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Project HIGH HOPES

TALENT DEVELOPMENT ASSESSMENT PROCESS (TDAP)

RATIONALE

Why identify gifted disabled students?

Rarely do students who are both gifted and disabled receive any services designed to develop their exceptional strengths. Additionally, traditional methods for identifying gifted students tend to work against disabled youngsters and result in underidentification. Although the incidence of gifts and talents among the disabled is shown to be between 5 and 10%, as in a non-impaired population, LD students are most frequently remediated for their disability while the talent is ignored.

Research information about these special students is equally lacking. Literature produced since 1977 reveals a dearth of information about strategies for developing gifts or talents of twice-exceptional students. This practice negates the findings of the major scholarly works in the area of the gifted disabled which persistently argue there is more to be gained by focusing on the gifts than on remediating weaknesses (Karnes & Johnson, 1991; Baum, Owen, & Dixon, 1991; Whitmore & Maker, 1985).

Another problem is that once students are classified as disabled, they may be taken out of the mainstream of education and placed in special classes or special schools. Thus, even if they happen to qualify for gifted education services, access to existing programs is limited, and often such programs cannot accommodate the unique needs of these disabled-but-talented students.

Why these curricular domains?

The areas of visual arts, performing arts, science, and engineering have been found to be areas of potential talent in disabled youngsters. According to a position paper published in 1984 by the National Science Teachers Association, " ... the exclusion of any group or persons from the access to science education . . . is an unnecessary and undesirable waste of human potential." The importance of identifying science potential in the disabled is underscored by the prevalence of disabled intellectually gifted individuals who have succeeded in the sciences.

Another productive field for disabled gifted individuals is the arts. In Project SEARCH, a number of disabled students were identified as talented in the arts and met with success in a state-funded program (Hokanson with Jospe, 1976). Baum, Emerick, Herman, and Dixon (1989) found that gifted learning disabled students often demonstrate their exceptional abilities in visual, spatial, and dramatic arts. The John F. Kennedy Center for Performing Arts, recognizing that disabled individuals can be highly gifted in visual and performing arts, funds a special art gallery where many outstanding works are displayed. Another example of achievement by disabled individuals is

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the National Theater for the Deaf, a leading showcase of dramatic talent in the hearing-impaired.

In their book, *Intellectual Giftedness in Disabled Persons,* Whitmore and Maker (1985) argue that there are specific intellectual and emotional needs of gifted or talented disabled students that must be addressed if their gifted potential is to be realized. These needs are:

1. a perceived possibility of success in a learning experience that is challenging;
2. a significant degree of match between the individual's desires and abilities and the nature of opportunities;
3. positive models;
4. accurate self-knowledge; and
5. positive vision of what the individual can become.

To meet these concerns, disabled gifted students need attention focused on their gift in an environment that supports and values the gift. They also need opportunities for applying gifts or talents to real-world endeavors. In addition, self-understanding of their strengths and weaknesses is essential in order for them to develop a personal repertoire of self-regulation and compensation strategies. Such an awareness will be valuable in helping these students make appropriate career choices based on a positive self-esteem as well as on high aspirations and successful experience with peers having similar gifts and interests (Baum et al., 1991; Levey & Dolan, 1988).

A major obstacle for disabled gifted students is low expectations by adults, based on faulty perceptions of the gifted disabled student's abilities and potential for independence and accomplishment (Whitmore & Maker, 1985). Teachers and parents alike have little training in meeting the needs of these students, and so often fail to recognize potential gifts and talents. This lack of recognition occurs for the following reasons:

1. The disabling condition overshadows the gifted behaviors;
2. Intellectual abilities have been defined too narrowly; and
3. Typical measures for identifying giftedness are based on stereotypical behaviors, achievement levels, and scores on pencil-and-paper tasks.

New emphasis on multiple intelligences (Gardner, 1985) and developmental identification (Karnes & Johnson, 1991; Baum et al., 1991) underscores the inappropriateness of traditional procedures, especially for individuals with a disabling condition. The Talent Discovery Assessment Process was developed to meet the need for more suitable identification of these youngsters.

Project HIGH HOPES: Notes

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Project
HIGH HOPES:
Talent Discovery
Assessment Process

Project HIGH HOPES: Notes

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TALENT DISCOVERY ASSESSMENT PROCESS (TDAP)

OVERVIEW

The Talent Discovery Assessment Process (TDAP) was designed to assess potential talent in the arts and sciences for special needs students in grades 5-8. Historically, assessment procedures involving pencil-and-paper tasks have been shown to abilities in students with special needs. The TDAP, however, is based on the philosophy that the most accurate predictor of potential talent is observations of student behaviors over time when they are engaged in **authentic activities** within specific domains.

The targeted behaviors indicating domain-specific talents are derived from Renzulli's three-ring conception of giftedness—above-average ability, creativity, and task commitment (1978). The TDAP has identified domain-specific, observable behaviors of these traits as they relate to the visual arts, dramatic arts, physical and life sciences, and engineering.[1]

Three of the domains are further divided into specific areas as follows:

- o Performing Arts
  - Drama.
  - Movement.
- o Visual Arts
  - Drawing (2-dimensional).
  - Sculpting (3-dimensional).
- o Physical and Life Sciences
  - Zoology.
  - Botany.
  - Physics.

The specific behaviors observed are shown in Figure 1.

[1] Specific sections of the Talent Discovery Assessment Process may be used depending on which talents are being considered for development.

Performing Arts	Visual Arts	Science	Engineering
1. Uses facial expressions effectively.	1. Achieves balance in his/her artwork.	1. Displays curiosity by asking relevant questions.	1. Actively manipulates materials.
2. Uses expressive voice.	2. Uses form (dimensionality) and design to produce the desired effect.	2. Shows considerable knowledge related to session topics.	2. Tries to predict outcomes.
3. Uses body language effectively.	3. Communicates his/her intent clearly.	3. Actively manipulates materials.	3. Understands the main concepts of each lesson's topics.
4. Communicates intent clearly.	4. Creates a unified design which relates parts to the whole and uses appropriate inclusion/exclusion ratio.	4. Communicates clearly the results of the project.	4. Creates a product which shows clarity of thought and focused plan of action.
5. Creates elaborate movements, skits, or characters.	5. Experiments with different ideas, materials, or techniques.	5. Systematically tests hypotheses.	5. Puts materials together in a unique way.
6. Accepts and incorporates others' feedback.	6. Combines disparate parts to create a unique solution.	6. Tries to predict outcomes.	6. Explains the logic of alternative solutions.
	7. Uses detail to show complexity of ideas.	7. Represents ideas in the form of a model.	7. Shows problem-solving skill by pursuing an unprompted investigation.
	8. Uses tools and materials effectively.	8. Finds means of overcoming obstacles in problem solving.	8. Observes patterns in experimentation.
	9. Accepts and incorporates others' feedback.		9. Finds means of overcoming obstacles in solving problems.
	10. Is able to talk about work.		

Figure 1. Talent Discovery Behaviors (Revised)

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The identification process, then, consists of activities that were purposely designed to elicit these behaviors which could then be observed and documented. These activities, conducted by content specialists in each domain, are administered over eight 90-minute sessions to groups of 10 or fewer students. Two specially-selected observers[2] document and record occurrences of the behaviors as individual students show them.

The assessment documents consist of rating scales (Talent Discovery Checklist) and comment sheets (Notes on Talent Discovery Sheet) designed for a given session and contained in a folder for that session only. A sample Talent Discovery Checklist for the science sessions is shown in Figure 2, and the accompanying Notes on Talent Discovery Sheet is illustrated in Figure 3. The two observers and the content specialist each have their own folder to use for each session. Finally, the TDAP contains individual Student Summary Sheets on which the observers and content specialist record behaviors they have noticed during the session. These summary sheets are used later in the final selection process. The complete set of assessment documents is found in Appendix A.

Talent Discovery Checklist

Rater: ____________ Date: ____________

Directions: For each student listed, mark a "+" in the appropriate space when you first observe the student exhibiting any of the behaviors listed in the first column.

Student Behaviors	Student Name									
Uses facial expressions.										
Uses expressive voice.										
Uses body language.										
Shows clear communication of intent.										
Creates elaborate movements, characters, or skits.										
Accepts and incorporates others' feedback.										

Following the team's discussion concerning student behaviors observed, each rater should assign a holistic score for each student based upon the following key:
3 = Place student in talent development class
2 = Defer judgment
1 = Placement in talent development class not appropriate at this time

Student Name										
Holistic Score										

Figure 2. Sample Talent Discovery Checklist.

[2] Ideally, one observer should be knowledgeable in the arts; the other, in science. This team of observers remains with the students for all eight sessions.

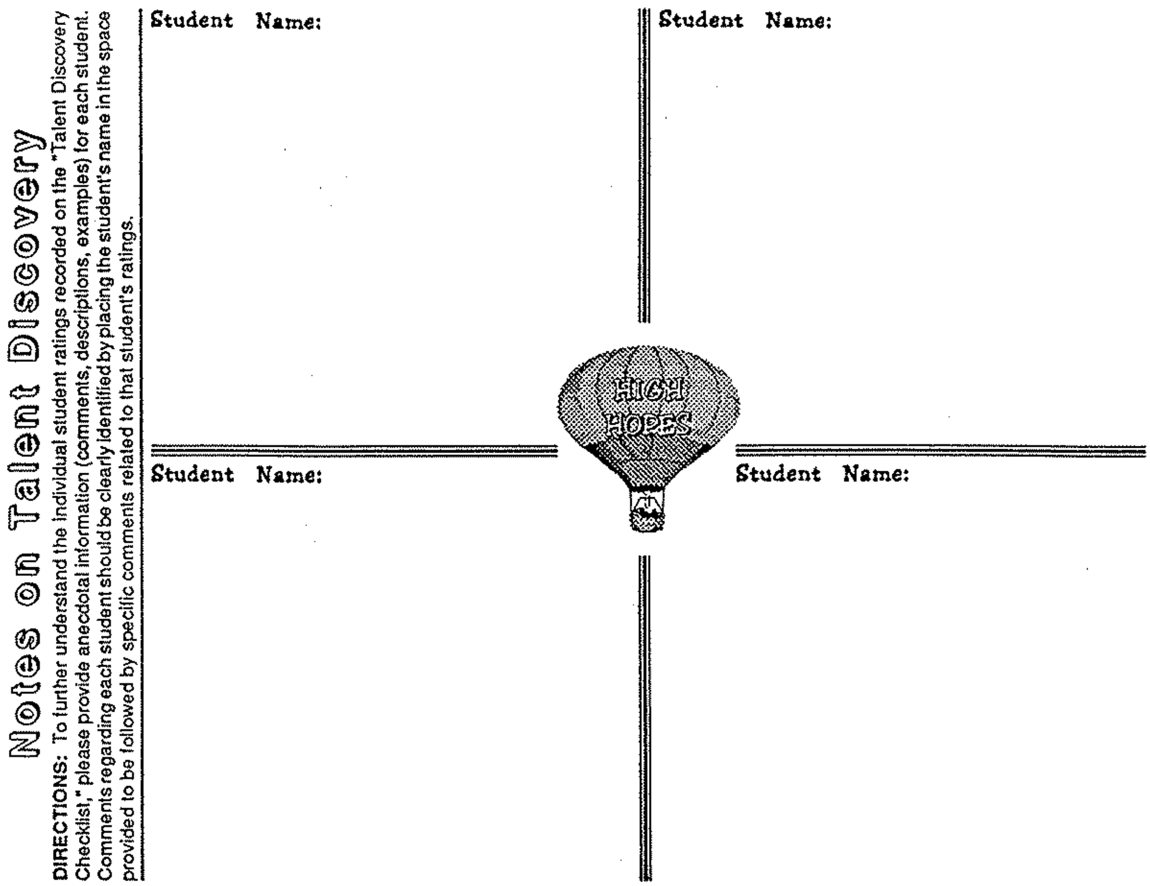

Figure 3. Sample Notes on Talent Discovery Sheet.

In short, the identification process allows for multiple observations over time to ensure that students are given full opportunity to display talent. The flow chart in Figure 4 depicts this process.

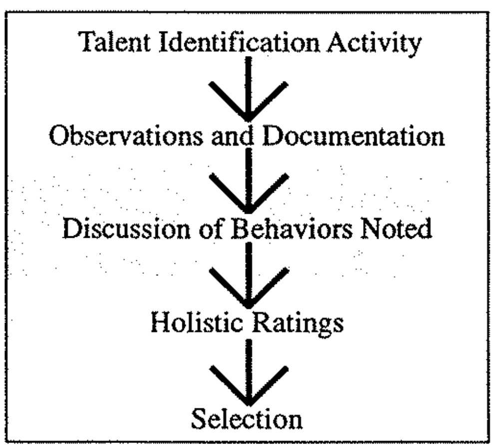

Figure 4. Pattern of observations.

Detailed instructions for administering the Talent Discovery Assessment Process are provided later in the User's Guide. A videotape of students as they participated in the Talent Identification Activities is also available to help you use the TDAP. We strongly recommend that you view this tape prior to administering the TDAP.

SETTING THE LEARNING ENVIRONMENT

it is important before talent assessment begin to develop an appropriate environment. Merely conducting these activities is not sufficient to identify student talent. The teacher first must organize the learning environment for maximal results. The following questions are helpful for assessing the learning environment:

- What is the best physical arrangement of desks, tables, chairs, stools, etc., to give each student ample space in which to work at an activity?
- How should students be grouped, if at all, for the activity?
- How have students been prepared emotionally for this activity? Have students who may be somewhat apprehensive about the activity been encouraged to participate and assured of teacher understanding?
- To what degree is the climate for this activity calm, safe, and inviting?

These environmental conditions are essential—not only to the success of the activity but to student productivity. These conditions are precursors to those created by the content specialist as he or she conducts the talent development session.

For domain-specific talents to emerge, the learning environment should differ from what the student may perceive as the regular classroom environment. The traditional setting has long neglected common characteristics of learning disabled, emotionally or behaviorally disordered, attention deficit, or hearing-impaired students and, in so doing, has denied gifted students with special needs a chance to show talent. In short, the careful arrangement of the environemtn and the use of appropriate teaching strategies will increase the probability that gifted behaviors can emerge.

To engage these students the content specialist should:

- Arrange the physical space to help students focus on the task.
- Maintain a small group size to encourage one-on-one participation.
- Eliminate the emphasis on reading and writing.
- Act as a guide, not an instructor.
- Use experiential activities which promote problem-solving.
- Make use of visual cues.
- Promote opportunities for lively discussion.
- Reduce teacher talk.

Arrange the physical space to help students focus on the task.

Each specific session has environmental accommodations based on research on noted weaknesses in special populations. While arranging the physical space to help students focus on the task is a simple enough chore, it is an essential step to take for a student with perceptual, attention, or hearing problems. The student with a learning disability—specifically, a perceptual difficulty—may not be able to focus without direct access to physical or visual models which provide a means of connecting to verbal discussions. In the case of students with attention deficits provisions for movement during the activity should be made to help the students attend to the task. It is not uncommon for students classified as ADHD to move from their seat to a visual display several times and still remain attentive. For students with hearing impairments it is essential that the physical space allow for clear viewing of the sign language interpreter as well as the activity being conducted.

Maintain a small group size to encourage one-on-one participation.

This important consideration affects three different areas. Hearing impaired students are actually sensitive to visual stimulation and depend upon visual recognition to communicate effectively. Small group size ensures that deaf students have the opportunity and time needed to respond to questions and seek specific information from the content specialist conducting the session. In working with students who demonstrate EBD behaviors—and, especially, attention deficits—small group size both reduces classroom distractions and allows the facilitator to channel student energy toward the task at hand. Small group size also effectively facilitates mentor interaction with students. This allows the one-to-one relationship to develop and encourages students to explore, question, and seek solutions. This feature is critical to uncovering behaviors which may have otherwise gone unnoticed in gifted students with special needs.

Eliminate the emphasis on reading and writing.

Eliminating the emphasis on reading and writing directly removes those areas of weakness most commonly characterizing students with special needs. By circumventing these areas, domain-specific talents such as problem-solving can surface and be observed by the teacher. It is important to remember that students with special needs spend much of their cognitive energy each day trying to decode information or write down their thoughts. This leaves little opportunity or energy for exploration and invention.

Act as a guide, not an instructor.

Simply put, the teacher serves as a guide to student discovery rather than one who imparts facts to be filed. A guide provides necessary background information; then, he or she allows students to explore and create. Arming students with skills to pursue scientific or artistic endeavors, guides ask probing questions as students conduct experiments and become engaged in projects. The guide is always there to suggest, supply more information, and support the student. In this way the students are able to seek information as needed while they learn and produce.

Use experiential activities that promote problem-solving.

Experiential activities that promote problem-solving benefits students with special needs in three ways. First, because the students are actively engaged in learning, their attention span increases. Secondly, this approach allows students to think and act in modes commensurate with their strengths. Last, learning occurring in a meaningful context allows for improved memory and transfer of learning.

The use of alternative assessment procedures incorporating experiential activities that promote problem-solving are currently being implemented in many states and individual school districts. Using experiential activities doubly benefits gifted students with special needs. First, other means of communication in lieu of reading and writing have provided students with opportunities to demonstrate domain-process skills. The domain-specific skills of scientific inquiry can best be learned by the hands-on approach of allowing students to conduct the activity and to see and experience in a tactile mode. Second, once the experiential activity is conducted, the content specialist encourages students to discover ties that can be made to other real-world situations and problems. This bridging not only anchors the learning but can also be transferred to other problem-solving situations.

Make use of visual cues.

Students who have learning difficulties often respond better to visual spatial information than to verbal input. These cues help the student to both comprehend new ideas and attend to the material presented. As a focal point, visual cues can serve to draw students back to the task in question. Perhaps more importantly, visual cues can provide examples of new scientific or artistic terms. In this way visual cues connect new concepts or terms to prior knowledge.

Promote opportunities for lively discussion.

Discussion and clarification of students' perceptions of the sessions create opportunities to observe their degree of understanding. Often these lively discussions bring comments from students that seem far-fetched but which, in reality, may be evidence of students' making connections to other situations and applications.

Reduce teacher talk.

The final consideration is to be certain the activity emphasizes more student talk than teacher talk. Teachers should present to the group clear, succinct directions, the activity's objective, and what each student should do to achieve this objective. As for questions to clarify directions. Model the activity for students who need to see precisely what is required of them. When every student knows what he or she is to do, proceed with the activity itself. Thereafter, keep teacher talk to a minimum.

Throughout the activity help students organize themselves as necessary, keeping in mind that each student will organize according to his or her preferred work style. Model the activity once again for any student appearing tentative about the activity.

The eight environmental conditions described above are as integral a component to each session's effectiveness as are the activities themselves. They must be combined with the unique environmental needs of each talent domain as specified prior to the description of each session.

INSTRUCTIONS for ADMINISTERING
the T.D.A.P.

1. **Identify a content specialist to conduct identification activities.** It is important that an expert in each domain, rather than a general classroom teacher, be selected for this highly-specialized function, because the expert is intimately familiar with the behaviors being elicited by the activities and will recognize nuances that others might miss. This content specialist (CS) may be a community member, a representative from a professional organization specializing in this domain, a science teacher, an actor, etc.

2. **Obtain 2 observers to rate student behaviors shown during talent development activities.** (These activities are listed in the next section of this guide.)
Their role will be to follow the four steps to assessment: (1) Observe and tally; (2) confer about observations of behaviors; (3) assign individual holistic ratings; and (4) make selection and placement decisions. It is important that observers watch students carefully and take their rating responsibilities seriously.

3. Content specialist and observers discuss definitions and examples of each behavior. **All three must have the same understanding of all terms.**

4. **Organize groups of up to 10 students of or about the same age.**
A group should not exceed 10 under any circumstances. Designed for middle-school-aged students, these activities are most effective when the group size is limited to 10, an appropriate size in which special needs students feel more comfortable and perform better. In a group this size special needs students will focus, communicate, and participate—unlike their behavior in a larger group in which they tend to feel alienated. Finally, it is not possible to observe and record behaviors of any more students at any one time.

5. **While the content specialist in a given domain conducts session(s) in that domain, observers indicate—on group Talent Discovery Checklist (see Figure 5)—the presence of behaviors and add descriptive notes of student responses on the Notes on Talent Discovery Sheet (see Figure 6).** The first time a student[3] demonstrates a behavior listed on the tally sheet, the observer marks a **+** in the box beside that student's name. If the student also shows any other interesting responses, jot a note about it in the appropriate section of the Notes on Talent Discovery Sheet.

[3] **Note:** It is helpful to have students wear name tags for easy identification by the observers.

Talent Discovery Checklist

High Hopes: Science

Rater: T. W. New Date: 5-7-94 Science Area: Zoology

Directions: For each student listed, mark a "+" in the appropriate space when you first observe the student exhibiting any of the behaviors listed in the first column.

Student Behaviors	Student Name									
	Amy	Mandy	Joe	David	Rose	Darren	Nathan	Sean	Allison	
Displays curiosity by asking relevant questions.	+	+		+		+	+	+	+	
Shows a lot of knowledge related to today's topics.	+			+		+	+		+	
Actively manipulates materials.	+	+		+	+	+	+	+	+	
Communicates clearly the results of the project.	+						+		+	
Systematically tests hypothesis.				+			+		+	
Tries to predict outcomes.	+			+	+		+		+	
Represents ideas in the form of a model.	+			+	+	+	+		+	
Finds means of overcoming obstacles in problem-solving.									+	

Following the team's discussion concerning student behaviors observed, each rater should assign a holistic score for each student based upon the following key:
- 3 = Place student in talent development class
- 2 = Defer judgment
- 1 = Placement in talent development class not appropriate at this time

Student Name	Amy	Mandy	Joe	David	Rose	Darren	Nathan	Sean	Allison	
Holistic Score	3	1	1	3	2	2	3	1	3	

Figure 5. Sample Talent Discovery Checklist.

Notes on Talent Discovery

DIRECTIONS: To further understand the individual student ratings recorded on the "Talent Discovery Checklist," please provide anecdotal information (comments, descriptions, examples) for each student. Comments regarding each student should be clearly identified by placing the student's name in the space provided to be followed by specific comments related to that student's ratings.

Student Name: Darren

Very interested in specimens.
Knows about caring for reptiles (friend has a snake)
Is not afraid of handling specimens.
Is very interested in the details of each specimen.

Does incredible drawings of specimens
Has asked good questions but seems more interested in drawing.
☆ Keep an eye on him in 2-D and 3-D art.

Student Name: Nathan

has had very good questions about the Anolis. Wants to know where to buy them. Has detailed questions about the care and keeping of reptiles.
Is very careful when handling specimens.
Turns specimens in containers and in his hands to get a desired angle for observation.
Clearly describes differences in skin between reptiles and amphibians.
Then checked other specimens to make sure skin differences were the same.
Designs detailed habitat for maintaining specimens in the classroom. Very concerned about the moisture problem (continued on back

HIGH HOPES

Student Name: Sean

asks questions about where the specimens are from and what they eat.
Does like to hold the animals and will hold specimens for other students to observe.

Started to lose interest in other parts of the session.

Student Name: Allison

Knows about local frogs. Has some confusion over the difference between lizards and salamanders. asks how are they different. then checks it out ~~with~~ by examing specimens
Knows what Reptiles and amphibians are, just seems confused over salamanders having tails. Knows that Toads have poison glands. Asks if salamanders can be poisonous like poison arrow frogs. (very good point)
Devises way of folding Notebook paper to keep salmander from walking off the edge of the desk while she is observing.
Predicts why salamanders should not be handled for long periods
Very good

Figure 6. Sample Notes on Talent Discovery Sheet.

6. **After the session is completed, the content specialist and observers confer to review behaviors they have recorded and in descriptive notes.** The observers' information will be on the group tally sheet whereas the content specialist's observations will be mental notes made as he or she was conducting the activities. **This is why immediate conferring is required in order to prevent confusion about which behaviors have been observed in which students.** Be sure to record **all** responses observed by **each** of these three persons on the Notes on Talent Discovery Sheet; this information will play an important role in selection decisions later.

7. **Observers and content specialist each record a holistic score for each student on the bottom of the Talent Discovery Checklist. This score will be used in making placement decisions within each talent development domain.** A holistic score is like a "gut reaction," derived from the total of informed observations and discussions about those observations. Each person records his or her individual holistic score for each student after every session.

8. **Record on the Talent Discovery Student Summary Sheet (see Figure 7) the (1) sum of observations (0-2) per behavior per session, and (2) holistic score.** Any behavior not marked with a + gets a score of 0; a behavior noted by one observer only gets a score of 1; any behavior noted by both observers gets a score of 2.

High Hopes: Talent Discovery Student Summary Sheet

STUDENT Amy R. SCHOOL ______

SITE CODE ______ SPECIAL ED. SETTING ______ FREE/REDUCED LUNCH ______

CHILD ID ______ DISABLING CONDITION ______ ETHNIC GROUP ______

PERFORMING ARTS	OBS 1	OBS 2
Uses facial expressions.	+	+
Uses expressive voice.	+	+
Uses body language.	+	+
Shows clear communication of intent.	+	+
Creates elaborate movements, characters, or skits.	+	+
Accepts and incorporates others' feedback.	+	+

SCIENCE	BOT OBSERVER 1	BOT OBSERVER 2	ZOO OBSERVER 1	ZOO OBSERVER 2	PHY OBSERVER 1	PHY OBSERVER 2
Displays curiosity by asking relevant questions.	+	+	+	+		
Shows a lot of knowledge related to today's topic.	+	+	+	+		
Actively manipulates materials.	+	+	+	+	+	+
Communicates clearly the results of the project.	+	+	+	+		+
Systematically tests hypothesis.	+			+		
Tries to predict outcomes.		+	+	+	+	
Represents ideas in the form of a model.			+	+	+	+
Finds means of overcoming obstacles in problem-solving.						

ENGINEERING	OBS 1	OBS 2
Actively manipulates materials.	+	+
Tries to predict outcomes.		
Understands the main concepts of each lesson's topic.		
Creates a product which shows clarity of thought and focused plan of action.	+	
Puts materials together in a unique way.		+
Explains the logic of alternative solutions.	+	+
Shows problem-solving skill by pursuing an unprompted investigation.		+
Observes patterns in experimentation.		
Finds means of overcoming obstacles in solving problems.		

VISUAL ARTS	2-D OBSERVER 1	2-D OBSERVER 2	3-D OBSERVER 1	3-D OBSERVER 2
Achieves balance in artwork.	+	+		
Uses form (dimensionality) and design to produce the desired effect.		+		+
Communicates intent clearly.	+		+	+
Creates a unified design which relates parts to the whole and uses appropriate inclusion/exclusion ratio.				+
Experiments with different ideas, materials, or techniques.		+		
Combines disparate parts to create a unique solution.				
Uses detail to show complexity of ideas.	+	+		
Uses tools and materials effectively.				
Accepts and incorporates others' feedback.				
Is able to talk about work.	+	+	+	+

HOLISTIC RATINGS

PERFORMING ARTS			SCIENCE BOTANY			SCIENCE ZOOLOGY			SCIENCE PHYSICS			ENGINEERING			VISUAL ARTS 2-D			VISUAL ARTS 3-D		
OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS
3	3	3	2	2	2	3	3	3	1	1	1	1	1	1	2	3	2	1	2	2

Figure 7. Sample Talent Discovery Student Summary Sheet.

9. Once the eight sessions are finished, review individual student summary sheets across the four domains to estimate the level of talent each student possesses in each domain. Average the 3 holistic scores for each domain. An average score of 2.5 or better indicates talent in the domain. **Do not treat the score as absolute. In questionable instances, observers' notes may influence the decision more heavily than the score itself.**

Project HIGH HOPES: Notes

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HIGH HOPES: Performing Arts

TALENT DISCOVERY ACTIVITIES

for the

Performing Arts

- Drama
- Movement

Project HIGH HOPES is a Javits Act Program # R206R00001.

Drama Activities

compiled and developed by

Jason LaRosa
Eastern Connecticut State University

Introduction:

The exercises are designed to produce many different behaviors, and there seems to be enough overlapping of intended behaviors to insure each student a fair chance at exhibiting the greatest range of behaviors over the entire session.

Please realize although the two Performing Arts sessions are designed to identify gifts in movement and the dramatic arts, the two disciplines share much common ground in their beginning stages. The exercises outlined below are designed to provide the students with the widest possible range of verbal and physical stimuli in order to produce the desired behaviors.

Behaviors to be Observed:

Uses facial expressions

Uses expressive voice.

Uses body language.

Shows clear communication of intent.

Creates elaborate movements, characters, or skits.

Accepts and incorporates others' feedback.

Organizing for Learning

You will need a large, open room or an average classroom with desks, tables, etc. cleared. All corners, piles of desks, etc. should be cushioned (ideally with gym mats, foam rubber, etc.) in smaller rooms. The students should wear clothes suitable for sitting on the floor and comfortable footwear (students may be asked to remove shoes for easier movement and to prevent injury). Finally, ice-packs and a first aid kit should be in the room for minor injuries.

Activity Title: **Hello!**

Time Frame: **5 minutes**

Materials:
Icepack or alternative medical care in case of emergency.

Procedures:

The leader will provide a brief introduction of himself, identify a space where he and the students will be performing the activities, and outline the activities.

The group and leader stand in a circle. The leader address each student with "Hello" punctuated with a wave and certain attitude. As each student is addressed s/he responds with "Hello," repeating the leader's wave and attitude. Once the leader addresses each student, he will change the wave and the attitude and repeat. The activity will end after four rounds or after each student who desires to lead a round has done so.

Activity Title: **First Thing In The Morning**

Time Frame: **15 minutes**

Materials:
Icepack or alternative medical care in case of emergency.

Procedures:

This is a mime exercise. The leader will explain that we will demonstrate what we do first thing in the morning, and will encourage the students to try the exercise and guess each other's activities. If possible, the instructor should find out what each student will be demonstrating so he can help revise each student's work for clarity and detail.

Activity Title: **Explosions**

Time Frame: **5 minutes**

Materials:

Icepack or alternative medical care in case of emergency.

Procedures:

Students will walk around the room, leaving plenty of space between themselves and others. At a signal (handclap or flick of the lights) they will "explode" out of the walk and into a freeze. After two rounds, the students will be instructed to mime performing a task from their freeze position (Example: arms akimbo, fists on top of each other, and legs parallel in an open stance could become swinging a baseball bat). The task should be sustainable long enough for the instructor and observers to see it.

Activity Title: **Machines**

Time Frame: **10 minutes**

Materials:

Icepack or alternative medical care in case of emergency.

Procedures:

One student starts a motion, another student joins in with a complementary motion, other students fill in with motions complementing the positive and negative space created by the first two students. The result of this exercise should be a creation of automated motion created by the bodies working in harmony.

Activity Title: **Story Spoon**

Time Frame: **20 minutes**

Materials:

Icepack or alternative medical care in case of emergency.
Newsprint
Marker
Spoon

Procedures:

This will be our wind-down exercise. The leader starts a story while holding a spoon, and passes the spoon to his right or left for the next student to continue the story. The story ends (or is continued one more round) when the spoon returns to the leader. A large pad and markers are needed for the leader to write down ideas in case the students get stuck in ruts (Example: horribly violent things keep happening to chipmunk the group has had searching for nuts on a nice spring day). Hopefully, after a couple of rounds, the students will move beyond free-association and develop a narrative the group can sustain.

As I mentioned above, these times are my ideals for the activities. However, I leave open the option to lengthen or shorten each exercise depending on the students, the room, and the general success of a particular exercise.

Activity Title: **Traveling Through Time and Space**

Time Frame: **10 minutes**

Materials

Icepack or alternative medical care in case of emergency
Drum, bongo, or other musical instrument
Tape player with appropriate tape

Procedures:

Instructor will designate a Point A and Point B in space. Instructor will then designate a period of time the student has to get from Point A to Point B. (Example: Get to the other side of the room in exactly 30 seconds.) Students are encouraged to take the full amount of time. A music cue is used: Music begins, time starts. Music ends, time is up. Repeat same time interval (30 seconds) until successful at judging time and space travel. Repeat same time interval and add movement assignment:

(Example: Must do 1 JUMP on way to other side.
Must change body base once during travel to other side.
Must change level in space's negative space on way to other side.
Must make contact with another person on way to other side.)

If time permits, the time element can be doubled to 1 minute, or shortened to 15 seconds to see how the student accommodates time.

Activity Title: **Making Shapes**

Time Frame: **10 minutes**

Materials

Icepack or alternative medical care in case of emergency

Procedures:

Instructor will start facing the group of students. The students will be instructed to begin by facing front to the instructor.

A. Instructor will make a shape; students will be instructed on how to "mirror" that shape. The instructor will repeat the exercise by making another shape and have the students copy the "mirror" image.

B. Instructor will make a shape with a designated energy; students copy.
C. Instructor will make a sequence of gestures and movements with a designated energy; students copy.

Activity Title: **Asymmetric/Symmetric Shapes**

Time Frame: **10 minutes**

Materials

Icepack or alternative medical care in case of emergency
Drum, bongo, or other musical instrument
Tape player with appropriate tape

Procedures:

Instructor will demonstrate the difference between asymmetric and symmetric shapes. Students will make up their own set of each. They will rehearse their shapes in a sequence. They will exchange them by teaching them to another person. Each student will then have twice as many shapes. They can arrange them in any order. We will explore different ways to do the shapes with different energy. (Examples: thrusting, bouncing, gliding, swinging, etc.) Students will take turns creating the shapes with different energy and play off each other's energy. The students may explore moods. The students may set their own tempo and energy for their set of shapes. A group performance of the shape sequences will conclude this exercise.

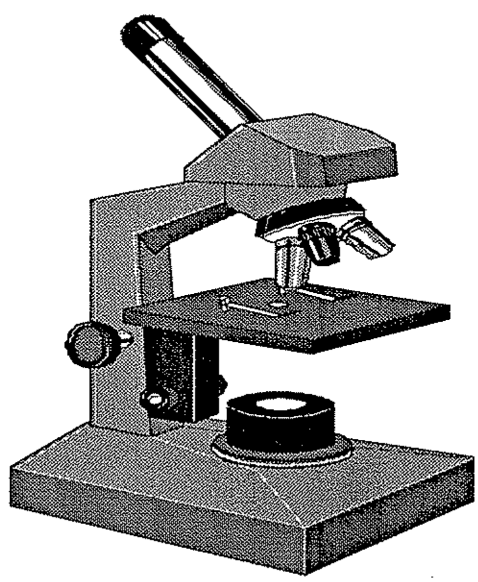
Project HIGH HOPES: Notes

TALENT DISCOVERY ACTIVITIES

for the

Physical and Life Sciences

- Zoology
- Botany
- Physics



Project HIGH HOPES is a Javits Act Program # R206R00001.

Zoology

compiled and developed by

Julie Henry
Dept. of Ecology and Evolutionary Biology
University of Connecticut

Introduction:

Reptiles and amphibians have always held a certain fascination for some students. This lesson is designed to draw out the naturalist by using common salamanders, frogs, lizards, and turtles. Through the careful use and examination of live specimens student behaviors that are highly valued in science such as observation, comparison and contrasting skills can be identified in students.

Behaviors to be Observed:

Displays curiosity by asking relevant questions.

Shows a lot of knowledge related to today's topic.

Actively manipulates materials.

Communicates clearly the results of the project.

Systematically tests hypothesis.

Tries to predict outcomes.

Represents ideas in the form of a model.

Finds means of overcoming obstacles in problem solving.

Organization for Learning:

The room should have long tables for specimen display and for student work areas. Be sensitive to some students' fear of reptiles and amphibians. Caution: some specimens should not be held by students. The specimens should be arranged in individual tanks that can be manipulated for observation.

Activity Title: Comparing and Contrasting Reptiles and Amphibians.

Time Frame: **55 minutes**

Materials:

Terrarium (-ia)
Salamander(s)
Lizard(s)
Turtle
Frog
Drawing paper & pencils with erasers (paper can be divided up into sections and pre-labeled)
Photographs or slides of: child
dog
bird
reptile
amphibian
fish

Procedures:

1. First, ask children what pets they have, to see if they have an image in their experience to relate to. Children will probably have additional or different answers to the ones listed. Talk about these answers.

Compare animals listed above, starting with the most complicated and progressing to least complicated. Ask students: What are the similarities? What are the differences?

2. Observation of two very different amphibian/reptiles...such as turtle and frog. Looking at the two will allow them to feel comfortable about making contrasts, and will provide a warm up for the next exercise. As we look at the animals we will talk about the same body parts as exercise 3.

3. Observation of salamander and lizard. Draw and talk about the following for each organism:

Head: eyes
ears
mouth
nostrils

Limbs:	leg feet toes claws
Tail:	
Body:	movement limb placement
Skin:	texture color etc.
Behavior:	
Habitat:	

4. Compare and contrast the salamander and the lizard. Some points probably will have been made earlier, but they can be repeated for emphasis. At this point reptiles and amphibians can again be a topic to talk about (adaptations to land etc.) Children's experiences with these organisms can be solicited at this time.

AMPHIBIANS	REPTILES
HEAD	HEAD
LEGS	LEGS
TAIL	TAIL
SKIN	SKIN

Project HIGH HOPES is Javits Act Program #R206R00001.

Botany

compiled and developed by

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University of Connecticut

The Other Living Things: Plants

Introduction:

The diversity of life on this planet has fascinated scientists for thousands of years. The gifted student with special needs can also participate and contribute to the study of various life forms around us. In this identification lesson students are introduced to key concepts of botany and encouraged to experiment and observe a variety of plant and thier living processes. Specific questions students will pursue include:

Where do we get our energy from?
What did you eat for lunch/breakfast?
meat - What did it eat? = plants
bread - grain = plants
Why are plants around?
What do plants do?

Behaviors to be Observed:

Displays curiosity by asking relevant questions.

Shows a lot of knowledge related to today's topic.

Actively manipulates materials.

Communicates clearly the results of the project.

Systematically tests hypothesis.

Tries to predict outcomes.

Represents ideas in the form of a model.

Finds means of overcoming obstacles in problem solving.

Organizing for Learning:

This lesson requires three different work areas with large tables. The room should be large enough for students to have space to walk around in and examine specimens. One table should be close to an electrical outlet. Another table should hold the plants for display.

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Activity Title: **Plant Diversity Overview**

Time Frame: **5 min. (approx.)**

Materials:

12 to 15 different types of potted plants
(Carolina biological Supply has plant assortments for a reasonable price.)
carrots with tops
potatoes
coconut
apple
orange

Procedures:

What are plants like? Present students with a variety of plants. Encourage them to compare and contrast different plants. This is the opportunity to identify students who have good observational skills and can identify trends, patterns, details and make connections. Discuss the students' observations.

Activity Title: **Plant Preservation/Cataloguing**

Time Frame: **10 min. (approx.)**

Materials:

Three easy-to-obtain and inexpensive plants
(Purchase separate plants other than the display plants from the first activity. Students will be taking leaf samples from these plants.)
construction paper
newspaper

Procedures:

How do we identify people, places, and plants? Encourage students to identify plants from a prepared key (based on structure) and allow them to press identified leaves as a permanent record of their observations. Each student is at a desk to do the activity.

Goal: To identify students who may be "collectors," enjoy categorizing, and have the ability to observe patterns.

Activity Title: **Root Systems**

Time Frame: **5 min. (approx.)**

What parts of plants don't we see? How do they get water? What happens if you don't water your plants?

Encourage students to observe transpiration (plants drinking) using celery and colored water. The is goal is to elicit experimentation and active re-trying in the face of failure.

Activity Title: **Oxygen Production**

Time Frame: **10 min. (approx.)**

Materials:

Elodea
light sources (120 watt outdoor bulb work well)
test tubes
test tube rack
colored plastic film

Procedures:

What besides food do plants make? How can we observe oxygen production? Encourage students to observe O_2 production in aquatic Elodea and attempt to alter the rate of oxygen production. Have an aquarium filled with the plants we will use plus small aquatic invertebrates. Carefully cut three-inch stems of Elodea and place in test tube filled with water. Have students place test tubes in rack in front of light source. After a few minutes air bubbles should begin to rise if Elodea is healthy. Have students manipulate the distance of the Elodea from the light source. Ask students to generate hypothesis of their observations.

Activity Title: **Create Your Own Plant**

Time Frame: **20 min. (approx.)**

Materials:

construction paper
straws
clay
plastic pots
staples
pipe cleaners

Procedures:

Elicit creative skills and the ability to make connections by having students make their own plants, emphasizing any parts they want. Students should be encouraged to use their observations from the specimen plants and be able to explain their created plant and its job (function).

Summary:

What have we learned? What do plants do? Why are they important? Do you want to learn more about plants? How can you find out more?

Physical Science

compiled and developed by

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University of Connecticut

Introduction:

Physical science requires students to actively experiment with the concepts of mass, volume, density, and pressure. This activity introduces these concepts but allows for hands-on experimentation by students to enable them to "do" science. The observer should pay particuliar attention to students comments and activity during the hands-on experiments.

Behaviors to be Observed:

Displays curiosity by asking relevant questions.

Shows a lot of knowledge related to today's topic.

Actively manipulates materials.

Communicates clearly the results of the project.

Systematically tests hypothesis.

Tries to predict outcomes.

Represents ideas in the form of a model.

Finds means of overcoming obstacles in problem solving.

Organization of Environment:

Materials for this lesson should be arranged in a box for each group of two students. Clear, concise directions will be given and observations will be recorded by each student on a response sheet. Mathematical calculations will be accomplished using a calculator as demonstrated by the instructor. Groups of students should be placed at tables that allow for plenty of room to experiment.

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Activity Title: Discovering Mass and Volume

Time Frame: **15 minutes**

Materials:

3 25ml plastic graduated cylinder, wide mouth
4 250-500ml plastic container with screw top
1 small plastic funnel
1 scale
1 calculator
1 metric ruler
Three geometricall- equivalent cubes of different masses
(i.e., plastic/foam, pine, ebony)
Small rock or a couple of marbles
1 equipment stand
2 15cm lengths of hard plastic tube
2 sections of flexible rubber hose (@ 20 & 45 cm)
1 small piece of rubber sheeting
1 small rubber band
1 balloon
1 2 liter plastic graduated beaker
1 plastic tub with 2-3 divisions

Procedures:

Today we are going to "do" some science by using matter in our experiments.

Has anyone ever heard of that word... "matter"?

Everything around us is made up of matter. We are matter. Matter is made up of tiny little particles called "atoms."

The amount of matter that makes up something is its mass.
And the amount of space the matter takes up is its volume.

Have students blow up balloons to demonstrate mass and volume.

How close these atoms are bunched up determines what kind of matter we have. There are three types of matter....does anyone know what they are?

They are gases, liquids and solids.

Now reach into Box 1 and pull out the three large cards. These are pictures of the atoms in the three types of matter. Card A shows gaseous matter. The atoms are spaced far apart and move very fast. (Relate to balloons: atoms far apart, not much mass but a lot of volume)

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Card B shows liquid matter. The atoms are much closer together and move much more slowly. (Water in a beaker: atoms much closer together, much more mass, much less volume)

Finally, Card C shows solid matter. The atoms are very close together and hardly move. They stay in place and just vibrate. (Pick up heavy cube: atoms touching, lot of weight in a small space)

So now we know that matter has mass and volume.
How can we measure mass? volume? (weigh, measure)

With these pieces of information we can calculate something called "density."

The density of an object is its mass divided by its volume.
(Do on board ......g/cm^3, g/ml)

Take out all three cubes. Which has the greatest density and why?

(Do Sheet 1 with one of the cubes, any cube they want)

Thus, different solids have different densities.

Can liquids have different densities? We will do an experiment to find out. But first we need to learn how to determine the density of a liquid. Let's use water.

(Do Sheet 2)

Back to our question, "Do liquids have different densities?" Using 3 unknown liquids.......

(Do Sheet 3, use @ 5ml each)

Which has greatest density? Lowest? What is Liquid A? What would happen if we poured B and C into A? We are making a guess. We know a little about density, so we are making an educated guess. An educated guess is a hypothesis. We prove a hypothesis by doing an experiment. Pour them in.

What have we shown?

Now what if we have an irregular solid so we can't measure its volume real easily? Any ideas....?

(Do Sheet 4)

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Activity Title: Calculate the densities of regular and irregular solid objects.

Time Frame: **15 minutes**

Materials:

3 25ml plastic graduated cylinder, wide mouth
4 250-500ml plastic container with screw top
1 small plastic funnel
1 scale
1 calculator
1 metric ruler
Three geometrically-equivalent cubes of different masses
(i.e., plastic/foam, pine, ebony)
Small rock or a couple of marbles
1 equipment stand
2 15cm lengths of hard plastic tube
2 sections of flexible rubber hose (@ 20 & 45 cm)
1 small piece of rubber sheeting
1 small rubber band
1 balloon
1 2 liter plastic graduated beaker
1 plastic tub with 2-3 divisions

Procedures:

Students will manipulate cubes of similar size that possess obviously different mass. Densities of these objects will be determined; masses by weighing and volumes by measurement (LxWxH). Densities of irregular objects will then be calculated by volume displacement.

1. Observe mass differential and volume similarity of cubes.
2. Weigh each cube, annotate on sheet B.
3. Measure dimensions of a cube; annotate on sheet B.
4. Calculate volume and density of each cube.
5. Record mass of cylinder from Activity A on sheet B.
6. Pour water into cylinder using funnel.
7. Weigh; annotate on sheet B.
8. Read volume; annotate on sheet B.
9. Weigh rock; annotate on sheet B.
10. Place rock in cylinder.
11. Reweigh; annotate on sheet B.
12. Do subtraction and division for density of rock.

Activity Title: Calculate the mass of various liquids.

Time Frame: **15 minutes**

Materials

3 25ml plastic graduated cylinder
3 250-500ml plastic container with screw top
1 small plastic funnel
1 scale
1 calculator

Procedures:

The students will weigh a graduated cylinder, pour some of the liquid into the cylinder and then reweigh. They will calculate the mass of the liquid by subtraction. The volume of liquid will be read off the side of the cylinder and its density determined by division (D=m/V). Two liquids will be used: water and alcohol.

1. Weigh cylinder; annotate on sheet A.
2. Pour liquid into cylinder using funnel.
3. Reweigh; annotate on sheet A.
4. Read volume; annotate on sheet A.
5. Do subtraction for mass of liquid.
6. Do division for density of liquid.
7. Repeat 1-6 for various liquids.

Activity Title: Building a manometer.

Time Frame: **15 minutes**

Materials

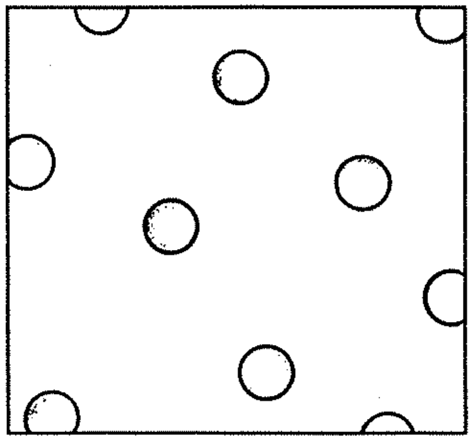
1 Equipment stand
2 15cm lengths of hard plastic tube
2 sections of flexible rubber hose (@ 20 & 45 cm)
1 50-100ml plastic container with screw top filled with colored water
1 small piece of rubber sheeting
1 small rubber band
1 small plastic funnel
Note: Tube, tubing and funnel must be compatible.

Procedures:

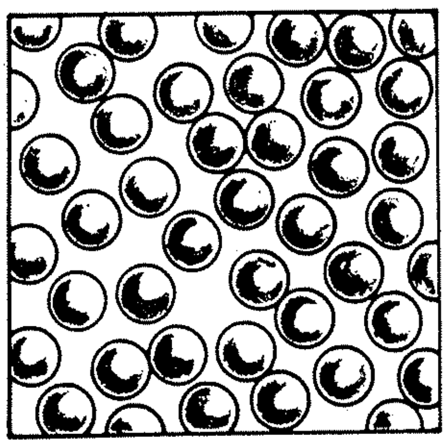
Each student (group) will construct a simple manometer and investigate the relationship between pressure and liquid depth. Has anyone ever heard of the word" pressure?" Pressure is force on an area. Push against a table or wall. You are applying pressure. Now water

in a cylinder applies pressure to the bottom of the cylinder. How much pressure? We can measure how much with a tool called a manometer. Let's build one....

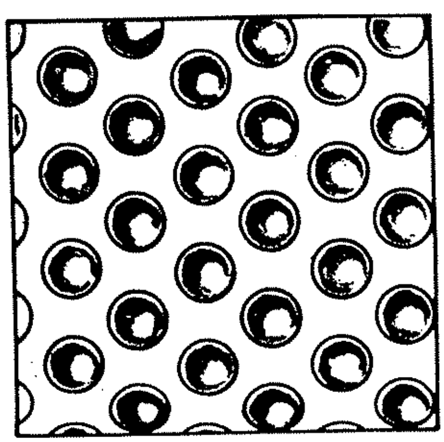
Card A



Card B

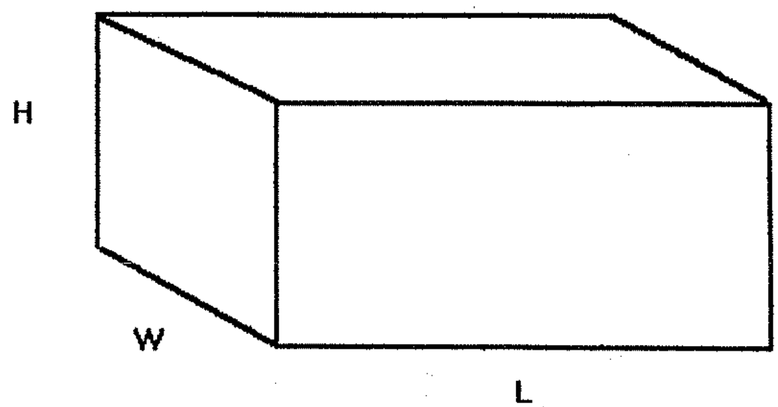


Card C



SHEET 1

Density of a Solid



Mass (m) = ______ g.
Length (L) = ______ cm.
Width (W) = ______ cm.
Height (H) = ______ cm.

Volume (V) = L x W x H
V = ______ cm^3.

Density (D) = m/V
D = ______ g/cm^3.

SHEET 2

DENSITY OF A LIQUID

Step	Measurements	Liquid W
2	mass of cup of liquid (g)	
1	mass of cup (g)	
3	mass of liquid (g)	
4	volume of liquid (cm^3)	
5	density of liquid (g/cm^3)	

SHEET 3

DENSITIES OF LIQUIDS

Step	Measurements	A	B	C
2	mass of cup of liquid (g)			
1	mass of cup (g)			
3	mass of liquid (g)			
4	volume of liquid (cm^3)			
5	density of liquid (g/cm^3)			

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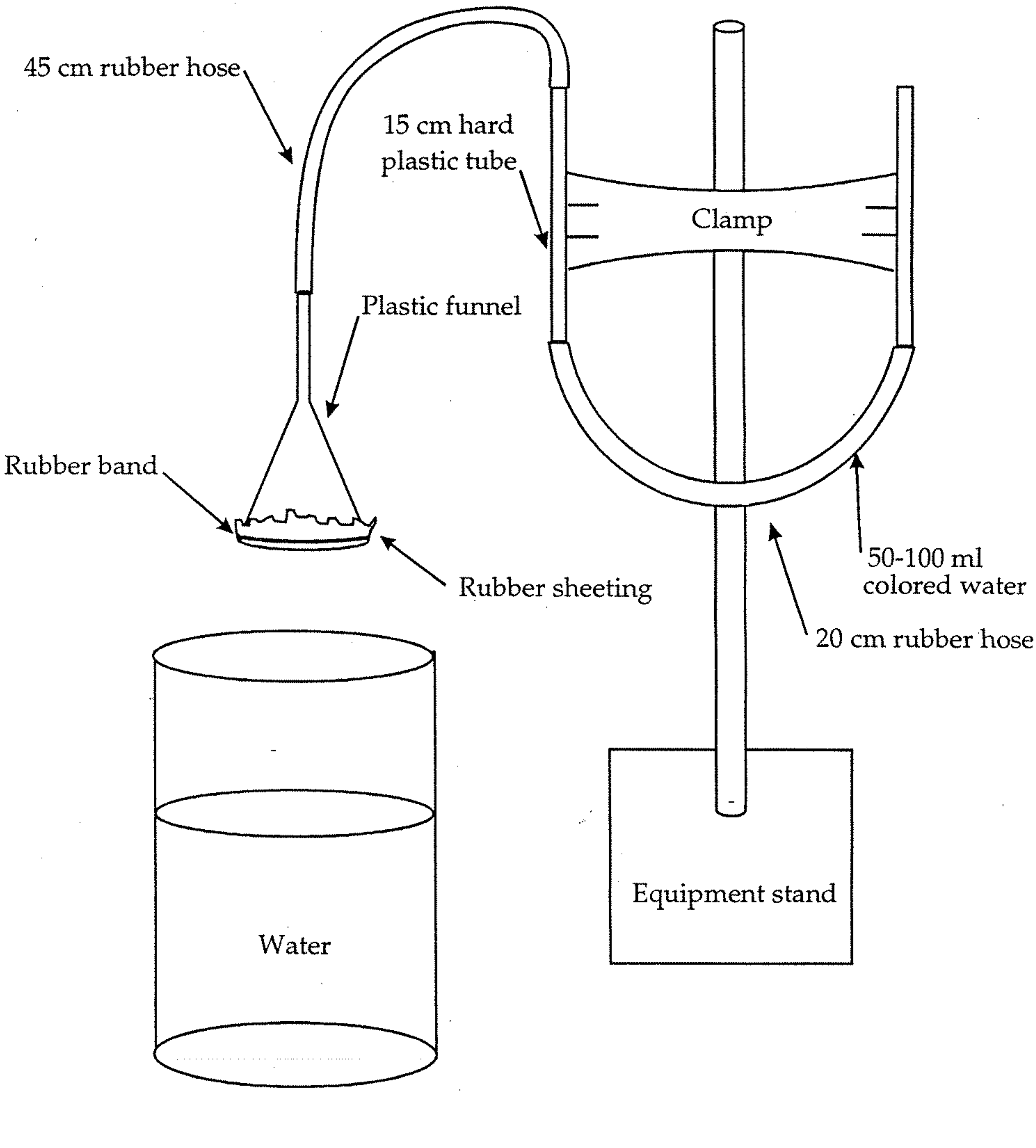
SHEET 4

Density of an Irregular Solid

Step	Measurements	Solid Y
1	mass of solid (g)	
3	volume of liquid and solid (cm^3)	
2	volume of liquid (cm^3)	
4	volume of solid (cm^3)	
5	density of solid (g/cm^3)	



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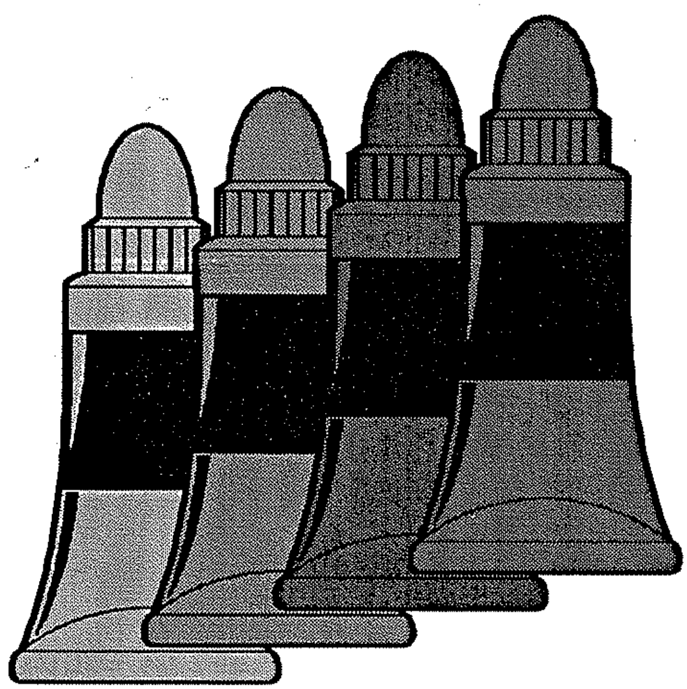
HIGH HOPES: Visual Arts

TALENT DISCOVERY ACTIVITIES

for the

Visual Arts

- Drawing (2-dimensional)
- Sculpting (3-dimensional)



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Two-Dimensional Arts

compiled and developed by

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Dept. of Fine Arts
University of Connecticut

Introduction:

The visual arts activities were designed by practicing artists and elicit skills which indicate artistic ability. This activity is designed to encourage and facilitate children's imagination, inventiveness, and the creative processes of brain-storming, selection/ discrimination, decision making, and combining in a structure that allows for creative freedom and individual expression. By using the familiar and expansive subject of Nature, students will explore new relationships and ways of seeing the world by putting parts together to create something new and unique out of existing forms.

Behaviors to be Observed:

Balance.

Form (dimensionality).

Clear communication of intent.

Unified design (parts to whole, inclusion/exclusion).

Experiments with ideas, materials, or techniques.

Combines disparate parts to create unique solution.

Uses detail to show complexity of ideas.

Uses tools and materials effectively.

Accepts and incorporates others' feedback.

Is able to talk about work.

Organization for Learning:

Set up materials table. Cover with newspaper. Place materials in groups. Place brushes, cups, water next to paints. Place paper on both ends. Each student will have their own working space, and choose their materials from the table. Place books, and magazines on separate desk.

Activity Title: **Composite Creature Activity - Drawing/Painting**

Time Frame: **15 minutes**

Materials

Tempera paint, brushes, cups, water
Colored pencils
Colored markers
Drawing pencils, erasers
Crayons, Cray-pas
All purpose paper; 3 sizes, 9x12, 11x14, 16x20

National Geographic, Nature books, etc.

Procedures:

Students will select from photographs, books, imagination, and visual memory, various features, and characteristics of living creatures (animals, insects, birds, fish, reptiles, etc.) and combine the disparate parts in new ways to create imaginative, inventive, and unique creatures. Students will then choose various aspects of the natural world and combine them to create an inventive and specific environment and home for their creatures that relates to its needs and habit patterns. Students will be free to choose from a range of materials, paint, markers, colored pencils, crayons, etc., to create their creatures. Students will also be invited to invent names, stories, facts, adventures, etc., about their composite creatures.

Introduce the activity. Brainstorm with the class about possible combinations, ideas, and imaginative environments for these creatures. Encourage them to be as creative and free as they want with their ideas, and how they draw them. Show examples of this exercise (when it feels appropriate). Studnets are to introduce materials. They and demonstrate their uses, can choose to use one or several materials in one drawing. State rules and guidelines of the class:

-Everyone has the right to work without being interrupted.
-Everyone has the right to be free from emotional and physical harm.
-Everyone has the right to use any materials he/she chooses, and must respect those materials.

All materials should be returned to their proper boxes or containers and placed to the table at the end of class. Work on the activity. When completed, leave time for the students to introduce their creatures to the class, tell stories, facts, etc., if they wish.

Three-Dimensional Arts

compiled and developed by

Anders Bachman
Free-lance artist and Consultant

Introduction:

This activity is designed to identify young artists with three-dimensional skills. Two lessons are described which tap students' spatial skills and give the observer opportunities to record behaviors in this domain.

Behaviors to be observed:

Balance.

Form (dimensionality).

Clear communication of intent.

Unified design (parts to whole, inclusion/exclusion).

Experiments with ideas, materials, or techniques.

Combines disparate parts to create unique solution.

Uses detail to show complexity of ideas.

Uses tools and materials effectively.

Accepts and incorporates others' feedback.

Is able to talk about work.

Organization for Learning:

The environment should have desk top space for each student, preferably arranged in a circle with an inlet to the center, or as a second choice, in small clusters. Each desk top should be covered with a piece of cardboard to protect it from the wire and to facilitate cleaning up.

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Activity Title: Creating structures with wire

Time Frame: **45 minutes**

Materials

2,3, or 4' piece of wire (pliable)
one pair of needle-nose pliers
one pair of regular pliers, per student

Procedures:

The objective of these activities is to elicit three-dimensional thinking using a medium guage wire to create your favorite food. We are going to explore a little piece of our imagination, and practice catching our images. What's fun about this for me is that both of the images which you will each create today will be different from everyone else's. None of them will be right or wrong. We can all have some fun.

Imagine your favorite food sitting on the table in front of you. My favorite food is an apple. It's easy for me to create an example using it.

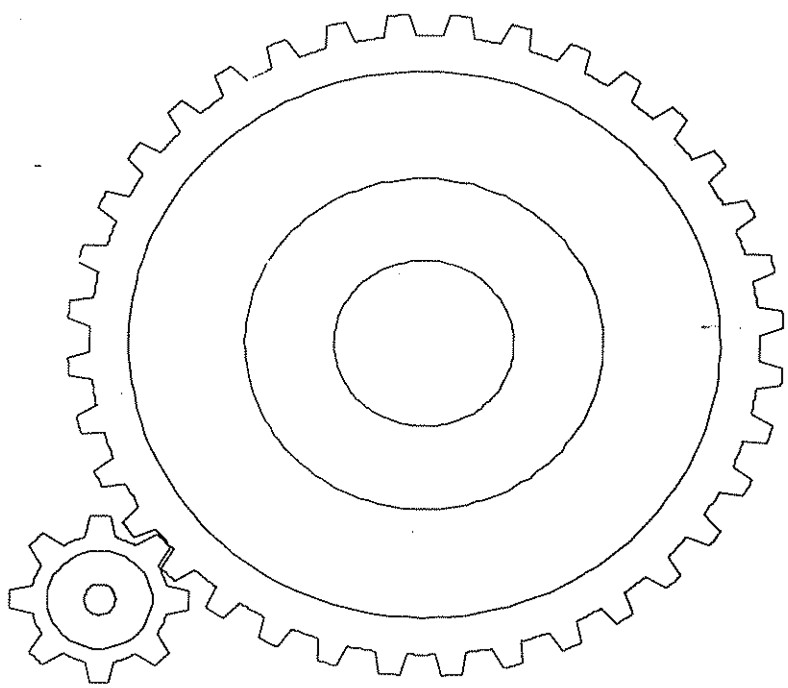
Example: Imagine a firm green apple. On the surface of this apple we are using a thin black magic marker to draw a continuous line which explores the surface of our apple, up and down the sides, over the bumps on the bottom, and up and around the stem. Maybe there is still a leaf attached to the stem, we'll explore it, also. Imagine what the apple looks like now with a thin black line meandering around on its surfaces. Magically our thin black line turns into a stiff wire, and just as magically our apple disappears, leaving the stiff wire behind, describing its surfaces. Try to use this idea as a starting point or springboard when creating your wire object. Remember, you can pick any food. It doesn't have to be an apple.

One more thing, be careful of the tools. Make sure that the pliers do not get clay in their working parts, and make sure that the end of your wire is not bothering someone else. At the end of our session, after we clean up, we can have a short show and tell. We will begin cleaning up at ________.

TALENT DISCOVERY ACTIVITIES

for

Engineering



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Activity Title: **Building rubber band powered vehicles, daVinci Style**

Time Frame: **70 minutes**

Materials: (list per student)

2 axles
2 front wheels
2 rear wheels
4 eye screws
small nails
1 12x3/4x4 soft wood board
hammer
large rubber bands

Procedures:

Students will be introduced to the work of Leonardo da Vinci. da Vinci had conceived of a spring-powered vehicle using the mechanisms commonly found in wind up clocks. Show students the drawing and ask student, "What do you think this is? How might it work?" Demonstrate the spring power used to run a clock and ask for student feed back. Show students a mock up of Leonardo's cart which has been altered to run on rubber bands. Wind up the cart and let it travel across a table or floor. Ask students for the noted differences they notice between the design of the cart and automobiles they are familiar with. Take out enough parts to assemble a demo four wheeled car. Model the construction technique with a limited amount of teacher talk.

Key points for students to observe include:

- using a nail to start the eye screw whole
- placement of the wheels on the axles
- anchoring a nail on the front to attach the rubber bands (without smashing an axle)
- attaching a rubber band to the back axle
- winding up the back wheel

Allow time for students to complete their model. Emphasize that they will need to make adjustments to increase their car's distance after they test their model each time. While students are constructing their model, mark off a testing track at five foot intervals. A tiled floor with 12 inch tiles is ideal, but if this is not available, use masking tape to mark off appropriate intervals. Typically, students finish their prototypes at different times. As students finish, have them test

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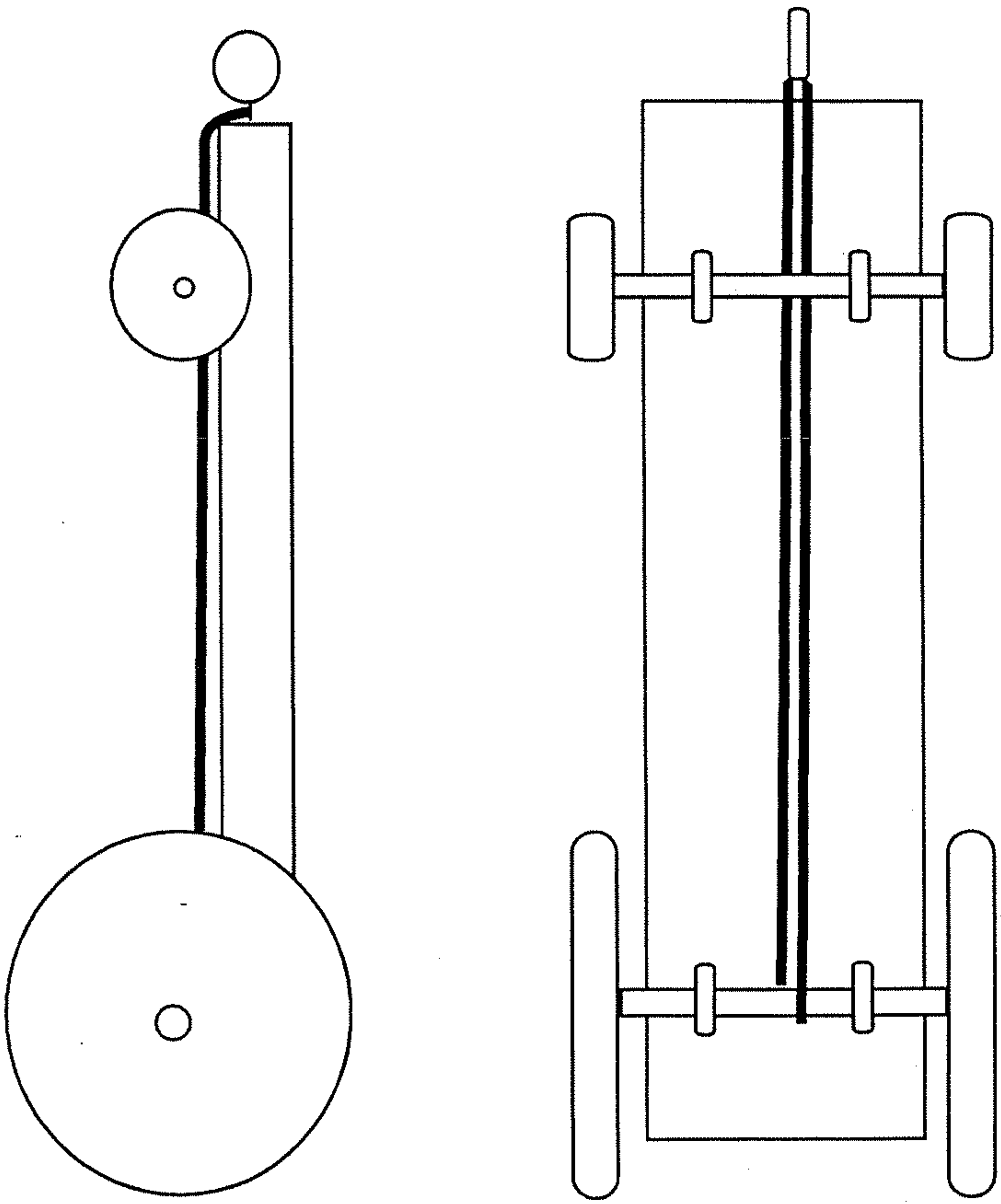
their vehicle on the track. Make sure to keep accurate records for each test they conduct. Also, be sure to debrief each student after each test and elicit students' alterations for extended runs.




Project
HIGH HOPES:
Sample Assessment
Sheets

Talent Discovery Checklist

Rater: ______________________ Date: ______________

Directions: For each student listed, mark a **"+"** in the appropriate space when you first observe the student exhibiting any of the behaviors listed in the first column.

Student Behaviors	Student Name									
Uses facial expressions.										
Uses expressive voice.										
Uses body language.										
Shows clear communication of intent.										
Creates elaborate movements, characters, or skits.										
Accepts and incorporates others' feedback.										

Following the team's discussion concerning student behaviors observed, each rater should assign a holistic score for each student based upon the following key:

3 = Place student in talent development class
2 = Defer judgment
1 = Placement in talent development class not appropriate at this time

Student Name										
Holistic Score										

Talent Discovery Checklist

HIGH HOPES: Visual Arts

Rater: ______________ Date: ______________ Dimension: ______________

Directions: For each student listed, mark a **"+"** in the appropriate space when you first observe the student exhibiting any of the behaviors listed in the first column.

Student Behaviors	Student Name									
Achieves balance in artwork.										
Uses form (dimensionality) and design to produce the desired effect.										
Communicates intent clearly.										
Creates a unified design which relates parts to the whole and uses appropriate inclusion/exclusion ratio.										
Experiments with different ideas, materials, or techniques.										
Combines disparate parts to create a unique solution.										
Uses detail to show complexity of ideas.										
Uses tools and materials effectively.										
Accepts and incorporates others' feedback.										
Is able to talk about work.										

Following the team's discussion concerning student behaviors observed, each rater should assign a holistic score for each student based upon the following key:

3 = Place student in talent development class
2 = Defer judgment
1 = Placement in talent development class not appropriate at this time

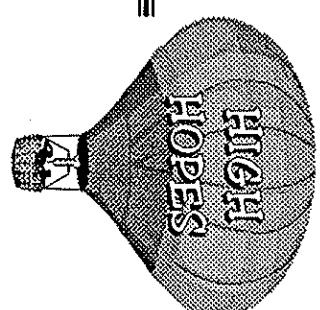
Student Name										
Holistic Score										

Notes on Talent Discovery

DIRECTIONS: To further understand the individual student ratings recorded on the "Talent Discovery Checklist," please provide anecdotal information (comments, descriptions, examples) for each student. Comments regarding each student should be clearly identified by placing the student's name in the space provided to be followed by specific comments related to that student's ratings.

Student Name:

Student Name:



Student Name:

Student Name:

High Hopes: Talent Discovery Student Summary Sheet

STUDENT ______________________ SCHOOL ______________________

SITE CODE ______ SPECIAL ED. SETTING ______ FREE/REDUCED LUNCH ______

CHILD ID ______ DISABLING CONDITION ______ ETHNIC GROUP ______

PERFORMING ARTS	OBS 1	OBS 2
Uses facial expressions.		
Uses expressive voice.		
Uses body language.		
Shows clear communication of intent.		
Creates elaborate movements, characters, or skits.		
Accepts and incorporates others' feedback.		

SCIENCE	BOT OBSERVER 1	BOT OBSERVER 2	ZOO OBSERVER 1	ZOO OBSERVER 2	PHY OBSERVER 1	PHY OBSERVER 2
Displays curiosity by asking relevant questions.						
Shows a lot of knowledge related to today's topic.						
Actively manipulates materials.						
Communicates clearly the results of the project.						
Systematically tests hypothesis.						
Tries to predict outcomes.						
Represents ideas in the form of a model.						
Finds means of overcoming obstacles in problem-solving.						

ENGINEERING	OBS 1	OBS 2
Actively manipulates materials.		
Tries to predict outcomes.		
Understands the main concepts of each lesson's topic.		
Creates a product which shows clarity of thought and focused plan of action.		
Puts materials together in a unique way.		
Explains the logic of alternative solutions.		
Shows problem-solving skill by pursuing an unprompted investigation.		
Observes patterns in experimentation.		
Finds means of overcoming obstacles in solving problems.		

VISUAL ARTS	2-D OBSERVER 1	2-D OBSERVER 2	3-D OBSERVER 1	3-D OBSERVER 2
Achieves balance in artwork.				
Uses form (dimensionality) and design to produce the desired effect.				
Communicates intent clearly.				
Creates a unified design which relates parts to the whole and uses appropriate inclusion/exclusion ratio.				
Experiments with different ideas, materials, or techniques.				
Combines disparate parts to create a unique solution.				
Uses detail to show complexity of ideas.				
Uses tools and materials effectively.				
Accepts and incorporates others' feedback.				
Is able to talk about work.				

HOLISTIC RATINGS

PERFORMING ARTS			SCIENCE BOTANY			SCIENCE ZOOLOGY			SCIENCE PHYSICS			ENGINEERING			VISUAL ARTS 2-D			VISUAL ARTS 3-D		
OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS	OB1	OB2	CS

Project HIGH HOPES: Notes


Project
HIGH HOPES:
Development of the
Talent Discovery
Assessment Process

DEVELOPMENT OF TALENT DISCOVERY ASSESSMENT PROCESS

The first stage of developing the Talent Discovery Assessment Process involved generating items which represented behaviors indicative of talent for each of the four domains—visual arts, performing arts, the sciences, and engineering. Content specialists in each domain assisted in item development and designed the talent discovery activities which they subsequently administered to the students to elicit the behaviors sought during each identification session.

Taba's Concept Development technique (1962) was used to lead the content specialists through a structured, sequential questioning process designed to move participants from an initially-unfocused overabundance of perceptions, opinions, and information to a well-organized, tightly-focused list of criteria. Using Taba's elements of listing, grouping, labeling, subsuming, ad recycling, the content specialists organized and reorganized their professional information. Concepts and broad categories of anticipated behaviors were summarily developed which would indicate talent in the visual arts, performing arts, or sciences.

Content specialists each met individually with project staff for several sessions to answer the following open-ended questions posed at the outset: (1) "What are some characteristics of an artist (or scientist)", and (2) "What would you look for in students as indicators of above-average ability in your field?" During each session the content specialists were guided in the Taba technique as they listed and refined their perceptions of the internal and external workings of artists and scientists—particularly, as they related to the three-ring conception of giftedness (above).

At the first session the content specialists brainstormed words and phrases they felt reflected the cognitive, creative, and affective characteristics of the practicing professional in their respective fields. These lists were further refined; similar or redundant items wry discarded, and related items, clustered into broad concept groups.

These broad concept groups were then refined to create a list of distinct behaviors observable in students as they completed specific tasks in science and art activities designed to elicit them. These behaviors were then used as identification criteria for inclusion in the second phase of the project.

Initial items were reviewed by the project evaluator to ensure the clarity and observability of each criterion. Feedback was solicited from the Cranston, Rhode Island, Public Schools coordinators of art and science as well as from two of the district's art teachers; from nationally-recognized authors in the fields of arts education; and from leaders in the areas of education of high-ability students and science education. Feedback led to subsequent revision of items and to

the creation of a domain-specific observational checklist for performing arts (27 items), visual arts (27 items), and science and engineering (23 items). These checklists are included in Appendix A.

The next step was brainstorming a list of activities for each domain which would provide opportunities for students to display some of all of these behaviors to trained observers. The resulting list of activities was reviewed by the content specialists and project staff with respect to feasibility of time, budget, space, and other available resources. Next, the activities were demonstrated to project consultants in special education who reviewed them for their applicability and appropriateness for students with special needs (learning disabled, emotionally or behaviorally disordered, attention deficit disordered, and hearing impaired). Once all talent identification activities were administered, students were selected to participate in talent development activities based on their performance during the identification process.

During the talent identification process it became evident that the original pools of observational items were much too large for practical data gathering. In addition, the data indicated that items for engineering talents were different enough from the science items to warrant a separate, fourth scale. The following discussion describes how the scales were finalized.

To accomplish the task of reducing the pools to more economical subsets, several methods—qualitative and quantitative—were used. Internal consistency estimates (Cronbach's alpha) were calculated for each scale of original items. Any item showing small ($r < .10$) corrected item-total correlations was nominated for deletion. This procedure suggested 23 items (of the original 173).

The observational data were then screened for frequencies. Any item showing no occurrences, i.e., a mean score of zero across all students, was nominated for deletion. This analysis showed about 10 items as representing rare or nonoccurring behaviors.

Next, criterion-related validities (simple correlations) were calculated between each item and a score reflecting observers' overall impression of student performance, An arbitrary cutoff of $r = .22$ (representing a small-to-medium effect size of about 5% [Cohen, 1988]) was used as an initial screen. This criterion nominated for deletion between 13% and 30% of the items based on the various observational scales.

Next, two judges familiar with item content and the observation process checked the previously-nominated items. If, in their view, a nominated item seemed theoretically important, it was retained. Only a couple of items slated for deletion were retained during this judgmental process.

Then, a selection score (1 = selected; 0 = not selected) for each talent area was regressed on the remaining observational items for the same talent area. This was the first multivariate screening of the observational data; for the first time, the covariation among the observational items was considered. To survive this analysis, an item had to show some unique explanation of

the variance in actual selection. The evaluator assumed that, because of redundancies among the observational items, the regression would eliminate large numbers of items. The assumption proved correct. The final scales for visual arts contained 10 items (of an original 27); performing arts, 6 items (of 27); science, 8 items (of 23); and engineering, 9 items (of 23).

Finally, the evaluator wondered whether the sharply-reduced observational scales were redundant (and, perhaps, less efficient) than the holistic impressionistic scores given by observers. To test this idea, selection scores for each talent area (1 or 0) were regressed in hierarchical regression analyses: A block of observational items was forced into the regression, followed by the single holistic score. The rationale for this sequence was that the observations occurred before, and should have informed, the holistic ratings. This gave the observational ratings causal priority in ordering the regressions.

The regression results, shown in Table 1, give evidence that both pieces of data—the observational ratings and the holistic impression—explain unique portions of the variation in selection. The sole exception occurred in Engineering, where the partial effect size for the holistic rating was tiny. Otherwise, the partial and total effect sizes are extremely large, and suggest that these aspects of the selection process are strongly related to actual selection into the talent programs. In short, both the ratings and the overall impression seem useful in making decisions about selection.

Table 1
Hierarchical Regressions Predicting Selection into Talent Program (N = 134)

Area	R^2	R^2 *Change*
Visual Arts		
Observ. items	.34	.34
Holistic	.72	.38
Performing Arts		
Observ. items	.51	.51
Holistic	.77	.26
Science		
Observ. items	.28	.28
Holistic	.58	.31
Engineering		
Observ. items	.41	.42
Holistic	.43	.01

The final sets of behavioral items for each rating scale are shown in Figure 1 on page seven.


Project
HIGH HOPES:
References

Project HIGH HOPES

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Project
HIGH HOPES:
Appendix

Appendix A - Talent Discovery Behaviors (Original)

Performing Arts

1. Uses facial expressions.
2. Uses expressive voice.
3. Uses body language.
4. Uses mime.
5. Isolates and articulates body parts.
6. Reproduces given shapes in sequence.
7. Reproduces a given sequence of movements with a given kinesthetic energy (i.e., rigid/fluid).
8. Has a good sense of direction and sense of self in space.
9. Travels through space well:
   On time with a beat.
   Can carry a character from one place to another.
10. Creates a character and communicates it to others.
11. Shows clear communication of intent.
12. Uses interesting, imaginative expressions (verbal, nonverbal).
13. Can shift emphasis from one body part to another.

Visual Arts

1. Relation of objects in space (overlapping, proportion, perspective).
2. Effective use of shading (near/far, light source).
3. Balance.
4. Contrast (variety of components, i.e., large/small, light/dark).
5. Form (dimensionality).
6. Effective use of line (edge contour, surface contour, variation).
7. Unified design (parts to whole, inclusion/exclusion).
8. Clear communication of intent.
9. Engineering solutions.
10. Sense of representational color.
11. Sense of emotional/inventive color.
12. Shows playfulness.
13. Experiments with ideas, materials, or techniques.
14. Combines disparate parts to create unique solution.

Science

1. Displays curiosity by asking relevant questions.
2. Shows a lot of knowledge related to today's topic.
3. Actively manipulates materials.
4. Communicates clearly the results of the project.
5. Systematically tests hypothesis.
6. Uses experiential controls in testing ideas.
7. Tries to predict outcomes.
8. Represents ideas in the form of a model.
9. Understands the main concepts of today's topic.
10. Product shows clarity of thought and focused plan of action.
11. Frequently asks questions.
12. Relates previously-learned material to the current project.
13. Puts materials together in a unique way.

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Performing Arts

14. Shows a wide variety of responses to a given stimulus.

15. Creates elaborate movements, characters, or skits.

16. Seems to enjoy the act of experimentation.

17. Persists, finds means of overcoming obstacles.

18. Eagerly participates in activities.

19. Immediately touches, experiments, "fools around" with materials, movements.

20. Focuses on task for most of activity period.

21. Can improvise.

22. Interacts with and plays off others.

23. Accepts and incorporates others' feedback.

Visual Arts

15. Shows diversity of ideas.

16. Shows many ideas.

17. Shows original ideas.

18. Uses detail to show complexity of ideas.

19. Eagerly participates in activities.

20. Immediately touches, experiments, "fools around" with materials.

21. Uses tools and materials effectively.

22. Focuses on task for most of activity period.

23. Persists, finds means to overcome obstacles.

24. Revises product without feedback.

25. Accepts and incorporates others' feedback.

26. Is able to talk about work.

Science

14. Explains the logic of alternative solutions.

15. Engages in progressive experimentation (i.e., experiments that build on previous experiments).

16. Shows problem solving by pursuing an unprompted investigation.

17. Observes patterns in experimentation.

18. Develops theory for an event based on experimentation and observation.

19. Describes a consuming passion about a field of science.

20. Perseveres in an activity.

21. Does more than the teacher asks.

22. Seems to enjoy the act of experimentation.

23. Finds means of overcoming obstacles in problem solving.

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