# C. AGGREGATE AND ANALYZE

The term aggregate means to combine information into a unified whole. Analyze means to question, explore, and investigate aggregated information—or to "dig into" data (National Center on Parent, Family, and Community Engagement, n.d.a, n.d.b). Aggregation and analysis occur on multiple levels. For example, education staff regularly aggregate and analyze information they have collected about individual children to help inform curricular decisions and interactions. They also aggregate and analyze child assessment information for all children in their setting on an ongoing basis. An education specialist might aggregate and analyze child assessment information for all children enrolled in a delegate agency program. A grantee-level leadership team would aggregate and analyze child assessment information, typically three times a year. All staff need support to learn how to compile and interpret the ongoing assessment data they have collected.
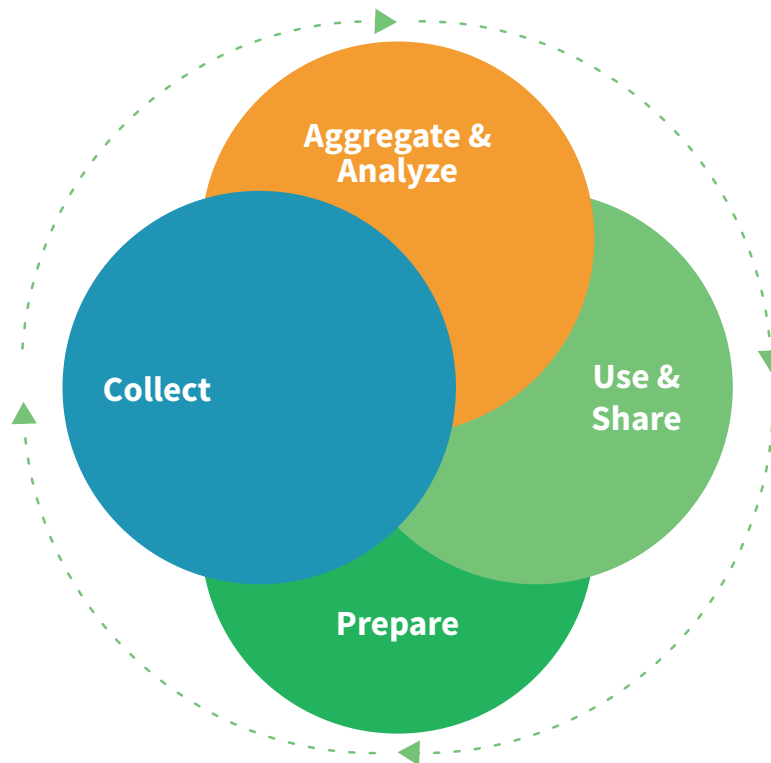
Disaggregate means breaking combined data into smaller subsets or subgroups. Staff create subsets or subgroups based on characteristics of children, families, or programs. For example, subgroups might be children who are DLLs, children with disabilities, children in different age groups such as infants, toddlers, and preschoolers, or programs that are half-day versus full-day. Disaggregated data can help staff compare information about subgroups and determine if they need more assessment information or professional development, resources, or implementation supports. For example, if a teacher compares communication outcomes for her children who are dual language learners versus those who are not dual language learners, she might decide to communicate with families about children's progress in their home language so she will have a complete view of how children are developing their communication skills.

A data aggregation and analysis plan can provide a roadmap to help conduct Aggregate and Analyze activities (National Center on Parent, Family, and Community Engagement, n.d.a, n.d.b). Aggregate and Analyze activities should be occurring at multiple levels (e.g., child, classroom, caseload, site, grantee).

1. Aggregation and analysis of ongoing child assessment information.

Table 1 shows an example of one teaching team's data aggregation and analysis activities. The teaching team implements these activities, as designed by the leadership team in the ongoing assessment plan.

Table 1. Aggregation and Analysis Activities: Ongoing Child Assessment Data

Step	Data Source	Example Questions to Guide Analysis
1. Compile ongoing child assessment documentation for each child	• Observations, child work samples, videos, checklists, information from families	• Have I compiled all the relevant documentation for each child? • If data are missing for a child, have I indicated what data are missing and why?
2. Use a scoring rubric, spreadsheet, or assessment instrument scoring system to enter data	• Scoring rubric, spreadsheet, or assessment instrument scoring system • Child-level information compiled in Step 1	• Have I entered all data for each child using the rubric, spreadsheet, or assessment instrument scoring system? • Have I entered all data within the timelines established by my program? • If data are missing for a child, have I indicated what data are missing and why?
3. Analyze— examine data for individual children and for the group of children and have focused conversations with other staff	• Scoring rubric, spreadsheet, or assessment instrument scoring system	• How is each child progressing in the goals, associated development progressions, and indicators from the ELOF? • Are there patterns or trends I see in the data for the children with whom I work?
4. Analyze— examine data for different ELOF sub-domains and have focused conversations with other staff	• Scoring rubric, spreadsheet, or assessment instrument scoring summaries	• How are the children doing on the math subdomain of the ELOF? • Which children might need additional instruction on key math skills? • Do we have enough documentation related to language and literacy? If not, what additional strategies might we use?
5. Analyze— examine data for subgroups of children and have focused conversations with other staff	• Scoring rubric, spreadsheet, or assessment instrument scoring system summaries	• How are children who are DLLs doing relative to children who are not DLLs? • How are children who have IFSPs or IEPs doing relative to other children?

Case Story
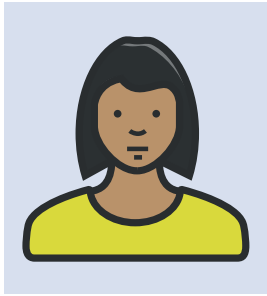
Lydia is a teacher in a three-year-olds' classroom in the Westcott Head Start program. She and her teaching assistant have ten children in their classroom. Her class has two children with IEPs and three children who are dual language learners. The teaching team includes a special educator and a speech-language therapist, who are there occasionally to support the children with IEPs. Lydia and her teaching team collected ongoing assessment data during the first two months of the school year using their program's observation-based assessment instrument. They received training on the instrument and procedures last year and periodically have ongoing implementation support from one of the coaches in the program. The program leadership team used the data report from the observation-based assessment instrument to develop a summary data sheet. Education staff used the sheet to aggregate and analyze ongoing assessment information. This data sheet is available in both a paper-and-pencil format and as an electronic spreadsheet. Lydia is not completely technologically fluent, so she prefers to use the paper-and-pencil format. One of her professional development goals for the coming year is to fluently use the electronic spreadsheet to enter and analyze her data. For now, she and the teaching team aggregate and analyze their data by hand.

Table 2 shows an example of the aggregation and analysis for the ELOF sub-domain Writing, Goal P-Lit 6. The data in Table 2 are from the report the observation-based assessment system produced after staff entered it in the online system. The summary data sheet includes the indicators on the observation-based assessment system that align with Goal P-Lit 6. The team analyzes the data and notes that 40% children make controlled scribbles, 30% can write a few letters or letter-like forms, 20% of the children are scribbling, and one child (10%) is writing letter strings. The team also notes that two of the three children who are drawing and scribbling are children with IEPs and the third child is a DLL whose home language uses characters rather than letters. The other children who are DLLs can either write a few letters or letter strings. Information from the **aggregation and analysis** activities that Lydia and her team have conducted will be very useful as they plan lessons.

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Table 2. Data Sheet from Observation-Based Instrument Data to Support Aggregation and Analysis

ELOF			Observation-Based Assessment Instrument Used by Program (Aligned to ELOF)		
ELOF Sub-Domain: Writing Goal: P-LIT 6. Child writes for a variety of purposes using increasingly sophisticated marks.			Observation-Based Assessment Instrument Items Aligned with P-LIT 6 Objective 19. Demonstrates emergent writing skills: a. Writes name[2]		
	Dual Language Learner	Individualized Education Program (IEP)	Scribbles or Marks	Controlled Scribbles	Mock Letters or Letter-Like Forms	Letter Strings
John	No	Yes	√			
Anna	No	No		√	Emerging	
Tyler	No	No		√		
Bethany	Yes	No			√	
Mee	Yes	Yes	√			
Shakira	No	No			√	
Jamal	Yes	No				√
Mattie	No	No		√		
Brigit	No	No			√	
Matthew	No	No		√		
Summary			2/10= 20%	4/10= 40%	3/10= 30%	1/10= 10%

2. Using ongoing child assessment information to aggregate and analyze at the program level.

The program leadership team must take time to analyze the data carefully and identify what is or is not working. If you planned **aggregation and analysis** activities as part of **preparation** activities, and if you engaged a wide variety of stakeholders throughout the cycle, congratulations! You've set a solid foundation for making data-informed decisions.

When analyzing ongoing assessment data for children who are DLLs, remember that it is important to understand the procedures and instruments staff used to collect ongoing assessment data. Include descriptions of the procedures and instruments used to collect the data in any of your analyses. Remember to acknowledge any limitations that might exist with analysis and interpretation of these data.

Table 3. Aggregation and Analysis Activities: Using Ongoing Child Assessment Data for Analysis and Planning

Step	Data Source	Questions to Guide Analysis
1. Create or obtain ongoing child assessment information and relevant variables	• Observations, child work samples, videos, checklists, information from families	• Have we compiled all the relevant data for each child? • Have we identified the relevant variables that we want to use to aggregate and analyze and disaggregate the data?
2. Ensure the integrity of the data	• Data set that contains ongoing child assessment information	• If data are missing, have we indicated what data are missing and why? • Were the data collected within the established timelines for the assessment cycle? • Are there any obvious anomalies in the data set?
3. Analyze the data—evaluate progress toward ELOF and school readiness goals in focused conversations with the leadership team and key stakeholders	• Results from data analyses	• What is the progress toward ELOF and school readiness goals? • What are the patterns or trends in the data over time for each of the ELOF indicators and school readiness goals?
4. Analyze the data—address questions the leadership team and key stakeholders posed while planning	• Results from data analyses • Action plan	• Did training or coaching help close the gap on missing data? • Were assessment cycles completed according to the annual schedule?
5. Analyze the data—examine results for subgroups of children and have focused conversations with the leadership team and key stakeholders	• Results from data analyses	• What is the progress toward ELOF and school readiness goals for different subgroups? • How does the progress of subgroups compare to the entire group? • What are the subgroup patterns or trends in the data over time for each of the ELOF indicators and school readiness goals? • How do these subgroup patterns or trends compare to the entire group?

Case Story
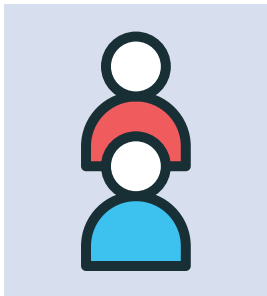
The Westcott Head Start leadership team meets after every assessment cycle to dig into their data. Before the meeting, the data coordinator generates summary reports from the online scoring system. The team receives a report with child-level data related to individual classrooms and home visitors and aggregated child-level data across the entire program. The leadership team reviews school readiness goals, which are available at each meeting so the team can assess the program's progress toward the goals.

The team analyzes the summary reports about the progress that individual children, subgroups of children, and the program overall have made toward ELOF expectations and in school readiness goals.

The team uses four different strategies to analyze the data. First, they look at the data in the aggregate by examining the mean (average of a group of numbers), median (middle value of numbers when they are ordered from smallest to largest), and range (difference between the lowest and highest values) of scores for each of the ELOF domains. After they look at these scores for a single cycle, they compare the current cycle scores to previous cycles and analyze trends over time. They also analyze the data to determine if they have achieved school readiness goals. For example, if the school readiness goal is that 80% of enrolled children meet or exceed expectations in the ELOF Social and Emotional domain, the team can use the summary report data to determine if they have met it.

After analyzing data in the aggregate at the program level, the team examines the same data at center, classroom, and home visitor caseload levels. Again, they consider the mean, median, and range of scores for a single set. They also compare current cycle scores to previous cycles and analyze trends over time. As they analyze the data, they flag anomalies and confirm their plans to address them. They identify where summary reports indicate children are meeting or exceeding ELOF expectations versus not meeting expectations. Analyzing these data helps the leadership team make informed decisions about which centers, teaching teams, and/or home visitors might need targeted and ongoing support to enhance curriculum or teaching and assessment practices.

Given that 40% of children enrolled in Westcott Head Start Center are DLLs and 8% are chronically absent, the team disaggregates the program, center, and classroom data by DLL and attendance status. They compare the means, medians, and ranges of scores by DLL and attendance status. Disaggregating this data helps them understand if there are differences in development and learning within assessment cycles or across cycles for children who are DLLs or who are chronically absent. If they find differences, they can discuss what supports teachers might need (e.g., differentiated or individualized instruction) and can work together to improve attendance.

Find additional resources related to digging deeper into data in the resource Data in Head Start and Early Head Start: Digging Into Data.

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