Enhancing Multiple Intelligences in Children who are Blind:

A Guide to Improving Curricular Activities

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Abstract: Howard Gardner's Theory of Multiple Intelligences has provided educators with a new view of intelligence. It emphasizes that science, math and language are not the only ways to exhibit intelligence. People exhibit intelligence in many different ways. Each type of intelligence is as valuable as the others. Gardner classifies these intelligences into eight different areas: bodily-kinesthetic, interpersonal, intrapersonal, linguistic, logical-mathematical, musical, spatial and natural intelligence. This paper reviews studies done for enhancing multiple intelligences in children who are blind. It also presents findings from brain research that supports the Theory of Multiple Intelligences and their implications in the field of teaching and learning. In addition, this paper provides a guide to modify curricular activities in the glance of the Theory of Multiple Intelligences. These activities are designed to improve different talents in children who are blind such as imagination, creativity, cooperation, social skills, self reflection, linguistic abilities, critical thinking, scientific thinking and attitudes towards nature. Examples of the teaching methods that are used to enhance these talents are: cooperation learning, guided imagery, brainstorming, questioning, scientific inquiry, projects-based learning, learning cycle, and some others. Sample lesson plans are provided in this paper.

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In 1983, Howard Gardner proposed his new theory of intelligence in his book: *Frames of Mind* (Gardner, 1983). He looked at intelligence from a different angle. Intelligence, according to Gardner, is not limited to the ability to think mathematically or logically. Learners, who are superior in visual thinking, interpersonal and intrapersonal relations, music, and natural expressions, may be classified as intelligent individuals. Gardner's Theory of Multiple Intelligences has been incorporated into various curricular activities (Armstrong, 1994). This new view of intelligence inspired many educators and curricular designers to create classroom activities that suit different types of learners. In addition, alternative assessment practices have gained new momentum (Silver, Strong & Perini, 2001).

Types of Intelligence

Gardner proposed, in his theory of Multiple Intelligences, nine types of intelligence: bodily-kinaesthetic, interpersonal, intrapersonal, linguistic, logical-mathematical, musical, spatial and natural intelligence. These types are described briefly as follows:

1. **Bodily-Kinaesthetic Intelligence:** the ability to use the body skilfully to express ideas and feelings. It also includes the ability to handle objects, equipments, and

apparatuses adroitly. Sports, drawing, carving, body acting, scientific laboratory skills, calligraphy, dancing and medical operations are all examples of this type of intelligence. Gardner puts Marta Graham, the outstanding American dancer, choreographer, and teacher, as one of the highest achievers in the bodily-kinaesthetic intelligence (Gardner, 2001).

Skills and Tasks:

The following behaviours are examples of the skills and tasks which belong to the bodily/kinaesthetic intelligence (Goodnough, 2001; Silver, Strong & Perini, 2001; Willis & Johnson, 2001; Brualdi, 1996; Armstrong, 1994):

- Exploring tactile models
- Sequencing movements
- Dramatizing
- Using concrete materials
- Clapping, tapping, hopping

2. **Interpersonal Intelligence**: the ability to understand other people's feelings, intentions, and motivations. It is about relationships among people. Interpersonal individuals are those individuals who manage to lead their people to achieve great goals such as freedom, independency, economic booming, and national security. Mahatma Gandhi is Gardner's best example of such individuals (Gardner, 2001).

Skills and Tasks:

The following behaviours are examples of the skills and tasks which belong to the interpersonal intelligence (Goodnough, 2001; Silver, Strong & Perini, 2001; Willis & Johnson, 2001; Brualdi, 1996; Armstrong, 1994):

- Role play
- Sharing strategies

- Assessing peer's work
- Interviewing others
- Participating in simulations
- Working cooperatively
- Peer tutoring
- Chatting
- Discussing issues
- Interacting with audience

3. **Intrapersonal Intelligence**: the ability to understand one's own innermost feelings, interests, determinations, ethics, strengths, integrity, imagination, thoughts, and motivations. People with strong intrapersonal intelligence have strong self-esteem, self-enhancement, self-discipline, and the ability to solve personal problems (Mbuva, 2003). Religious leaders and psychological therapists perform a high level of the intrapersonal intelligence.

   Skills and Tasks:

   The following behaviours are examples of the skills and tasks which belong to the logical/mathematical intelligence (Goodnough, 2001; Silver, Strong & Perini, 2001; Willis & Johnson, 2001; Brualdi, 1996; Armstrong, 1994):

   - Writing journals
   - Reflecting on self-progress and achievement
   - Addressing values and attitudes
   - Conducting self-assessment
   - Enjoying private spaces
   - Empowerment
   - Preferring privacy

4. **Linguistic Intelligence:** the ability to use language effectively (Christison & Kennedy, 1999). This includes written and spoken expressions. Individuals with linguistic intelligence are sensitive to meaning and words. They can manipulate language and communicate with words effectively (Mbuva, 2003). Thomas Eliot, the American-British poet and critic, and one of the most distinguished literary figures of the 20th century, is Gardner's best example of this type of intelligence (Gardner, 2001).

   Skills and Tasks:

   The following behaviours are examples of the skills and tasks which belong to the linguistic intelligence (Goodnough, 2001; Silver, Strong & Perini, 2001; Willis & Johnson, 2001; Brualdi, 1996; Armstrong, 1994):

   - Reading or writing stories
   - Enjoying listening to lectures, poems, and jokes
   - Chatting
   - Storytelling
   - Attending book corners
   - Lecturing

5. **Logical/Mathematical Intelligence:** the ability to use numbers, recognize patterns, and create sequences to solve problems (Mbuva, 2003). It includes reasoning scientifically, analyzing problems logically, carrying out complex mathematical operations, and investigating natural and artificial phenomena. Mathematicians, computer programmers, accountants and scientists fit very nicely into the highest category of this type of intelligence (Patterson, N.D.). Albert Einstein is Howard Gardner's best example of this intelligence.

Skills and Tasks:

The following behaviours are examples of the skills and tasks which belong to the logical/mathematical intelligence (Goodnough, 2001; Armstrong, 1994; Silver, Strong & Perini, 2001; Brualdi, 1996; Willis & Johnson, 2001):

- Solving or creating: problems, logic puzzles, equations, brain teasers, and algorithms
- Justifying thinking
- Explaining natural phenomena
- Manipulating numbers

6. **Musical/Rhythmic Intelligence:** the ability to recognize, appreciate and compose tunes, pitches, melody, sounds and rhythms (Christison & Kennedy, 1999; Patterson, N.D.). Singers, musicians and composers are examples of the individuals who belong to this type of intelligence. Igor Stravinsky, the Russian-American composer and the one of the greatest and most versatile composers of the 20th century, is Howard Gardner's best example (Gardner, 2001).

Skills and Tasks:

The following behaviours are examples of the skills and tasks which belong to the musical/rhythmic intelligence (Goodnough, 2001; Silver, Strong & Perini, 2001; Willis & Johnson, 2001; Brualdi, 1996; Armstrong, 1994):

- Using musical notation
- Creating rhythmic patterns
- Associating past events mentally with certain rhythm of a preferred old song
- Repeating rhythms by mouth while working

7. **Visual/Spatial Intelligence:** the ability to create mental images that are clear, three dimensional, and rich in colour. It includes manipulating objects mentally in order to solve problems (Mbuva, 2003, Al-Balushi, 2003, Mathewson, 1999, Shepard, 1988). Graphic designers, painters, and computerized movie designers are visual/spatial individuals. Scientists and engineers are considered to be visual thinkers (Mathewson, 1999; Shepard, 1988). Gardner (2001) argues that spatial intelligence is also developed in children who are blind. Examples of this intelligence are James Watson, the discoverer of the DNA structure, and Telsa, the inventor of the self-starting alternating current motor, Kekule, the discoverer of the benzene ring structure, Michael Faraday, the discoverer of the magnetic field line, and Albert Einstein, the founder of the Theory of Relativity (Shepards, 1988; Rechelson, 1977). All these scientists share one common talent; they are visual thinkers. Mathewson (1999) summarizes some of these instances:

> Michael Faraday's visualization of "lines of force" surrounding charged objects and magnetic poles is frequently cited as an example of the use of imagery in explanations of phenomena. The inventor Nikola Tesla was able to visualize entire working models of devices in his head. Albert Einstein used highly visual "thought experiments" to explore his ideas and described his mental style as "combinatory play" with images. Friedrick Kekule, a pioneer in structural organic chemistry (who originally had suited to be an architect), claimed to have thought of the cyclic structure of benzene while daydreaming (p. 37).

Shepard (1988) expands this point and describes Einstein's use of imagination saying:

> Indeed, the paradox that eventually led him [Einstein] to the development of the special theory of relativity first came to him when, at age 16, he imagined himself traveling along beside a beam of light (at the velocity of some 186,000 miles per second). It then struck him

> that the stationary spatial oscillation that he mentally "saw" corresponded neither to anything that could be perceptually experienced as light nor to anything described by Maxwell's equations for the propagation of electromagnetic waves (p. 155).

Skills and Tasks:

The following behaviours are examples of the skills and tasks which belong to the visual/spatial intelligence (Goodnough, 2001; Armstrong, 1994; Silver, Strong & Perini, 2001; Brualdi, 1996; Willis & Johnson, 2001):

- Drawing diagrams
- Painting
- Creating computerized pictures
- Using illustrations
- Creating mental models
- Imagining
- Participating in guided imagery activities
- Creating and using graphic organizers, concept maps, and mind maps

8. **Naturalist Intelligence:** the love of nature. Naturalist intelligence people love being outdoors in nature and enjoy its elements such as plants, animals, lakes, oceans, birds and stars. Nature inspires these people in many different ways. They feel relaxed and energized when they interact with nature, or just laying down on a hump and staring at the sky. Farmers, gardeners, botanists, geologists, florists, archaeologists, nature painters, and nature poets are example of the naturalist intelligence individuals.

Skills and Tasks:

The following behaviours are examples of skills and tasks belong to the naturalistic intelligence (Goodnough, 2001; Armstrong, 1994; Silver, Strong & Perini, 2001; Brualdi, 1996; Willis & Johnson, 2001):

- Classifying natural objects
- Observing patters
- Enjoying nature

The Implications of Multiple Intelligences to Children who are Blind

Introduction:

Elsie Rao is a retired teacher after seventeen years as a teacher of the visually impaired in Tyler Independent School District, Texas. She was chosen the Teacher of the Year for 2002. She states that:

> If people remember one thing from this essay, it should be that **blind and visually impaired people can learn to do almost anything, except maybe fly an airplane.** I start telling my students this when they are very young and I repeat it over and over again until they start to share this idea with their classmates and friends, until I see them believing it as well (Rao, 2003).

Oakland, Banner and Livingston (2000) investigated learning styles of visually impaired students. They found that these students prefer practical, thinking, or organized styles. Wagner (1994) listed guidelines to keep in mind when teaching science to visually-impaired students:

1. All students can succeed in science.
2. Students with disabilities can benefit from participation in science classes.
3. Serving their needs is often much simpler that one might expect.

4. They can be an asset to the class and make cooperative learning meaningful.
5. There is no substitute for a positive attitude and a helpful, inspiring, mentoring role.
6. Persons with disabilities can enter and succeed in many different careers in science.

This section demonstrates different teaching strategies that are designed to improve multiple intelligences in children who are blind. Each activity is designed to improve more than one type of intelligence. These intelligences are listed under each activity. Table 1 demonstrates types of intelligence that may be enhanced by each activity.

Table 1. Types of Intelligence Enhanced by Each Activity in this Guide

Activity	Linguistic	Logical	Spatial	Bodily	Personal	Social	Musical	Natural
1	✓	✓	✓		✓	✓		✓
2	✓	✓	✓	✓		✓		✓
3	✓			✓	✓	✓	✓	
4	✓	✓	✓	✓			✓	
5		✓	✓	✓		✓		
6	✓	✓	✓		✓	✓		✓
7			✓	✓			✓	✓
8	✓	✓	✓	✓	✓	✓	✓	✓
9			✓	✓		✓	✓	
10	✓	✓	✓		✓	✓		✓

Activity 1: Brainstorming: Around the Table

Objective(s):

1. To think divergently
2. To produce different types of ideas for the intended situation
3. To improve imagination
4. To use the free association tactic

Instructions:

1. Arrange classroom chairs in a circle.
2. Tell students that you will ask a question, and they need to produce ideas to answer it.
3. Ask the brainstorming question:

What if the gravitation force stopped for five minutes?

Think of all consequences.

4. Instruct students to talk about all consequences without evaluating these ideas at this moment. They should produce their ideas in a free association mood.
5. Pick up a student and ask her to produce the first idea, then the one to her right hand, then the next student, and so on.
6. Write students' ideas while they are brainstorming.
7. Brace some of their distinguished ideas, do not criticize any ideas, and encourage students to think in different directions.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:
    - Practice producing ideas fluently.
    - Explain their ideas.
2. **Logical Intelligence:** when they:

- Think of the consequences scientifically.
- Reason their ideas.

3. **Visual/Spatial Intelligence:** when they:
    - Think of consequences related to flying objects.
    - Relate the consequences to the gigantic objects such as Earth, moon and stars.
4. **Intrapersonal Intelligence:** when they:
    - Think of consequences within themselves.
5. **Interpersonal Intelligence:** when they:
    - Share their ideas.
    - Collaborate together to improve one of their best ideas.
6. **Naturalist Intelligence:** when they:
    - Think about the effects of gravity on natural phenomena and objects.

Activity 2: Scientific Discovery: Eggs and Vinegar

Objective(s):

1. To investigate the effect of the vinegar on the egg's shell.
2. To practice science processes such as: prediction, controlling variables, designing, comparison, concluding, and explanation.

Instructions:

1. You need: eggs, vinegar, and cups.

Three days before the lesson:

2. Pour vinegar on a cup to its middle level.
3. Put an egg into the cup.
4. Leave the experiment for three days. You will notice that the egg shell becomes soft and transparency.

During the lesson

5. Ask students the following question:

What happens when you put an egg into a cup of vinegar? Why?

6. Listen to their predictions. Then inform them that they will do this experiment today to check their predictions.
7. Let them feel the hardness of an egg.
8. Ask for a volunteer to taste the vinegar.
9. Ask them:

What does your mother use the vinegar for?

10. Tell them that you will put an egg into a cup of vinegar, and you will leave it for three days.
11. Tell them that you did this experiment three days before and have the results with you.

12. Let them feel the softness of the egg shell which you put into the vinegar three days before.
13. Ask them:

Why do you think this happened?

14. Let them discuss in their group the scientific explanation for this phenomenon.
15. Listen to their explanations.
16. The discussion should lead to the following explanation:

    The vinegar is an acid. It reacts with the Calcium in the egg's shell.

    This explanation might be expanded to include deeper information when teaching students at higher levels.
17. Ask students to design other experiments to test the effect of other solutions on egg shells.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:
    - Predict, explain and discuss.
2. **Logical Intelligence:** when they:
    - Predict the results.
    - Explain the results scientifically.
    - Design new Experiments
3. **Visual/Spatial Intelligence:** when they:
    - Feel the hardness and softness of the shell before and after the experiment.
4. **Interpersonal Intelligence:** when they:
    - Discuss, design, predict and explain together.
5. **Naturalist Intelligence:** when they:

- Interact with real materials from the nature such as eggs and vinegar.
- Think of the effect of different natural materials on each other.

6. **Bodily-Kinaesthetic Intelligence:** when they:
    - Sharpen their feeling-by-touching skills.

Activity 3: Creative Thinking: The TV Show

Objective(s):

1. To think creatively
2. To design a TV show
3. To perform a TV show in the classroom
4. To enjoy the taste of learning

Instructions:

1. Ask students to design their own TV show using the following steps:
    - Choose a topic for the show.
    - Choose one of your group members to be the mediator of the show.
    - Design a comedy sketch.
    - Design a discussion panel related to the topic.
    - Design TV commercials to be broadcasted during the show.
    - Write and design a song for the show.
    - Write a poem for the show.
    - Arrange all these segments together creatively.
2. Ask them to distribute these tasks among them: 2-3 students for each segment.
3. Give them 20 minutes to finish designing the segments.
4. Allow 10-15 minutes to arrange the whole show and prepare to perform it.
5. Arrange the chairs for the show in the way they decide.
6. Ask them to start their show.

After the show:

7. Ask them to reflect on their performance.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:

- Write up the show's scenarios, the song, the poem, the commercials, and the comedy sketch.
- Perform the show.

2. **Intrapersonal Intelligence:** when they:
    - Reflect on their performance.
3. **Interpersonal Intelligence:** when they:
    - Collaborate together to design the whole show.
    - Perform certain roles such as: the poet and the mediator.
    - Perform certain segments such as: the commercials and the panel.
4. **Bodily-Kinaesthetic Intelligence:** when they:
    - Perform different roles in the show.
5. **Musical/Rhythmic Intelligence:** when they:
    - Write up and sing the song

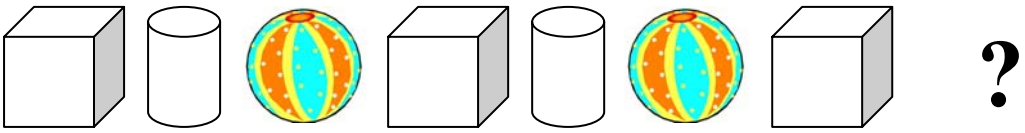
Activity 4: Patterns Recognition: Predict what's next.

Objective(s):

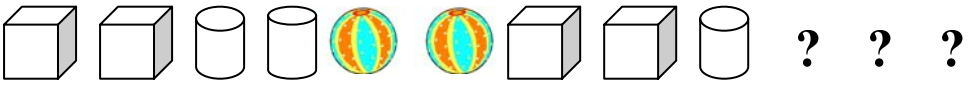
1. To recognize patterns
2. To develop classification skills
3. To develop imagination
4. To improve the three dimensional thinking

Instructions:

1. You need wooden or plastic objects of different shapes: spheres, cylinders, and cubes.
2. Arrange them in the table in the following way:



3. Ask a student to feel the first object, then the next, and so on.
4. Ask her to predict the object that comes after the last cube.
5. Ask other students to follow the same instructions.
6. Tell them the right answer, and discuss the reason for that.
7. Ask them to write and sing a song that demonstrates the pattern.
8. Rearrange the objects in the following pattern:



9. Ask them to predict the three objects that come after the last cylinder.
10. Ask them to write and sing a song that demonstrates the pattern.
11. Rearrange the objects in the following pattern:

12. Ask them to predict the three objects that come after the last cube.
13. Ask them to write and sing a song that demonstrates the pattern.
14. You can rearrange the objects in any pattern you choose.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:
    - Write and sing a song that demonstrates the pattern.
2. **Logical/Mathematical Intelligence:** when they:
    - Predict the patterns.
3. **Visual/Spatial Intelligence:** when they:
    - Feel the shape of each object.
    - Produce the sequence of the objects mentally in their minds so they would be able to predict the next objects.
4. **Bodily-Kinaesthetic Intelligence:** when they:
    - Sharpen their feeling-by-touching skills.
5. **Musical/Rhythmic Intelligence:** when they:
    - Write and sing a song that demonstrates the pattern.

Activity 5: Patterns Recognition: Classification Around the Table

Objective(s):

1. To recognize patterns
2. To develop classification skills
3. To develop imagination
4. To improve the three dimensional thinking

Instructions:

1. You need objects of different shapes. These objects might be: empty canes, boxes, pens, pencils, coins, small balls, etc.
2. Tell the students to feel the objects by their hands.
3. Ask them to classify the objects into groups according to their:
    - Shapes: circles, cylinders, cubes.
    - Length: tall and short.
    - Softness: soft and hard.
    - Made of: paper, metal, plastic and cloth.
4. They might choose their own way of classification.
5. Ask them to justify their method of classification.

Activity Variations: Students might classify fruits according to their taste, shapes, and softness. Also you may choose any other objects.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:
    - Discuss their method of classification in their groups.
    - Justify their method of classification.
2. **Logical/Mathematical Intelligence:** when they:
    - Classify the objects.

- Justify their method of classification.

3. **Visual/Spatial Intelligence:** when they:
    - Feel the shape of each object.
    - Think of the shapes mentally in their minds to produce new categories.
4. **Interpersonal Intelligence:** when they:
    - Collaborate together to classify the objects.
5. **Bodily-Kinaesthetic Intelligence:** when they:
    - Sharpen their feeling-by-touching skills.

Activity 6: Brainstorming: Think of an analogy

Objective(s):

1. To think divergently
2. To construct an analogy for a particular situation or case
3. To improve imagination
4. To think creatively

Instructions:

1. Ask students to think of an analogy for each of the following:
    - Her/himself
    - Her/his life
    - Her/his way of thinking
    - Her/his relationship with others
    - Love
    - Courage
    - Integrity
    - Success

    You may think of other concepts to add to this list.
2. Encourage them to say the following phrase in their mind when they think of an analogy for each case:

    "I think X is like Y"

    For example: **"I think myself is like a cloud"**
3. Let them think about their analogies individually. Allow 5-10 minutes to construct each analogy.
4. Direct them to think of things around them such as: objects, shapes, animals, plants, space objects, rhythms or tunes, sports, smells, tastes, etc.

5. Ask them to talk about their analogies with each other. Encourage them to reason their analogy choice.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:
    - Talk about their analogies.
2. **Logical Intelligence:** when they:
    - Reason their analogy choice.
    - Think of similarities between the main concept such as "love" and the analogy they constructed for it.
3. **Visual/Spatial Intelligence:** when they:
    - Think of objects, shapes, animals, plants, space objects, rhythms or tunes, sports, smells, tastes that are similar to the main concept.
4. **Intrapersonal Intelligence:** when they:
    - Investigate the similarities between themselves, their life, their way of thinking, and their relationship with others in one hand, and the analogies they construct for each of these concepts in another hand.
5. **Interpersonal Intelligence:** when they:
    - Talk about their analogies with each other.
6. **Naturalist Intelligence:** when they:
    - Search for analogies among naturalist elements such as objects, shapes, animals, plants, space objects, rhythms or tunes, sports, smells, tastes, etc.
7. **Musical/Rhythmic Intelligence:** when they:
    - Use rhythms or tunes as analogies.

Activity 7: Creative Thinking: Modelling the Clay

Objective(s):

1. To practice artistic skills
2. To enhance the three-dimensional thinking
3. To improve imagination
4. To model known objects

Instructions:

1. Provide a reasonable amount of non-toxic clay.
2. Provide different animal toys: an elephant, a giraffe, a lion, a snake, a seal, a bear, etc.

3. Ask each student to choose her favourite animal.
4. Allow each student to touch and feel the shape, the details, and the size of her toy.
5. Provide each student with an amount of clay to model her animal.
6. Instruct them to feel the details of the animal toy from time to time so they do not lose the mental image of the shape of the animal.
7. Allow 20 minutes for the completion of their models.
8. During that time, interact with each student, and help her to improve her model.

9. When time it over, ask an external adult examiner, who is blind too, to evaluate students' models by touching and feeling each model and tell the name of the animal that each model represents. If he succeeds in telling the name of the animal correctly, this means that the student who modelled that animal succeeded in her task.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Visual/Spatial Intelligence:** when they:
    - Build up a mental model of their animal toy.
2. **Bodily-Kinaesthetic Intelligence:** when they:
    - Sharpen their feeling-by-touching skills.
    - Improve their modelling skills.
3. **Naturalist Intelligence:** when they:
    - Interact with the details of the animals of the nature.

Activity 8: Reflective Thinking: Myself and the Ball

Objective(s):

1. To think divergently
2. To reflect on oneself
3. To improve imagination
4. To talk about the similarities and differences between oneself and an object

Instructions:

1. Provide students with different objects like the following:
    - A ball
    - An orange
    - An apple
    - A pen
    - A coffee mug
    - A radio

    You can think of other objects to add to this list.
2. Pass one object at a time.
3. Let students feel that object.
4. Ask each student to compare herself to that object.
5. Encourage them to brainstorm similarities and differences between themselves and that object.
6. Ask them to find ideas from the properties of the object: shape, softness and hardness, size, smell, taste, and function.
7. Encourage them to think of similarities and differences between the object and their way of living, relationships with others, thinking type, learning style, and feelings.

8. Allow 10 minutes for brainstorming.
9. Afterwards, ask them to share their ideas with each other.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:
    - Talk about similarities and differences between themselves and that object.
2. **Logical Intelligence:** when they:
    - Think of similarities and differences between themselves and that object.
3. **Visual/Spatial Intelligence:** when they:
    - Think of similarities and differences between themselves and the visual/spatial features of the object such as: shape, smell, softness, dimensions, and size.
4. **Intrapersonal Intelligence:** when they:
    - Reflect on the similarities and differences between themselves, their life, their way of thinking, and their relationship with others in one hand, and the object under consideration in another hand.
5. **Interpersonal Intelligence:** when they:
    - Talk about their reflections with each other.
6. **Naturalist Intelligence:** when they:
    - Search for similarities and differences between themselves and the naturalist features of the objects under consideration such as shapes, smells, tastes, rhythms or tunes, etc.
7. **Bodily-Kinaesthetic Intelligence:** when they:
    - Sharpen their feeling-by-touching skills.

6. **Musical/Rhythmic Intelligence:** when they:

    - Compare some aspects of their life to the rhythms or tunes of objects such as the radio or the drum.

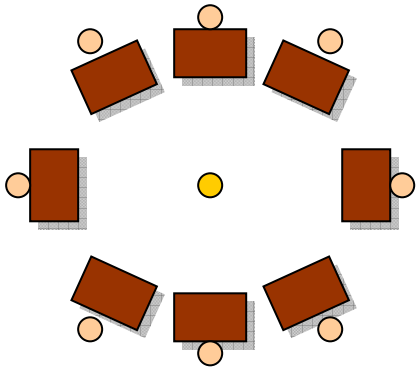
Activity 9: Playful Learning: Listen, Focus and Shoot!!

Objective(s):

1. To improve mental and physical focusing skills.

Instructions:

1. You need a soft ball that does not hurt when hit with. In the same time, the ball should be able to reach its goal when tossed, so it should not be too light.
2. Arrange students' desks in a circle of three meters in diameter, facing the centre of the circle (see the diagram).



3. Ask each student to stand behind her desk.
4. Choose a student to stand at the centre of the circle.
5. Provide her with the ball.
6. Tell the students the roles stated in the following steps.
7. You start the game by touching one of the students randomly.
8. The touched student should hit her desk by her hand.
9. The student at the centre should listen carefully and determine the exact location of the student who made the noise. Then she should toss the ball towards the one who made the noise.
10. If the ball hits the student, she must sit down and considered out of the game.

11. Students start to sing a song of their choice to celebrate the success of their classmate at the centre.
12. If the ball does not reach the student, then the student at the centre has two more chances.
13. The teacher repeats step no. 7.
14. If the student at the centre fails the three chances given to her, then she leaves the game.
15. The teacher chooses another student to be at the centre. Steps 7-11 shall be repeated.
16. The last student who is not kicked out of the game wins.

Types of Intelligence to be improved in children who are blind by this activity:

1. **Visual/Spatial Intelligence:** when they:
    - Use their spatial abilities to determine the location of the student who tossed the ball.
2. **Interpersonal Intelligence:** when they:
    - Play together.
3. **Bodily-Kinaesthetic Intelligence:** when they:
    - Improve their tossing skills.
4. **Musical/Rhythmic Intelligence:** when they:
    - Sing a song at the pause.

Activity 10: Guided Imagery: Follow Your Imagination

Objective(s):

2. To think divergently
3. To produce different types of ideas for the intended situation
4. To improve imagination
5. To use the free association tactic

Instructions:

Guided imagery has several synonyms: mental journey, active imagination, and directed waking dream (Ahsen, 2001). General suggestions for using guided imagery are as follow:

Breathing exercise: start by having students relax and breathe from the diaphragm. They should fill the stomach when inhaling (Annarella, 1999). This helps them to release any tension.

Relaxing exercises: before the main activity, start with one or two short guided imagery exercises to put students in the mood of imagery. Here are two examples of such exercises:

Exercise 1:

> Breathe deeply. Close your eyes and picture a red circle in front of you…Now change the color to orange…now to green…now change the shape to a square (Galyean, 1985).

Exercise 2:

> Picture in your mind your kitchen…imagine that you are there … look around the kitchen … what are all the objects and furniture you see?… remember the colors … move so that you are in front of the sink? … reach out and touch it … get a glass from a cupboard … fill the glass with water… imagine yourself drinking the water … how do you feel? … put the glass down … now move around in your kitchen…move where you want to go…take a last look around …

when you are ready come back here … look around you here … you are back from a fantasy trip (Stockard & Eccles, 1980, p.6).

Exercise 3:

Close your eyes and remember what it is like on a dark summer night in the country … look up at the sky … can you see the moon? … are there any stars? … imagine a friend with you … both of you move around and gather some small pieces of wood … perhaps you can find some birch bark … put the pieces of wood and birch bark on the ground … gather some more dry branches and twigs … place these on the pile … take a match out of your pocket … light the match and hold it to the pile of twigs … watch the tiny flame get larger and larger … see the frames lick and curl around the logs … watch as the branches begin to burn faster … can you feel the heat of the fire? (Stockard & Eccles, 1980, p.7).

Pauses: make your sentences short and always make stops after each sentence to allow students create their mental images. Rushing inhibits the proper formation of images.

The use of all senses: encourage students to use their five senses. Use words within the script to promote that. After the activity, ask the students to talk about their feelings and their senses as the activity progressed. If they are going to work with an imaginary object, encourage them to visualize it and describe it using the five senses (Annarella, 1999).

Main Activities

The main activities are designed to serve certain purposes other than relaxation. They may be used to explain certain concepts, elaborate on a subject, expand imagination, brainstorm ideas, and get ideas for writing a novel. Below are two examples of such activities.

Imagery Activity I:

Making Friends with your Brain

Objective:

- To appreciate the role of the brain.

Close your eyes and begin to focus your attention on your breathe, giving yourself the suggestion that with each exhalation your body becomes more and more relaxed. Good. Now bring your attention up into your brain, and while are you breathe in … and … out, imagine your brain pulsing in … and … out. Become aware of the shape of your brain within your skull, noticing its weight and size.

Now lift your hands and, without actually touching your head, bring them as close to your brain as possible, about a half inch from your skull. Feel the warmth between your hands and your brain. Feel the energy radiating from your brain to the palms of your hands. Feel your brain as a living, breathing organism. Begin to make friends with your brain. (Pause)

Now put your hands down while still focusing attention on your brain. Send your brain messages of gratitude for the wonderful job it does, and request that it continue to function with greater skill and capacity each day. Suggest to your brain that it send healing messages throughout your body for better understanding. (Pause)

Now, as I count to five, bring yourself back to full waking consciousness, feeling relaxed, alert, and with greater awareness of your brain. One … two … three … four … five. (Murdock, 1987, p.67).

Imagery Activity II:

Comet Ride

Objective:

- To understand some astronomy concepts.

> Close your eyes and imagine: You are standing on a cold, sooty snowball a few kilometers across. It's big for a snowball, but from where you are standing you can easily see that it is round. This is the nucleus of a comet, but it is still and dark this distance from the sun. You gaze off into the distance at that dim yellow star, which you know is the sun you move around, even though it doesn't look very different from any other star from this far away…
>
> Stand gently on your comet! One stamp of your foot could break a hole in its fragile ice. It has gravity enough to hold you on if you don't make any sudden moves. Make a snowball from some of this ice, and throw it – you are strong enough to make it fly completely off the comet, off into space where it will never fall back to you (Berglund, 1997, p. 35.).

You may write your own scenario for topics of your choice.

Debriefing: after the activity, ask students about the colors, shapes, sizes, tastes, textures, temperature, sounds, smells, etc… they experience during the activity. Also, they might tell a story about their imaginary journey (Annarella, 1999).

Types of Intelligence to be improved in children who are blind by this activity:

1. **Linguistic Intelligence:** when they:
   - Talk about their imagination.
   - Tell a story about their imaginary journey.
2. **Logical Intelligence:** when they:
   - Discuss how comets work.
3. **Visual/Spatial Intelligence:** when they:

- Produce mental images for what they hear.

4. **Intrapersonal Intelligence:** the guided imagery activities help learners to become (Galyean, 1985):
    - less disruptive
    - calm and relaxed
    - greater achievement, success, and confidence
    - more attentive, focused
    - sensitive to selves and inner processes
    - better attendance
5. **Naturalist Intelligence:** when they:
    - Produce mental images for natural objects such as comet, mountains, trees, etc.

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