would guide observers' attention to the relevant aspects of the skills and facilitate a deeper understanding of human movement (Amara et al. 2015; Baudry, Leroy, and Chollet 2006).
 - It also benefits the retention of a newly acquired skill (Boyer et al. 2009).

7. Motion Analysis Applications in Sport

- Applications: Dartfish, Coach's eye, Hudl Technique
- The features include (but are not limited to) instant replay, slow motion playback, drawing tools, statistic analysis, split screen/comparison videos, data collection, and online sharing.

8. Applications and Conclusion

- Explore creative ways to apply the three forms of video modeling in sport/PE into piano teaching
- Analyze students' physical movement and identify inefficiency in movement through motion analysis applications in sport
- Investigate if the increasing numbers of modeled events through video modeling can benefit students' performance outcome.
- Encourage students to observe and evaluate their own performances through motion analysis applications during home practice sessions
- Discover how the video technology can be used during piano lessons to increase students' motivation, concentration, and engagement
- Create a record of students' learning progress through collecting self-modeling videos

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