

DOCUMENT RESUME

ED 411 162

SE 060 571

AUTHOR Burton, Larry D.
TITLE Hitting the Issues Head On: Using Role Play in Science Education.
PUB DATE 1997-04-03
NOTE 20p.; Paper presented at the Annual Meeting of the National Science Teachers Association (New Orleans, LA, April 3, 1997).
PUB TYPE Guides - Classroom - Teacher (052) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Educational Strategies; Elementary Secondary Education; *Interdisciplinary Approach; Learning Strategies; Lesson Plans; Perspective Taking; *Role Playing; Science Curriculum; *Science Education; Teacher Workshops

ABSTRACT

This paper presents materials from a workshop on using role playing in science education. It contains the basics of role play therapy including the purposes of the strategy, establishing a classroom climate for role play, guidelines for interaction in role play, preparation for role play and possible focuses of a role playing session, step-by-step procedures, two role play lessons, handouts that define the various roles, and a sample role playing form. The materials provide detailed steps that can guide teachers through the process of involving their students in role play in order to enhance learning in science. (DDR)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

Hitting the Issues Head On

Using Role Play in Science Education

A Workshop Presented at
The National Science Teachers Association Annual Conference
New Orleans, Louisiana
April 3, 1997

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL
HAS BEEN GRANTED BY

L.D. Burton

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

This document has been reproduced as
received from the person or organization
originating it.

Minor changes have been made to
improve reproduction quality.

Points of view or opinions stated in this
document do not necessarily represent
official OERI position or policy.

Larry D. Burton, Ph.D.
Andrews University
Berrien Springs, Michigan

BEST COPY AVAILABLE

The Basics of Role Play Theory

Purposes of the Strategy

Fannie and George Shaftel (1967) describe role play as a type of “reality practice.” Teachers using role play as an instructional tool can expect to foster empathy, interpersonal problem-solving techniques, and reflective analysis of personal values and behavior (Joyce, Weil, & Showers, 1992). The benefits of role play can be expanded as follows:

1. The ability to practice a potentially difficult situation in a safe environment.
2. The ability to try a variety of approaches in difficult situations.
3. The opportunity to experience situations from another perspective.
4. The opportunity to identify personal values.
5. The opportunity to listen to another persons point of view.
6. A safe environment for practicing problem solving.
7. A laboratory for analyzing interactions and values.
8. The opportunity to learn from our mistakes.
9. The chance to explore the consequences of choices made.

The Shaftels identify the following as perhaps the greatest benefit of using the role play teaching strategy. Students “with the help *and* opposition of their classmates, *gradually face and make conscious the choices they make in situations crucial to them*, and, through the experience of articulating, testing, and criticizing their motivations, develop a system of consciously held values” (Shaftel & Shaftel, 1967, p. 84).

Establishing a Classroom Climate for Role Play

Role play will never achieve its potential in a classroom that is not “safe.” The classroom environment must promote openness of thought and interaction. The climate must promote the following:

1. The expression of both traditional and alternative behaviors.
2. The expression of strong feelings.
3. Respect for the feelings of others.
4. Respect for the ideas of others.
5. Respect for the feelings of others.
6. The exploration of alternative solutions to problems.
7. Non-evaluative acceptance of student responses. “Reality” serves as the basis for evaluation of the enactments.

To truly have this type of classroom, the behavior must be modeled *and* taught (using T-Charts for example) by the classroom teacher.

Guidelines for Interaction in Role Play

- Be non-evaluative in your reaction to student responses.
- Be supportive of students and their responses
- Listen for “hidden” messages in student responses
- The teacher is a “directive guide-on-the-side” during role play. The teacher is not totally non-directive, yet neither is she controlling the process.
- “Evaluate” the enactments and discussions on the reality of the situation.
- Encourage alternative solutions and re-enactments.
- Encourage alternative interpretations of roles.
- Paraphrase and reflect student responses to increase personal awareness of views, feelings, and values expressed.

Preparation Necessary for Teaching with Role Play

Since role play is an active, experiential strategy the only materials needed to use the strategy are those required to confront the learners with the initial problem. The problem can be presented in a variety of ways including stories, videos, scenarios, case studies, and moral delimitas.

Joyce, Weil, and Showers (1992) identify the following **sources of problem situations** for role play:

1. Issues arising from developmental stages
2. Issues arising from sexual, ethnic, or socioeconomic class
3. Value (ethical) themes
4. Difficult emotions
5. Scripts or “games people play”
6. Troublesome situations
7. Social issues
8. Community issues

To this list I add the following (some of which are implied in #3 & #7 above):

9. Ethical issues from specific content areas
10. Ethical issues from specific professions
11. Issues arising from cross-cultural interaction
12. Ethical issues arising from technological advancement

Possible Focuses of a Role Playing Session (Joyce, Weil, & Showers, 1992)

1. Feelings
 - a. Exploring one’s own feelings
 - b. Exploring others’ feelings
 - c. Acting out or releasing feelings
 - d. Experiencing higher-status roles in order to change the perceptions of others and one’s own perceptions
2. Attitudes, values, and perceptions
 - a. Identifying values of culture or subculture
 - b. Clarifying and evaluating one’s own values and value conflicts
3. Problem-solving attitudes and skills
 - a. Openness to possible solutions
 - b. Ability to identify a problem
 - c. Ability to generate alternative solutions
 - d. Ability to evaluate the consequences to oneself and others of alternative solutions to problems
 - e. Experiencing consequences and making final decisions in light of those consequences.
 - f. Analyzing criteria and assumptions behind alternatives
 - g. Acquiring new behaviors
4. Subject matter
 - a. Feelings of participants
 - b. Historical realities: historical crises, dilemmas, and decisions

Joyce, B., Weil, M., & Showers, B. (1992). *Models of Teaching*. Boston, Allyn and Bacon.
Shaftel, F., and Shaftel, G. (1967). *Role Playing for Social Values*. Out of print.

Role Play Step-by-Step

Phase 1: Warm Up the Group

Identify/introduce the problem

Make problem explicit

Phase 2: Select Participants

Analyze roles

Select players

Phase 3: Set the stage

Decide on the setting

Restate roles

Phase 4: Prepare the Observers

Decide focus

Assign tasks

Phase 5: Enact

Begin role play (keep it short)

Break the role play

Phase 6: Discuss and Evaluate

Review action of the role play

Discuss major focus

Develop next enactment

Phase 7: Reenact

Play revised roles

Suggest next steps

Phase 8: Discuss and Evaluate

Same as phase six

Phase 9: Share Experience and Generalize

Relate problem situation to real experience

Generalize principals of behavior

Cloning Around

A Role Play Lesson

Subject Area	Science
Topic	Cloning
Instructional Level	4th grade through adult
Time Required	40 -- 55 minutes
Size of Instructional Group	At least 6 -- 10 students
Performance Objectives	Demonstrate problem solving techniques Identify and analyze personal values Identify values held by others Evaluate reasons for behavioral actions

Phase 1: Warm up the group:

- ▶ Present the problem by reading the scenario.
 - ▶ Robert and Samantha Jones have been trying to have a child for 10 years. All treatments, including in-vitro fertilization have failed. A family friend suggested that the Jones try cloning as an alternative to traditional reproduction. The Jones could produce children using Samantha's egg and the nucleus of any cell from either "parent." Samantha and Robert are not quite sure what to do.
 - ▶ Display a synopsis of the scenario on overhead.
- ▶ Review the Role Play process (overhead)
- ▶ Questions to use:
 - ▶ How would you describe the basic problem in this situation?
 - ▶ What issues are involved?
 - ▶ Are there possible sources of conflict in this situation?

Phase 2: Select Participants

- ▶ Who should we include in the first enactment?
- ▶ Possible roles:
 - ▶ Robert Jones
 - ▶ Samantha Jones
 - ▶ Their medical doctor
 - ▶ The family friend
 - ▶ A counselor
- ▶ Select participants through volunteers -- look for someone who reacts to the scenario

Phase 3: Set the Stage

- ▶ Where should the enactment begin?
- ▶ Possible settings for the first enactment
 - ▶ At the Jones' home
 - ▶ At the home of their family friend
 - ▶ At their doctor's office

Phase 4: Prepare the Observers

Tasks for the observers (Place on an overhead)

- ▶ Analysis
 1. Are there other issues that are influencing the dynamics of this situation?
 2. What are the players trying to achieve (what are the goals behind their actions)?
- ▶ Evaluate
 3. How realistic is the enactment?
 4. Are the players actions effective in achieving their goals (as identified by #2)?
- ▶ Propose
 5. How could we re-enact this scene?
 6. Where should we go next in our enactments?

Phase 5: Enactment

- ▶ Possible scenes for enactment/reenactment
 - ▶ The family friend suggests the possibility of cloning
 - ▶ The couple discuss the friend's suggestion alone
 - ▶ The couple discuss the friend's suggestion with their doctor
- ▶ Possible sources for disagreement
 - ▶ Religious background of one player
 - ▶ Personal ethical position on "experimenting" with humans
 - ▶ The effect on the child (rights of the unborn, will "being a clone" impact the child's development, etc.)

Phase 6: Discuss & Evaluate

- ▶ Observers report
 - ▶ Group discusses observations
- ▶ What issues are evident in the enactment thus far?
- ▶ What is the source of conflict?
- ▶ If there one clear-cut issue at the center of the enactment?
- ▶ What problem-solving or conflict-resolution skills have been demonstrated so far?

Phase 7: Reenactment

- ▶ Use same process as Phase 5

Phase 8: Discuss & Evaluate

- ▶ Use same process as Phase 6

Phase 9: Share Experience & Generalize

- ▶ Use Think/Square/Share to process the following questions.
- ▶ Questions to encourage application of learnings to specific real world situations:
 - ▶ In looking at the issues we identified in this role play, can you think of any other life situations which involve the same issues?
 - ▶ What problem-solving techniques or conflict-resolution skills were demonstrated in the enactments?
 - ▶ In what other situations could you use these same techniques/skills?

Robert and Samantha Jones have been trying to have a child for 10 years. All treatments, including in-vitro fertilization have failed. A family friend suggested that the Jones try cloning as an alternative to traditional reproduction. The Jones could produce children using Samantha's egg and the nucleus of any cell from either "parent." Samantha and Robert are not quite sure what to do.

Observer Roles

Analysis

1. Are there other issues that are influencing the dynamics of this situation?
2. What are the players trying to achieve (what are the goals behind their actions)?

Evaluate

3. How realistic is the enactment?
4. Are the players actions effective in achieving their goals (as identified by #2)?

Propose

5. How could we re-enact this scene?
6. Where should we go next in our enactments?

Cloning Around II

A Role Play Lesson

Subject Area	Science
Topic	Cloning
Instructional Level	4th grade through adult
Time Required	40 -- 55 minutes
Size of Instructional Group	At least 6 -- 10 students
Performance Objectives	Demonstrate problem solving techniques Identify and analyze personal values Identify values held by others Evaluate reasons for behavioral actions

Phase 1: Warm up the group:

- ▶ Present the problem by reading the scenario.
 - ▶ Anna Wright is one of the world's most brilliant scientists. Because of her work in at the Centers for Disease Control, the quality of life for HIV patients has greatly improved in the past five years. Recently she was approached by a childless couple who would like to use the latest technology in their pursuit of parenthood. They have attempted all traditional fertility treatments and some not-so-traditional treatments. After hearing several news reports, they would like to attempt cloning. They would like Dr. Wright to supply the nucleus for the cloning procedure that will produce their child.
 - ▶ Display a synopsis of the scenario on overhead.
- ▶ Review the Role Play process (overhead)
- ▶ Questions to use:
 - ▶ How would you describe the basic problem in this situation?
 - ▶ What issues are involved?
 - ▶ What possible conflicts or conundrums could emerge from this situation?

Phase 2: Select Participants

- ▶ Who should we include in the first enactment?
- ▶ Possible roles:
 - ▶ Anna Wright
 - ▶ Robert Jones (the husband)
 - ▶ Samantha Jones (the wife)
 - ▶ Their medical doctors
 - ▶ Dr. Wright's colleagues
 - ▶ A counselor
- ▶ Select participants through volunteers -- look for someone who reacts to the scenario

Phase 3: Set the Stage

- ▶ Where should the enactment begin?
- ▶ Possible settings for the first enactment

- ▶ At Dr. Wright's office
- ▶ At the Jones' home
- ▶ At a restaurant

Phase 4: Prepare the Observers

Tasks for the observers (Place on an overhead)

- ▶ Analysis
 1. Are there other issues that are influencing the dynamics of this situation?
 2. What are the players trying to achieve (what are the goals behind their actions)?
- ▶ Evaluate
 3. How realistic is the enactment?
 4. Are the players actions effective in achieving their goals (as identified by #2)?
- ▶ Propose
 5. How could we re-enact this scene?
 6. Where should we go next in our enactments?

Phase 5: Enactment

- ▶ Possible scenes for enactment/reenactment
 - ▶ The Jones recognize Dr. Wright at a restaurant and approach her
 - ▶ The couple discuss their proposal with Dr. Wright at her office
 - ▶ The couple discuss their proposal with Dr. Wright in their doctor's office
- ▶ Possible sources for disagreement
 - ▶ Religious background of one player
 - ▶ Personal ethical position on "experimenting" with humans
 - ▶ The effect on the child (rights of the unborn, will "being a clone" impact the child's development, etc.)
 - ▶ Dr. Wright's desire or lack of desire for "immortality"
 - ▶ Beliefs about what it means to be a human or an individual

Phase 6: Discuss & Evaluate

- ▶ Observers report
 - ▶ Group discusses observations
- ▶ What issues are evident in the enactment thus far?
- ▶ What is the source of conflict?
- ▶ If there one clear-cut issue at the center of the enactment?
- ▶ What problem-solving or conflict-resolution skills have been demonstrated so far?

Phase 7: Reenactment

- ▶ Use same process as Phase 5

Phase 8: Discuss & Evaluate

- ▶ Use same process as Phase 6

Phase 9: Share Experience & Generalize

- ▶ Use Think/Square/Share to process the following questions.
- ▶ Questions to encourage application of learnings to specific real world situations:
 - ▶ In looking at the issues we identified in this role play, can you think of any other life situations which involve the same issues?
 - ▶ What problem-solving techniques or conflict-resolution skills were demonstrated in the enactments?
 - ▶ In what other situations could you use these same techniques/skills?

Anna Wright is one of the world's most brilliant scientists. Because of her work at the Centers for Disease Control, the quality of life for HIV patients has greatly improved in the past five years. Recently she was approached by a childless couple who would like to use the latest technology in their pursuit of parenthood. They have attempted all traditional fertility treatments and some not-so-traditional treatments. After hearing several news reports, they would like to attempt cloning. They would like Dr. Wright to supply the nucleus for the cloning procedure that will produce their child.

Observer Roles

Analysis

1. Are there other issues that are influencing the dynamics of this situation?
2. What are the players trying to achieve (what are the goals behind their actions)?

Evaluate

3. How realistic is the enactment?
4. Are the players actions effective in achieving their goals (as identified by #2)?

Propose

5. How could we re-enact this scene?
6. Where should we go next in our enactments?

Potential Issues for Role Plays in Science Education

- ▶ Euthanasia
- ▶ Use of human tissue in research
- ▶ Attitudes toward science and science education
- ▶ Workplace ethics
- ▶
- ▶
- ▶

Possible scenario foci for issue areas:

- ▶ Euthanasia
 - ▶ Jack Kvorkian's latest assisted suicide
 - ▶
 - ▶
 - ▶
- ▶ Use of human tissue in research
 - ▶ Use of fetal brain tissue in Alzheimer's treatment
 - ▶ Cloning
 - ▶
 - ▶
 - ▶
- ▶ Attitudes toward science and science education
 - ▶ Students who hate science
 - ▶ Parents who don't see science as valuable for their children
 - ▶ A teacher who believes her/his students can not learn science concepts/processes
 - ▶
 - ▶
 - ▶
- ▶ Workplace ethics
 - ▶ Harrassment
 - ▶ Treatment of patients (with insurance coverage) who are no longer benefitting from treatment
 - ▶ Refusal to treat patients who do not have insurance coverage
 - ▶

Role Play Planning Form

Subject/Topic/Grade-Age Level/Time Required/# of Students

Lesson 1.
Goals 2.
3.

Performance 1.
Objectives 2.
3.
4.

State the problem to be presented or how the problem will be constructed.

If students are unfamiliar with the role play process, do you need to instruct them on specific process elements to ensure their success?

1. Phase 1: Warm Up the Group

How will you present the problem? Describe examples provided to the students. Write one or two questions that could be used to explore the issues involved in the problem situation.

2. Phase 2: Select Participants

Suggest several roles that could be enacted for this problem situation. What would be the attitudes/values for each role? How will you select the participants.

3. Phase 3: Set the Stage

Describe possible settings for the first enactment. What areas can you expect to be included in the enactment?

Role Play Planning Form (continued)

4. Phase 4: Prepare the Observers

What tasks will you assign the observers? For example,

- Describe: feelings of a specific player
thinking process of a specific player
actions/reactions of a specific player
- Analyze: possible reasons for players' actions
possible goals for each player
- Propose: alternative enactments (and then demonstrate in a reenactment)
- Evaluate: realism of the enactment
effectiveness of players' actions
sequence of players' actions
helpfulness of players' actions in achieving goals

5. Phase 5: Enact/Phase 7: Reenactment

Suggest two or three possible scenes for enactment/reenactment. Are there certain values you want to highlight in the first enactment?

6. Phases 6 & 8: Discuss and Evaluate

Write two or three questions that could be used to initiate student analysis of the conflict and values exhibited. What cooperative techniques will you use to facilitate discussion?

7. Phase 9: Share Experience and Generalize

Write a question to encourage application of the problem solution to a specific real life situation. Write a question designed to apply the findings to life in general.



REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: <i>Hitting the Issues Head On: Using Role Play in Science Education</i>	
Author(s): <i>Larry D. Burton</i>	
Corporate Source: <i>Andrews University</i>	Publication Date: <i>April 3, 1997</i>

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic/optical media, and sold through the ERIC Document Reproduction Service (EDRS) or other ERIC vendors. Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following two options and sign at the bottom of the page.



The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

_____ *Sample* _____

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 1

The sample sticker shown below will be affixed to all Level 2 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

_____ *Sample* _____

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 2



Check here For Level 2 Release: Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical), but not in paper copy.

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but neither box is checked, documents will be processed at Level 1.

"I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic/optical media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries."

Sign here → please

Signature: <i>Larry D. Burton</i>	Printed Name/Position/Title: <i>Larry D. Burton/Asst. Professor</i>	
Organization/Address: <i>Bell Hall Suite 014 Andrews University Berrien Springs, MI 49104-0114</i>	Telephone: <i>616-471-6674</i>	FAX: <i>616-471-6374</i>
	E-Mail Address: <i>burton@andrews.edu</i>	Date: <i>7-24-97</i>

