Slime Bash Social:

A Tactile Manipulative for Child and Youth Play

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Abstract

The play product of slime has gained increasing popularity amongst children and youth throughout the United States. Slime can be thought of as a tactile manipulative that can be shaped, stretched, expanded, lumped together, twisted, squeezed, squashed, folded, rolled, shredded, twirled, swirled, pounded, and cut or pulled apart. As a learning tool, slime can and does support STEM initiatives and programs. Slime can be created using simple ingredients that are easily measured, combined, and prepared by children and youth. In addition, slime can incorporate components such as glitter, beads, shaving cream, color dyes and other items. This paper offers an interpretation of slime as a tactile manipulative which can be tied to STEM, art and other initiatives as well as combining with other program areas and formats. The paper also presents program examples drawn from throughout the United States. One program known as the Slime Bash Social sponsored by the University of Northern Iowa's Institute for Youth Leaders is highlighted in this practical article. This program incorporated slime with other learning activities of dance and singing performances.

Key Words

Slime, manipulative, tactile, STEM, youth, children, program design.

Introduction

An increasingly popular form of play is found in the use of a substance with interesting material properties known as slime. Slime is easy to create and offers numerous opportunities for meaningful play involvement. Slime can be defined as a viscous liquid matter that is artificially created by blending various ingredients together to create a substance that can easily be modified in shape, consistency and color. Slime has gained great popularity across the United States and is even highlighted in prominent product advertisements. For example, Elmer's Glue has recently featured its product "Elmer's® Ooey Gluey Slime" on their website and in nationally televised commercials. Their national slime contest challenges individuals to enter their personally created slime in several categories (Ooey Gluey Slime Games Contest Rules, 2018).

Tactile manipulatives may be thought of as physical objects which may be used as a teaching or play tool for children or youth. Use of such an object can be thought of as a hands-on form of learning. Many STEM based learning concepts include a program design that encourages problem-solving through learning by doing. This approach is grounded in constructivist theory that has been "shown to improve student achievement in higher level cognitive tasks, such as

scientific processes and mathematic problem solving" (Laboy-Rush, 2011, p. 4). Constructivism is an active learning approach.

Rather than "behaviors or skills as the goal of instruction, cognitive development and deep understanding are the foci; rather than stages being the result of maturation, they are understood as constructions of active learner reorganization" (Fosnot & Perry, 1996, p. 11). Using tactical manipulative materials can be one avenue to describe learning objectives that are abstract. According to Schoolyard School Specialty (2017), by experimenting with tactile manipulatives, participants experience using deductive reasoning skills to make things work or to discover they do not. This allows for learners to experience failure in non-threatening ways. Children or youth are naturally inquisitive and desire to know how things work. Making and playing with slime can be a source of intrinsic motivation to encourage inquiry learning and hands-on experiences. Individuals that participate in slime based projects have an opportunity to make meaningful connections to different subjects through "concrete, hands-on explorations" based on student interest and input (Grande, n.d., p. 100).

Drickey (2018) and Smith and Montani (2008) have discussed the use of manipulatives as a teaching strategy to support instruction in the classroom or informal learning environments. They suggested that multisensory materials support the hypothesis that performance increases through the use of such strategies and materials. By moving the slime around, children and youth can gain greater insights into spatial relations as well as build their fine motor skills. The manipulation of slime helps individuals build their hand strength and dexterity. Polan (2017) suggested that children are able to gain STEM skills through preparing slime. He labeled measuring and experimenting along with practicing reading and art skills to be STEM skills. In addition, participants learn how to mix colors. By touching and moving the slime into various shapes, sizes and configurations, tactical sensory play is encouraged. For example, slime not only stimulates one's tactile sensory patterns, but also one's visual and other senses. Making slime involves using multiple senses which harnesses different parts of the body and areas of the brain which increases brain power. Grande (2005) explored developing the process skills involved in the making

of slime. Process skills included "questioning, observing, measuring, evaluating and investigating - all necessary skills for inquiry" (p. 99).

Johnston (2018) while studying the impact of thematic, interdisciplinary teaching on students' reading engagement and achievement in a language immersion setting, reported the use of thematically-related units to increase background knowledge acquisition and deepen comprehension. This approach became a foundation for all the independent work that Johnston's students undertook. Johnston utilized slime to deepen learning.

Sarquis (1986) has discussed the application of slime in the preparation of "a collection of polymer activities to be carried out in the laboratory segment" of a general chemistry course (p. 60). This author suggested that dramatization of a complicated chemical reaction would be more graphic and easier to explain by the steps involved in creating slime. Sarquis also suggested seven basic reasons for incorporating slime: (1) demonstrates a chemical process; (2) develops vocabulary necessary to carry out the activity; (3) creates an interest in careers in science; (4) provides for "hands-on" learning according to Piaget; (5) provides the student with an opportunity to learn the structure of the polymer; (6) stresses basic science safety labs and (7) stresses that science can be fun as well as educational (1986, p. 63).

Hussain and Carignan (2016) have noted that children are naturally curious. The authors discussed creative science activities as a pathway to "achieve the goal of learning science content and to excite students about science, technology, engineering, and math, teachers may incorporate creative classroom activities" (p. 49). Likewise, Krantz (2004) suggested that fun exploratory activities can be used as an opportunity to develop inquiry skills and increase science knowledge "through observation, comparing and contrasting, recording data, and making inferences" (p. 22).

This practical paper outlines how slime has been used in various program settings as a play activity. In addition, the article offers information on slime as a tactile manipulative; that is slime is a tangible substance that can be touched, molded and shaped into various configurations. One can also include additives to slime changing its color, consistency, and fragrance. A recipe and directions for crafting slime are also

included in this paper. Lastly, several examples are provided from community parks and recreation departments and a youth serving organization demonstrating how slime has been incorporated into their programming.

What is Slime?

Slime can be thought of as a tactile manipulative and as an object that individuals can touch and change into different shapes to participate in various meaningful play activities. Because slime can be formed in different configurations and consistencies as it can be shaped, stretched and expanded, lumped together, twisted, squeezed, squashed, folded, rolled, shredded, twirled, swirled, pounded and cut and/or pulled apart, it is an optimal hands on play activity. Further, there can be additives to slime which include changing its color, consistency and shape. Also, by adding beads, glitter, clay, shaving cream and foam pieces, the mixture can be employed as a means of increasing its tactile and sensory interest. As a result of these variables slime exhibits many qualities that enable an individual to be creative and gain great satisfaction from touching, feeling and maneuvering the substance into endless configurations and designs.

There are many different types of slime. According to Helmenstine (2018) some of these include: magnetic slime; radioactive-looking slime; glow in the dark slime; thermochromic color change slime; foam slime; edible blood slime; glitter slime; flubber slime; ectoplasm slime; electroactive slime; Koolaid Playdough slime; soap slime; edible slime; gunk or goo slime; silly putty slime; oobleck slime and borax-free slime.

Slime, the Arts, and STEM

Slime doesn't fit any specific program area; however, depending on the context it can be viewed as an art form, a craft and/or a way of enhancing STEM concepts. Edginton, Deiser, Kowalski, and Lankford (2018) have suggested that visual arts are those which provide an opportunity for individuals to communicate their impressions and feeling to others. Certainly the way that slime can be shaped provides a means of expression for individuals to engage in creative expressions and the productions of original products. As a craft, slime can take some tangible shape which can be visually pleasing to an individual (Edginton et al., 2018).

Slime can support STEM activities in numerous ways. It can be weighed, measured, compared, and evaluated. Focusing play activities around slime enables individuals to address various STEM standards of practice including learning and applying content, integrating content, interpreting and communicating information, engaging in inquiry, engaging in logical reasoning, collaborating as a team and applying technology appropriately (Exemplars: We set the standards. (n.d.).

In the utilization of STEM and Art Standards in the application of slime, it appears that this medium provides an excellent way of encouraging problem solving, creativity, creative thinking, and logic and collaborative actions. Individuals can shape or manipulate the slime into various science, technology, engineering and mathematic components or artistic creations which can be drawn into activities that promote subject specific learning. For example, combining various ingredients and observing their reaction enables individuals to gain knowledge of such processes. Measuring ingredients also enables individuals to understand proportionality. Therefore, one can see slime is a useful tool in advancing various STEM and Art Standards.

The application of STEM and National Art Core Standards was evident in the program discussed later in this article known as the Slime Bash Social. For example, one of the standards encourages children to "analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred" (Middle School - Physical Science 1-2) as a benchmark indicator. There are numerous STEM Standards that can be applied to this activity, too numerous to detail in this article. The National Core Arts Standards show that many of these can be addressed using slime as a medium of artistic expression. The basic standards include creating, performing, responding, and connecting. For example, Anchor Standard #3 involves refining and completing artistic work. Anchor Standard #4 involves interpret work for presentation (National Core Arts Standards, 2019).

Youth and Recreation Programs
Incorporating Slime

As noted, slime as a tool of play is gaining increased popularity across the United States (Missouri Poison Center, 2018). Many municipal park and recreation departments and youth serving organizations are offering programs featuring the utilization of slime. Often the programs are built around themes such as Christmas, Halloween or learning programs which include STEM activities.

The Gardner Park and Recreation Department in Kansas has offered a program called "Slime in the Park." This program provides children and youth ages 3-10 years of age an opportunity to make their own slime and customize it. Approximately 5-20 individuals can participate in each program offering. The city of Ocean City, located in New Jersey, offers a summer program called "Slime, Goo & Poison Too." Youth ages 7-12 participate in a week long camp conducting experiments and learning about the toxicology of slime, goo, and chemicals. Participants are "…encouraged to conduct experiments to learn about animal health and the protection of Earth's habitats…" (Ocean City, New Jersey, 2017, p. 19).

The YMCA of Metro Chicago operates a 3 week all-day program built around "Slime Time & Grossology for children and youth ages 6-11." This event theme was derived from the animated television series Grossology and the YMCA utilized this for their program design and theme. The program operates from 7:00 AM to 6:00 PM Monday through Friday and the YMCA operates programs in the summer and the fall.

The Activities

Creating Slime

How does one create slime? The ingredients for creating slime are relatively simple and straight forward. Basic ingredients and tools for creation include:

1. Borax powder
2. Water
3. 4 ounce (120 ml) glue (e.g., Elmer's white glue)
4. Teaspoon
5. Bowl
6. Jar or measuring cup
7. Food coloring (optional)
8. Measuring cup (Helmenstine, 2018)

Directions for creating slime involve locating a craft bowl and measuring tools. Next, place a ½ cup of glue into the craft bowl. A desire to color the slime adding food coloring should be considered at this step of the process. Next, one should mix ½ cup of water into the glue. The next step involves adding the activator into the solution. In this recipe the activator is one teaspoon of borax powder premixed previously with one cup of water. Alternate activators could be substituted such as liquid starch or contact lens solution. Once combined, the substance requires kneading by hand for several minutes to thoroughly incorporate all ingredients. At this time other elements can be added such as shaving cream, glitter, beads, etc.

Slime Bash Social, Institute for Youth Leaders

The University of Northern Iowa's Institute for Youth Leaders featured a program known as the "Slime Bash Social" (See the advertising flier in Figure 1). The event was an opportunity to create community interaction for the integration of children and youth from two Midwest communities with differing socio-economic status for the purpose of creating a safe, fun and engaging environment in which participants could meet and associate with others from neighborhoods that differ from their own. The program was designed to be an avenue of recreation engagement for members of several neighborhoods to conveniently and safely allow their children and youth the opportunity to engage in creative play with slime. The event included not only an occasion for children and youth ages 7 and older to create and play with slime, but also featured team building activities and performances from local talent.

Figure 1. Slime Bash Social flyer

The program attracted 95 parents who registered 106 children, age 7-15. Participants were randomly grouped in a team of 8-10, and assigned a table for activities building. (See Figure 2). Nine tables were set for the event featuring three building recreation activities. Participants were rotated across these tables to explore each of these activities. Each activity table had 2-3 team leaders who had obtained trainings on how to coordinate recreational activities engagement with young people prior to the event. These team leaders were recruited and oriented to understand the team building

recreation activities as it relates to leadership skills under a separate program initiative known as the Young People Leadership Development (YPLD) program. The team building recreation activities were incorporated as an avenue to set the stage for an effective relational and friendly play environment.

Table 1 offers information that demonstrates the design of the event which combined three major activities. The first of these was a series of team activities including a pyramid stacking game (see Figure 3 on next page), an activity known as lowering the helium stick (see Figure 4), and, last, an activity called hot lava. This was followed by providing individuals with an opportunity to create and play with slime (see Figure 5). The next part of the program involved a review of several local hip-hop performances. At the conclusion of the program, students were able to pick up their slime containers and go home. The entire program was completed in 2 and ½ hours.

Figure 2. Students at a table with their leader.

Table 1. Design of the Event

Length/Duration	Activity	Description	Relationship to STEM
15 minutes	Pyramid Building	This team building activity involved stacking blocks into a pyramid	Mathematics, Engineering
20 minutes	Slime	This theme related activity focused on creating slime with attention to Lorax	Creative thinking, mathematics
15 minutes	Helium Sticks	This team building activity involved teams attempting to move helium sticks down to floor level without dropping them	Problem solving, creative thinking, team collaboration
20 minutes	Slime	This theme related activity focused on creating slime with attention to Star Wars	Creative thinking, mathematics
15 minutes	Hot Lava	This team building activity involved using the imagination to strategically move about	Problem solving, creative thinking, team collaboration
20 minutes	Slime	This theme related activity focused on creating slime with attention to the University of Northern Iowa	Creative thinking, mathematics
20 minutes	Performances	Several performances were offered including contemporary hip hop ones	Creative thinking, application of technology
Ongoing/ continuous	Parent Zone	Opportunities for parents to engage was passive observation as well as participation with children/youth	Parental support, carryover to the home environment

Figure 3. Pyramid building activity.

Figure 4. Lowering the helium stick activity.

Figure 5. Participants creating slime.

As one can see in viewing Table 1, three themed scenarios were utilized for creative stimulation. These themes included: (1) the Lorax from Dr. Suess, (2) Star Wars (see Figure 6) and (3) the University of Northern Iowa [UNI]. Tables were decorated which reflected each of the themes. Also quotes were included at the table supporting the themes. Items reflecting the themes that could be mixed into the slime if desired were also at the tables. The parent zone was situated where parents could observe the activities and if they desired, could participate with their children. A number of parents joined in an active fashion for several of the activities.

To evaluate the slime creative play and team building recreation activity experience, each participant was provided with YPLD's designed passport that enabled them to identify how they gained skills under seven basic facets of

leadership as they engaged in the overall activities. These leadership facets include: (1) building a diverse culture (2) teamwork, (3) citizenship, (4) work ethic, (5) emotional stability, (6) decision making and (7) health and well-being (see Figure 7 which displays the Passport). This provided an opportunity for participants in each team to observe and access how they gained leadership skills within an organized creative play and recreation environment. The team leaders engaged the participants to reflect on these facets. The team building recreation activities as well as the slime creativity were designed to provide avenue to observe all seven YPLD's leadership facets. Figure 7 presents the passport used to assess these leadership facets.

Figure 6. Activity table with a Star Wars theme.

After engaging in the team building activities, participants practiced skills including reading recipes, measuring, mixing colors, and using trial and error to make a colorful, slimy substance that they then played with and took home (See Figure 8).

The bundling as well as the sequencing of activities can have a significant impact on the success or failure of any event. In this program, a series of highly active cooperative games aimed at enabling participants to be introduced to one another and to build teams was followed by a more passive creative art activity featuring the use of slime. Moving from a series of highly active group activities to more individual ones required closer monitoring of the transitions between activities. The same could be said about the final major program element - a series of hip hop performances. The organizers of the event reflected that transitions between various portions of the overall event could have been more closely planned.

Figure 7. Executive passport.

Figure 8. Participants stretching slime and also preparing it for trip home.

The social recreation curve initially proposed by Ford (1977) and later updated by Edginton et al. (2018) suggests that programs should start slowly and build to crescendo. These authors suggest that the program should be cut or stopped at its peak, leaving the participants wanting to return in the future for more. The peak of this activity was the slime art project as advertised. However after that activity, the program somewhat dragged on to its conclusion with some moments of high enthusiasm exhibited by the participants for the live hip-hop performances. Perhaps the sequence of the event activities should be examined and more closely monitored.

The target number of over 100 children was secured for the event and was augmented with the attendance of nearly the same number of parents. Promotion for the program involved the use of social media and flyers strategically placed in the community at schools. Great support from parents was in evidence. Perhaps the provision of free t-shirts and a no fee policy for the event encouraged participation. The facilities and space were excellent. A double wide gymnasium enabled the separation of each of the program components. Although there was no formal evaluation tool, many positive comments were received from the participants and parents. There was a sense of joyful enthusiasm for the event with many individuals asking when we would conduct a similar one in the future. Of note was the cross cultural interaction of community members drawn from diverse racial and socioeconomic backgrounds.

Conclusion

Play is an important aspect of leisure and learning. Meacham and Atwood-Blaine (2018) stated that "Today's heavy emphasis on high-stakes testing and accountability, particularly in literacy, have limited young children's use of their authentic ways to explore the world" (p.57). Dewey (1938) explained that one emphasis in moving beyond traditional education was the importance of maintaining a standpoint that educational experience is significant only as it compels to further experience. The idea of growth and continuity becomes an essential function of a teacher to create opportunity and experiences that engage the student and

compel them to seek future experiences. Events such as the Slime Bash Social and Slime in the Park create opportunities for youth to learn through experience which can propel them to future learning opportunities and desire. Continued community programs utilizing this new tool can be an effective way to engage youth in experiential learning environments.

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