

Sample Instrument

CHILDREN DEMONSTRATE GAINS IN SCHOOL READINESS (MATH SKILLS)

Education Focus Area: Early Childhood Education

Outcome: Number of children demonstrating gains in school readiness in terms of numeracy (math) skills (ED25).

Instruments

You will need to develop or identify an instrument to measure gains of children who completed participation in a CNCS-supported early childhood education program (performance measure ED21).

Existing Instrument

First, determine whether the early childhood program in which your National Service participants (“participants”) are being placed is already using an instrument that assesses children in the area of mathematics. If so, review the instrument and data collected to determine if this data can be used to measure the national performance measure outcome you selected. Discuss with the early childhood program director whether you can use their data for your performance measures:

- Can the data be accessed in a timely manner?
- Can the data for those children that participants serve be separated from the children not being served by participants?
- Can confidentiality be maintained?

Developing an Instrument

If you cannot use an existing early childhood program instrument, you will need to identify or develop an appropriate instrument that can assess the indicators you plan to measure for your national measure. The instrument should have evidence of reliable information identified or recognized by reliable sources (i.e., sources that researched or tested the indicators proposed).

Sample Instrument in this packet

The sample instrument in this packet is derived from two sources:

- Head Start Childhood Outcomes Framework¹
- Maryland Head Start Child Development Outcomes Framework²

¹ Head Start Child Outcomes Framework: <http://www.hsnrc.org/CDI/pdfs/UGCOF.pdf>

² Maryland Head Start Child Development Outcomes Framework:
http://www.mdk12.org/instruction/ensure/readiness/pdfs/MD_HS_CHILD_OutcomesFramework.pdf

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The Head Start Childhood Outcomes Framework is based on the Head Start Program Performance Standards, Head Start Program Performance Measures, provisions of the Head Start Act as amended in 1998, advice of the Head Start Bureau Technical Work Group on Child Outcomes, and a review of documents on assessment of young children and early childhood program accountability from a variety of state agencies and professional organizations.

The Maryland Head Start Child Development Outcomes Framework is a document that integrates the Head Start Performance Standards, the Head Start Child Outcomes Framework, and the Maryland Model for School Readiness Framework.

The Head Start Child Outcomes Framework consists of eight Domains, three of which pertain to the early childhood national measures: social and emotional development, literacy, and numeracy (math). For the sample “Mathematics Assessment” in this packet, there are three Domain Elements. Each Domain Element consists of four to seven indicators. Maryland Head Start Administrators identified examples for each of the indicators. You can choose to use/revise this assessment instrument or develop/identify your own.

How to Use the Sample Instrument in this Packet

Review the “Mathematics Assessment” sample instrument for school readiness in the area of numeracy:

- For each domain element, review the **indicators** and identify those indicators that you plan to measure to assess children’s gain.
- For each indicator, review the **indicator examples** and select those indicator examples you plan to assess.
- Revise, add, or delete the indicator examples to best fit the early childhood program.

Mathematics Assessment (ED25)

Instructions

What is the purpose?	To determine how many children that completed participating in a CNCS-supported early childhood education program (performance measure ED21) demonstrate gains in school readiness in terms of numeracy (math) skills.
Who should complete this instrument?	<p>Individuals who have the ability to assess children’s gains in mathematic skills through observation of children.</p> <p>The persons conducting the observations should be persons who are not directly involved in providing services to the children (i.e., not participants). If more then one person will assess the children, it is highly recommended that all data collectors are trained in standard observation procedures and rating criteria to ensure inter-rater reliability.</p>
When should we complete this instrument?	<p>At least two times; when children begin the program year, and again after children have completed participation in your early childhood education program (ED21).</p> <p>Programs may want to observe the children mid-year to obtain a benchmark of the progress being made half way into the program.</p>
What should we do to prepare?	<p>Modify the assessment as needed by deleting indicator examples not appropriate for your program. Add any other indicator examples your program may need to assess gain. Decide who will administer the assessment(s) and how you would like the persons to return the assessment to you.</p> <p>Provide a description and instructions to those who will use the assessment by including an explanation about the purpose of the assessment, how the data will be used, and who will be conducting the assessment.</p> <p>Persons conducting the assessment need to be trained in advance so they are prepared to make consistent observational assessments of children’s pre-academic skills, and how to record responses accurately. Training of all persons conducting assessments will ensure the inter-rater reliability.</p>
What should we do afterwards?	<p>Match the pre-assessment with the post assessment for each child. You will need to measure gains in social and/or emotional development for each child. You may want to enter the data in an Excel spreadsheet (summary log) to make comparisons between pre-assessments and post-assessments easier. Based on your project’s outcome target, identify each student that has met the target and count those students as “demonstrating gains”. Keep all the assessments and summary log in a safe place: these are your raw data and serve as proof that a systematic process was used to document the outcomes.</p>
Can I use an alternative instrument?	<p>Different assessments can be used to assess gain in mathematics of each child. However, make sure that the instrument is supported by research or other reliable sources that ensure identified indicators are valid.</p>

EARLY CHILDHOOD DEVELOPMENT MATHEMATICS ASSESSMENT³

Education Program: _____

Child: _____ Age: _____

Person Assessing the Child: _____ Position: _____

Date: _____ Pre-Assessment Post-Assessment

This pre-post instrument assesses the child’s mathematics skills in three domain elements. Assess the child at the beginning of the program year (pre-assessment) and at the end of the program year (post-assessment). Mark the appropriate box above. For each indicator and example listed, assess the child’s mathematic skills by noting whether “yes”, it is consistently and appropriately present, “no” it is not present or rarely so, or “not sure”, if you have not had an occasion to observe the indicator example. To assess whether the child has gained competency, compare the number of indicator examples marked “yes” in the child’s pre-assessment with those examples marked “yes” in the post assessment.

MATHEMATICS					
Domain Element	Indicator	Examples	Yes	No	Not Sure
Numbers and Operations	Demonstrates increasing interest and awareness of numbers and counting as a means for solving problems and determining quantity.	Tells the number of objects when objects are added or removed			
		Can distinguish the broad concept of more, less or equal (e.g., identifies which is more and which is less)			
		Begins to understand one-to-one correlation			
	Shows understanding of the concepts of number and quantity.	Counts up to 10 when touching or handling one object for each number			
		Counts in a sequence			
		Visually determines quantity			
		Uses the correct words that express quantity like some, more, or less, correctly			

³ Information for this assessment was taken from the following document: Maryland Head Start Child Development Outcomes Framework; Copyright©01/01/02 Carlethea Johnson, Maryland Head Start Administrators. Distribution and reprinting permitted as long as this copyright notice is included.

MATHEMATICS					
Domain Element	Indicator	Examples	Yes	No	Not Sure
Numbers and Operations cont.		Says that a group has less after one or more items are removed			
		Follows directions involving number and quantity (e.g., count three cookies)			
	Begins to associate number concepts, vocabulary, quantities and written numerals in meaningful ways.	By counting tags, child knows how many spaces are available in an interest area			
		Recognizes their address and birthday in numbers			
		States his/her address			
		Follows directions of symbols and numbers in a recipe (e.g., 3 pictures of a teaspoon equals a recipe item)			
		Divides a whole into halves			
		Develops increasing ability to count in sequence to 10 and beyond.	Verbally counts to 10 (and above) demonstrated through finger plays, counting aloud, and number games.		
	Counts objects in a picture or series of pictures				
	Counts to tell how many are in a group				
	Begins to make use of one-to-one correspondence in counting objects and matching groups of objects.	Matches pairs of objects in one to one correspondence, (e.g., finds two shoes for feet)			
		One-to-one correspondence with another set: lines up brushes to make sure there is one for each jar of paint.			
	Begins to use language to compare numbers of objects with terms such as more, less, greater than, fewer, equal to.	Counts sets of blocks and indicates which has more or less			
		Tells the number of objects when objects are added or taken away			
		Verbally determines quantity as more or less, taller or shorter and nearer or farther			

MATHEMATICS					
Domain Element	Indicator	Examples	Yes	No	Not Sure
	Develops increased abilities to combine, separate and name “how many” concrete objects.	Groups or sorts objects by one property, such as size, shape, color, or use			
		Sorts a group of objects by one property and then another			
		Tells whether two amounts are the same			
Geometry and Spatial Sense	Begins to recognize, describe, compare and name common shapes, their parts and attributes.	Identifies common shapes (circle, square, triangle) in the classroom			
		Names attributes of shapes: circles are round, triangles have three sides			
		Draws, makes, cuts out a circle, square, triangle, rectangle			
	Progresses in ability to put together and take apart shapes.	Can put together a 3-12 piece puzzle			
		Builds shapes with blocks, “Legos” and other manipulatives			
	Begins to be able to determine whether or not two shapes are the same size and shape.	Matches blocks to shelves at clean up time			
		Inserts shapes to like openings in a box			
		Matches same shape and size to pattern on template			
	Shows growth in matching, sorting, putting in a series and regrouping objects according to one or two attributes such as color, shape or size.	Uses self-correcting toys: graduated stacking rings			
		Sorts objects by one attribute			
		Identifies or expresses when one or more objects in a series is out of place			
		Arranges objects in order by size			
	Builds an increasing understanding of directionality, order and position of objects, and words such as up, down, over, under, top, bottom, inside, outside, in front and behind.	Follows simple positional directions with assistance, (e.g., puts paper in trash can)			
		Puts objects in, on, under, on top of, or next to another object as requested			
		Used positional words correctly (e.g., come sit near me)			

MATHEMATICS					
Domain Element	Indicator	Examples	Yes	No	Not Sure
Pattern and Measurement	Enhances abilities to recognize, duplicate and extend simple patterns using a variety of materials.	Completes simple form board and imitates handclapping pattern			
		Recognizes and recreates simple patterns with objects			
		Creates simple pattern of own design using objects			
	Show increasing abilities to match, sort, put in a series, and regroup objects according to one or two attributes such as shape or size.	Creates groups according to colors			
		Creates subgroups according to shapes and sizes			
		Creates subgroups according to shape, size and color			
		Matches sets of socks or mittens			
	Begins to make comparisons between several objects based on a single attribute.	Verbalizes similarities of objects (e.g., “we have the same shoes”)			
		Describes objects and actions by noting their similarities and differences			
	Shows progress in using standard and non-standard measures for length and area of objectives	Uses terms related to width, length, volume, temperature, time, weight, quantity and fractions			
		Uses unit blocks to measure length of rug			
		Measures two cups of flour			
		Uses comparative words such as heavier, smaller			

Definitions

Yes – A child consistently and appropriately demonstrates this developmental skill.

No – A child rarely or never demonstrates this developmental skill.

Not Sure – The respondent has not had an opportunity to observe the child in this area.