ROLE-PLAYING SUPPORTS BOTH MULTI-CULTURAL AND ENVIRONMENTAL TEACHING AND LEARNING

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ABSTRACT

This article describes a practitioners' classroom role-playing activity and draws from scholarships on role-playing, multiculturalism, and environmentalism. We discuss the benefits and implementation of role-playing in a science classroom by adopting a project WILD activity in our classroom with pre-service teachers. Project WILD is based on the premise that young people and educators have a vital interest in learning about our natural world. The preservice teachers were tasked with applying it to a local environmental issue that they could use in their future classrooms. We argue that the incorporation of role-playing in a science classroom provides an opportunity to address real-life issues like environmental from multiple perspectives. We describe a class activity that can successfully implement role-playing and promote multi perspectives while addressing an environmental issue.

Introduction and Background

The Minnesota Professional Educator and Licensing Board (PELSB) revised the standards and included the standard: bring multiple perspectives to the discussion of the subject matter, including attention to a student's personal, family, and community experiences and cultural norms (2016).   Given the new teaching standard for our teacher preparation program, Science Methods candidates are expected to bring multiple perspectives to the discussion of the subject matter, including attention to a student's personal, family, and community experiences and cultural norms. To achieve this standard, teacher candidates will explore scientific, Indigenous, and local knowledge and skills. Teacher candidates will participate in simulated community role-playing on multiple perspectives on issues of natural resources.

After considering the standard, our learning segment activity entailed those students participating in a simulated community role-playing on multiple perspectives on issues of natural resources. For this paper, we define role-playing as a type of active and participatory learning activity that creates interaction between students and a simulated scenario (Kilgour et al., 2005) Role-playing is a stimulating and engaging strategy to motivate learners to dive deeper into an issue or topic. Aubusson et al. (1997) found that role-playing in science classrooms developed deeper student understanding, improved student motivation, and facilitated learning across a range of ability levels. Unfortunately, there persists an erroneous belief that academic content standards cannot be met through play-based activities, which has caused playful methods of learning to virtually disappear from school classrooms (Bergen 2009). In this paper, we discuss the integration of role-playing in a science methods course taught to elementary pre-service teachers (PSTs) and its benefits in addressing multicultural and environmental issues in science.

Role-Playing and multiculturalism literature review

Role-playing is a tool that can be used both for teaching with a multi-cultural lens and environmental. According to Munin and Efron (2017):

> "Role-playing, in which students are assigned a role and act out
> a given scenario, is a useful example of an experiential technique for
> teaching and learning. Its use has been documented and studied in

the literature for more than half a century. Such pedagogic research exposes the shortcomings as well as the advantages of role-playing as a method for learning theoretical subject matters. Although many of these studies show negligible significance in the acquisition of knowledge through the use of role-playing (compared with lecture and case-study approaches), other benefits of role-playing were clearly recognized. Most studies concluded that role-playing significantly enhanced students' interest in the material being learned; in the retention of this material in more detail and for a longer time; and in instilling a positive attitude and defusing anxiety about the subject matter. Role-playing not only brings theory to life and offers students the chance to put theory into practice; it does so in an enjoyable and accommodating manner." (p. 313).

Furthermore, the use of role-plays also has the potential to facilitate a more comprehensive learning experience for teacher education students compared to the more traditional cognitive focused approach (Kilgour et al., 2005)

According to Sherran (2015), role-playing can cultivate multi-perspectives. Through role-playing, students strive to understand the experiences of others, even if they do not agree with them. Role-playing allows students to imagine the narrative, change a text into real-life, and create alternate scenarios. It gives them the ability to see the potential impact of their choices. Further, Sherrin (2015) states role-playing helps students to make sense of ideas like power, identity, and choice and acknowledge their humanity. Additionally, Neuendorf and O'Connell (2011) describe the value of role-plays in teacher education: "Pedagogically sound scenario-based role-plays are activities with a specific learning outcome designed to create a real learning experience for participants" (p. 2182).

Role-playing and environmentalism literature review

Not only does role-playing provide an opportunity for our students to view the world from a different point of view, but it also allows them to view an issue from a different viewpoint. In our case, we asked the students to research an environmental issue from an assigned viewpoint. Chen and Martin (2014) reported that environmental education focused on the acquisition of knowledge is limited in its effectiveness, due to its small role in promoting sustainable behavior. While focusing on the impact of social consciousness brings the environmental issue into concepts

that are more relevant. Chen and Martin (2004) state that methodologies should (1) focus on change and not just knowledge attainment, (2) reveal behaviors in a real-world context, (3) highlight internal and external influences on environmental behavior, and (4) include a problem-solving approach that demands a solution. Role-play simulations address these criteria and can influence the perspective change necessary to promote sustainable behavior.

The activity shared here is an environmental role-playing lesson developed and refined from Project WILD (Association of Fish and Wildlife Agencies, 2022). The activity is directed at PSTs in a medium-sized university in the Midwest. Project WILD is an interdisciplinary conservation and environmental education program emphasizing wildlife. Designed for educators of kindergarten through twelfth grade, Project WILD capitalizes on the natural interest that children and adults have in wildlife by providing hands-on activities.

Project WILD is based on the premise that young people and educators have a vital interest in learning about our natural world. The program emphasizes wildlife because of its intrinsic and ecological values, as well as its importance as a basis for teaching how ecosystems function. In the face of competing needs and pressures affecting the quality and sustainability of life on earth, Project WILD addresses the need for human beings to develop as responsible citizens of our planet.

Project WILD's mission is to provide wildlife-based conservation and environmental education that fosters responsible actions toward wildlife and related natural resources. All curriculum materials are backed by sound educational practices and theory and represent the work of many professionals within the fields of education and natural resource management from across the country. Project WILD provides a template for us to adapt to this standard using a recent event.

Proposed Project Wild integration

Set-up the Activity

PSTs read a pre-class reading about the dilemma they would be exploring during class time. The dilemma we chose for them to explore was on the Pebble Mine project in Alaska, USA. The Pebble Dilemma was a real-world discussion around the opening of a Mine in Alaska. Approval for this mine project never

occurred. However, it was a long-standing, hot-button issue in Alaska and outside. The PSTs were participating in the simulation of the debate that occurred around the Pebble Mine in rural, western Alaska. We gave the PSTs the purpose of the meeting which was to determine if there was enough support to revive the proposal. The PSTs were assigned different roles and given time to research their respective role and write down arguments for/against the Pebble mine from the viewpoint of their assigned role and they were to bring to the council a minute presentation. Then, the PSTs presented their perspective on the mine development in a fictional Environmental Protection Agency meeting where a vote was taken at the conclusion of the meeting to recommend proceeding/not proceeding with the mine project.

Perspectives assigned to PSTs for role play

After setting up the activity the PSTs will be assigned various roles that will play as experts during this activity. Table 1 summarizes each of these roles.

Table 1: Perspective Roles assigned to students

Assigned Perspective	Role
Community Manager (budgets)	The community manager will act as a liaison between the Mine developer and the community. They will act as the voice and moderator of the developer through community support, distributing important content and any digital media or social media presence to build trust in the developer through a presence in the community and online.
Mine operator	Part of the crew at the mining site who operates machinery to drill and excavate.
Corporate offices outside of Alaska	Mine Developer – Northern Dynasty Minerals is a Canada-based mineral exploration company. This company was focused on the exploration and advancement of the Pebble Mine project in terms of how feasible it was, permits and development. Proposed

	profit-sharing plan for the residents from the Bristol Bay region.
Effected Native Corporation officers	Alaska is divided into different corporations. Each corporation is given the right to develop resources in its area.
State legislator	Called on the governor to stop the development of the proposed copper mine.
Sierra Club	Defends natural resources and wild places. The nation's largest and most effective grassroots environmental movement.
Fishing industry (Salmon)	Wild salmon fishing in Bristol Bay, near the proposed Pebble Mine construction site.
Elders from a nearby village	Indigenous Leaders. The mine would impede on the traditional way of life for many of the Indigenous people in the area
Transportation and construction of housing for mine workers (build port)	Building a mine would also increase the building of infrastructure surrounding the mine. This would lead to greater accessibility into the region and the price of goods would decrease for the local villages/ people.
Moose and Salmon population	From the perspective of the animals. They will give their perspective and be part of the debate but not participate in the vote.
Local towns people	Local area feelings about the mine. In 2006 one poll reported 28% of Alaskans in favor of and 53% opposed to Pebble and another reported 45% of Alaskans in favor and 31% in opposition.
Local business owners	Create significant revenue and create well-paying jobs
Manager of local EPA office	Will chair the debate

Simulated Environmental Protection Agency meeting

After PSTs are given time to research their assigned viewpoint, the role-play can begin. In this role-play, they engage in a debate presenting their perspectives. Each participant gets one minute to present their perspective. After all, perspectives have been presented, each participant has one minute to refute any other perspectives or arguments brought against their perspective.   Then, after the exercise, all the participants vote for the approval or rejection of the Pebble Mine. In order to further have the students explore other points of view, the participants switch with another participants' viewpoint.

From their new point of view, the participants will then be asked to present their new perspective at another Environmental Protection Agency meeting. After this second debate, a vote will also be taken to approve or reject the Pebble Mine Project.

Proposed Assignment for Pre-service Teachers to a Local Issue

Once the PSTs have participated in both debates, they will work in small groups to design a role-play simulation involving local, environmental dilemmas from their communities. This simulation should be designed to be implemented in kindergarten to sixth-grade classrooms.

Without knowing exactly where each of the PSTs will teach after graduation, we will assign them the task to develop a role-play for their students using an environmental issue from Minnesota, USA. Some of the potential environmental issues found in the state of Minnesota:

- *Mining in Boundary Waters Canoe Area*
- *Logging in Boundary Waters Canoe Area*
- *Mining in Iron range in Northern Minnesota*
- *Fishing limits on Mille Lacs Lake - different for Native people vs. Non-native people*
- *"Green" energy – Windmill or solar farms*
- *How are local lakes affected by farming – how does farming affect the watershed?*

The PSTs will work in groups and design a simulation based in Minnesota. They should find, research, and discuss a simulation like the Pebble Mine dilemma. PSTs' research will include the following:

- *Describe the dilemma– what is the dilemma that is being discussed?*
- *Describe the importance of the dilemma and what would be some of the arguments surrounding both sides of the dilemma*
- *The multiple perspectives surrounding the dilemma– brainstorm and research a group of people that would be involved in this particular environmental topic (at least 10)*
- *Find a minimum of 5 websites that you could give your students to begin researching the topic.*

The assignment will involve detailed procedures on how to conduct the debate in a kindergarten to sixth-grade class. The PSTs use the rubric provided (Table 2.) to guide them.

Table 2: Rubric for simulated student assignment

	5-4	3-2	1-0
Notecard – quality of research	Notecard is written neatly and legibly so another person would be able to read and decipher the argument.	The notecard is neat and legible, but arguments are hard to decipher. Sentences are not written in a way that another could read and understand the argument	Notecard is hard to follow and/or not written neatly enough for another person to read
	3 or more reasons or arguments are given in support of the stance you are making. Reasons are all backed up with evidence found from research.	2 – 3 reasons or arguments are given in support of the stance you are making. 1-2 of the reasons backed up with evidence found from research.	Reasons or arguments are given in support of the stance you are making but they are not well-thought out or backed up with evidence.
Debate – presentation of the argument and	Clearly presented reasons/arguments to support your stance. Used full minute to	Presented reasons/arguments to support your stance. Presentation was short	Presented reasons/arguments to support your stance.

supporting facts	present and participated fully in the rebuttal. Reasons were all backed up with evidence found from research.	and/or did not participated fully in the rebuttal. Most of the reasons were all backed up with evidence found from research. 1 or 2 of the reasons lacked evidence.	Presentation was short and did not participated fully in the rebuttal. Reasons/arguments lacked evidence to support.
Writing a Dilemma for Elementary students from MN	Dilemma presented is a relevant and timely issue in MN. All pertinent details included in rationale for what the dilemma is and why this is a dilemma/debate. Written for 5th grade students or below.	Dilemma presented somewhat relevant or timely issue in MN. Some pertinent details included in rationale for what the dilemma is and why this is a dilemma/debate are missing. Written for 5th grade students or below mainly, some parts would be hard for an elementary student to follow.	Dilemma presented not a relevant or timely issue in MN. Pertinent details included in rationale for what the dilemma is and why this is a dilemma/debate are missing and/or unclear. Not written for 5th grade students or below.
Procedure – give a procedure on how you would conduct the meeting/debate in your elementary classroom	Procedure on how you would present this dilemma is given. Procedure on how you would conduct the debate is given clearly and thoroughly. Steps on how to run the debate are given and written in a way a substitute could follow if needed.	Procedure on how you would present this dilemma is given. Procedure on how you would conduct the debate is given. Steps on how to run the debate are given and written but some of the steps are unclear and would be hard to follow if you were a substitute.	Procedure on how you would present this dilemma is not given or unclear. Procedure on how you would conduct the debate is not given or unclear.
People perspectives for MN issue – listing 10	Ten or more different points of view given.	Eight to nine points of view are given.	Seven or fewer points of view are given.

different points of view to be researched and perspectives given for debate	Short descriptions are given and thorough and accurate for each point of view.	Short descriptions for each point of view. Some of the descriptions are not thorough and/or accurate.	Some descriptions are missing and/or inaccurate.
Resources – coming up with 5 or more resources for elementary students to use for research	Five or more resources are given. Resources are appropriate for 5th graders or younger.	Three to four resources are given. Resources given are not all age appropriate for 5th grade or younger.	Two or fewer resources are given. Resources are not age appropriate for 5th grade or younger.

Discussion

States such as Minnesota are promoting multicultural perspectives into the standards for teacher preparation programs. This will give PSTs and higher education programs opportunities to incorporate real-world scenarios in their curriculums. This project discussed in this paper was prompted by the new standards. Incorporating Project Wild will not only promote the multi-cultural perspective but also give a "real-world" scenario to PSTs. By engaging the PSTs in dilemma and debate, they are able to learn to listen to divergent perspectives and engage with their peers on multiple perspectives surrounding an environmental issue. Sherran (2015) notes that role-playing cultivates empathy as students try to understand the perspectives and experiences of others.

By asking PSTs to design a scenario based on a local dilemma, which equips with the skills of designing a scenario based on the community in which they work. This will benefit both the school, community, and other stakeholders in highlighting the local environmental issues and possible solutions. By engaging in a local dilemma discourse, the students are made aware of environmental issues in their local community and potential different perspectives that may exist. This provides an opportunity for students to see themselves as experts and problem-solvers while learning science content. While in this paper we discussed our proposed project and assignment incorporating multi-cultural and environmental issues in our class, in the

future, we hope to carry out research on how PSTs' personal perspectives were influenced by participation in this project and role-play scenario.

Disclosure statement

No potential conflict of interest was reported by the authors.

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