A Planning Guide for Linking Data

to Support Program Improvement in Early Care and Education

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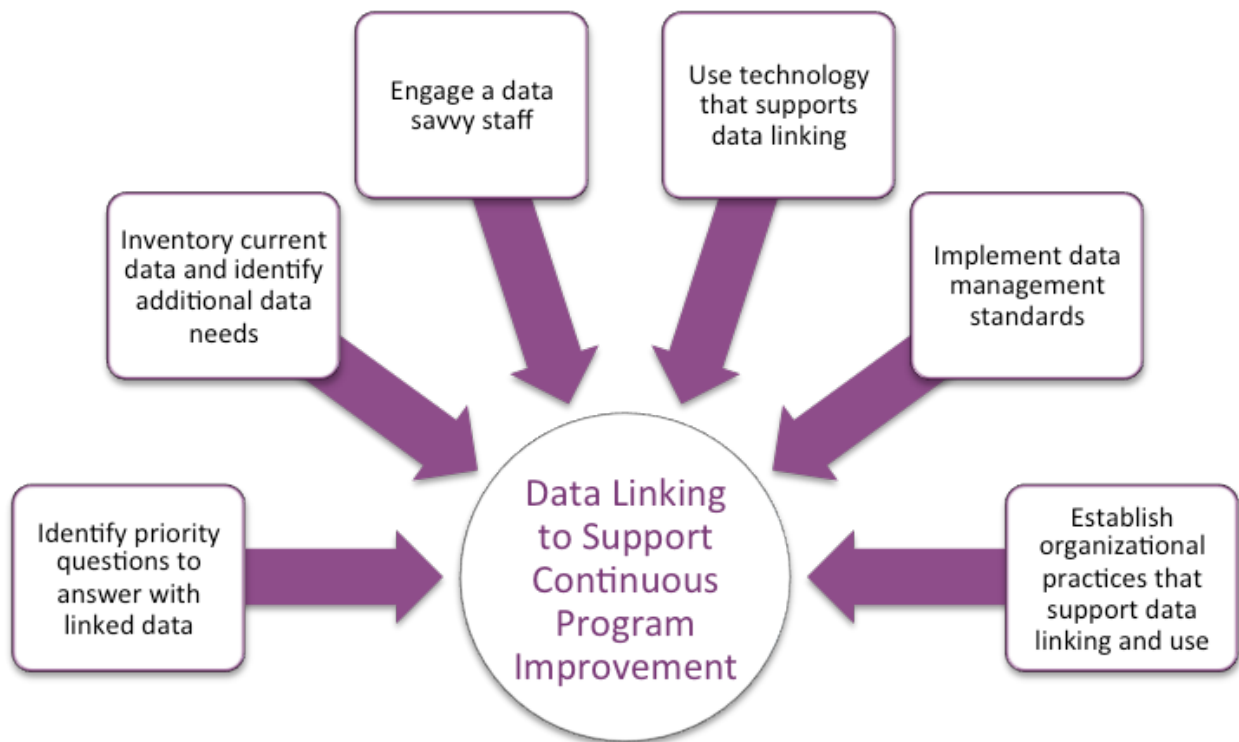
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Introduction

Linking data collected by early care and education (ECE) programs to data collected by other agencies provides a unique opportunity for early childhood leaders to understand the full experiences of the children and families they serve. ECE programs can benefit from linking their data because linked data can improve program quality, improve services for children, reduce the data collection burden on families and staff, and inform strategic planning. Linked data has many uses, including to help shape the delivery of the services, individualize the care provided to children, avoid duplication of services, and clarify the goals of the program itself.

In this resource, data are considered "linked" when information from two or more separate data systems or databases are shared, connected, combined, or merged. These data systems or databases may be housed in the same program or in multiple programs or agencies. Linking data can occur in various ways ranging from simple, (e.g., sharing a spreadsheet) to more complex (e.g., merging two databases into a single file), to very complex (e.g., fully integrating data across multiple agencies). However, all linked data can provide useful information to support ECE program improvement. There are many practices that ECE programs can engage in to make data linking possible and ensure that their linking efforts are successful. This resource focuses on six of the best practices that ECE programs can institute to facilitate the process of data linking. Figure 1 shows how these six practices support the use of linked data for continuous program improvement.

Figure 1. Best practices that help ECE programs use linked data for continuous program improvement purposes

Data linking is a challenge for many ECE programs. Although ECE program leaders may know the benefits of linking their data to data from other organizations, barriers such as a lack of data expertise or insufficient technology make it difficult to link data. This guide is intended to help programs take the initial steps towards meeting these challenges by providing information, strategies, and an opportunity to reflect on the use of particular practices that support data linking.

The audience for this guide is all ECE programs. Some of the activities described are more applicable to certain types of programs than others. For example, some of these activities are specific to Head Start grantees, who have requirements to collect and report specific types of data. **It is important to note that not all of the practices and sub-practices in this guide need to be in place before linking data.**

How to Use this Guide

The activities in this guide are best completed by a program director and/or the program person who oversees data collection, possibly with the assistance of a technical assistance provider or data expert. A data expert is a person or organization with knowledge about data linking and use, generally, and in ECE programs specifically. A TA provider or data expert can discuss the data-related ideas in this planning guide with program leaders and help develop a plan to implement the practices and activities listed here. **See Appendix A for instructions about how to use this guide if you are a TA provider. A glossary of some of terms is included at the end of this resource in Appendix B. Appendix C describes how we developed this guide, including the identification of the six best practices.** Below is a description of the components for each of the six best practices described in this resource.

✓ *Description:* Each best practice includes a brief description of the practice and addresses questions like: Why is this practice important? How does this practice support linking data?

✓ *Resources:* Accompanying each description is a link to other resources on the same topic. Use these additional resources to learn more about the application of this best practice in the field of early care and education.

✓ *Checklist:* A checklist is provided for each best practice that outlines each of its sub-practices that facilitate data linking. **Not all of the sub-practices need to be in place for a program to be ready to link data.** The purpose of the checklist is to help programs identify areas of improvement, not to convey that all sub-practices must be implemented before data linking is possible. Complete the checklist to identify which activities you are currently doing and which you have yet to do. Indicate whether you are doing each sub-practice not at all, somewhat, or fully. Figure 2 provides an example of what a completed checklist will look like.

Figure 2. Example of a completed checklist

Practices related to data driven decision-making	Not at All, Somewhat, Fully
Data are used on a regular basis to make decisions about your program	Somewhat
Data are used on a regular basis to make decisions about your teachers or ECE providers	Fully
Data are used on a regular basis to make decisions about your children	Fully
Data are used to guide teachers' classroom instruction	Somewhat
Data are used to plan staff training	Not at All
Data are used to make strategic or long-term decisions about the direction of the program	Fully

Sub-practices you are doing somewhat or not at all will help you identify areas for improvement

✓ *Planning worksheet:* The final section is a planning worksheet that you can use to begin the process of implementing some of the sub-practices listed for each best practice. Use the guide to develop an initial plan for improving practices and identify specific next steps. An initial step, for example, could include assigning staff to complete the work. We encourage you to focus on a small number of activities, no more than one or two for each practice you select, to address in your plan. Once those are accomplished, you can set new goals. Figure 3 provides an example of what a completed planning worksheet will look like.

Figure 3. Example of a completed planning worksheet

List the 1 or 2 questions you would like to be able to answer about your children, families, staff or the program.	How are my children doing in reading once they leave my program?
What do you see as the immediate next steps to answer these questions? What is the timeline for completing each step?	• Contact the school district within the next month to find out what kind of reading data they collect • Talk to district staff about starting a data linking agreement to share kindergarten assessment data. Will schedule a time to discuss data linking within the next 3 months
What are possible challenges in accomplishing the next steps and what strategies will you use to address them?	• District staff might be so busy that it is difficult to schedule a time to talk. We will call the staff member we know and be prepared to talk about how this might be useful for the school as well as us.
Who will be responsible for each step? What resources are needed (staff, time, etc.)?	• Myself and other leaders in my program including my health and education coordinators • Staff time to talk with district staff. Outside expertise to link and analyze the data and address our main question of interest.

1. Identify priority questions to answer with linked data

The first best practice to support effective data linking is for program staff to identify the questions they want to answer and the goals they hope to accomplish with linked data. For example, an ECE program may be interested in:

✓ Knowing what other types of services children are receiving in order to better individualize their education and care

✓ Learning which families are receiving unemployment services so that they might ask their Human Resource Director to offer job search or job interview tips at their next family social activity

✓ Identifying families who are eligible but not receiving Temporary Assistance for Needy Families (TANF) and then helping them apply for assistance

Once program staff know the specific questions they want to answer, they can work to ensure that they have—or request from other organizations—the data needed to answer those questions. Answers to the various questions can be used to set goals or make decisions in the program.

Related Resources

A Resource Guide for Head Start Programs: Moving Beyond a Culture of Compliance to a Culture of Continuous Improvement, Urban Institute and the Office of Planning Research and Evaluation

Embracing the Use of Data for Continuous Program Improvement, Harvard Family Research Project

Understanding Data Use for Continuous Quality Improvement in Head Start, Urban Institute

Data Direction #3: Engaging an External Research Partner to Help Use Linked Data

Strength in Numbers: Supporting Quality Improvement in Early Care and Education Programs through Linking Data

Checklist #1: Identify priority questions that require linked data to set goals and drive decision-making

Practices related to data driven decision-making	Not at All, Somewhat, Fully
Data are used on a regular basis to make decisions about: your program	
Data are used on a regular basis to make decisions about: your teachers or ECE providers	
Data are used on a regular basis to make decisions about: your children and families	
Data are used to engage families and the community in program decision-making	
Data are used to guide teachers' classroom instruction	
Data are used to plan staff training	
Data are used to make strategic or long-term decisions about the direction of the program	
Practices related to linking to other data	**Not at All, Somewhat, Fully**
Program staff and/or families have identified questions that could be answered with linked data	
Program leaders, staff, or families have identified other data that would be useful to have that the program does not currently collect	
Program leaders have identified other organizations that collect data about the children and families in the program	
Program leaders have talked with leaders in other organizations about questions that would be helpful to answer using linked data from both organizations	

Worksheet #1: Planning worksheet to identify priority questions to answer with linked data

Priority Practices	List the 1 or 2 questions you would like to be able to answer about your children, families, staff or the program.	
Next Steps and Timeline	What do you see as the immediate next steps to answer these questions? What is the timeline for completing each step?	
Possible Challenges	What are possible challenges in accomplishing the next steps and what strategies will you use to address them?	
Responsible Parties and Resources Needed	Who will be responsible for each step? What resources are needed (staff, time, etc.)?	

2. Inventory your current data and identify additional data needs

Once the priority questions have been identified, the next best practice is to identify the relevant data collected by the program. Program staff can then identify the particular pieces of data that could be linked to answer a specific question. It is possible that some of the information needed is not available. If this is the case, then program staff can determine whether they want to begin collecting the data or access the data from another organization that collects it.

The amount and types of data collected depend on the unique situation of each program. Some programs, like Head Start, are required to collect and report on a wide range of information about the characteristics (e.g., age), education, and health of children and families they serve. Other early care and education (ECE) programs may only be required to collect and report on children's demographics. All data should be collected for a specific purpose. Sometimes data are collected to meet a reporting requirement; other times, data are collected for program improvement purposes; and sometimes data are collected for both purposes. Programs that collect data above and beyond what is required of them for reporting purposes have additional opportunities to use data to support their continuous quality improvement and help make informed decisions. ECE programs often collect some data in each of the following areas:

✓ Children

✓ Families

✓ Teachers, assistants, family service workers, administrative personnel, and other staff

✓ Learning environments (including classrooms and family child care settings)

✓ Services

✓ The program itself (e.g., financial information, family satisfaction)

Collecting at least some data in each of these categories can help programs develop a rich sense of all aspects of their operations and the families they serve. It is also a key step in using linked data. The specific linked data needed to answer questions of interest will vary between programs. **Not all of the data in this checklist needs to be collected before linking is possible. Rather, this checklist is a way to help identify gaps and determine if linked data would fill those gaps.**

Related Resources

Data in Head Start and Early Head Start, Head Start National Center on Program Management and Fiscal Operations (PMFO)

INQUIRE Data Toolkit - Quality Initiatives Research and Evaluation Consortium (INQUIRE)

Core Data Elements for EC and School-Age Registries, The National Registry Alliance

Case Study #1: Tulsa Community Action Project's Commitment to Data Driven Decision-Making

Data Direction #4: Building a Data Sharing Partnership with Other Organizations

Checklist #2: Potential data to collect in ECE programs

Practices related to child and family data	Not at All, Somewhat, Fully
Child demographics (e.g., birthdate, gender, race/ethnicity)	
Family demographics (e.g., income, employment, number of family members in the home, housing status)	
Contact information for families (e.g., phone numbers, email addresses, mailing address)	
Developmental screening (e.g., Ages and Stages)	
Children's health and wellness data (e.g., immunizations, annual medical check-up, annual dental check-up, medical home)	
Attendance	
Curriculum-based instructional assessment (e.g., Teaching Strategies Gold)	
Informal observations or teacher-developed checklist	
Practices related to staff data	**Not at All, Somewhat, Fully**
Education and past employment experience	
Highest degree earned or credential earned (e.g., CDA, Associate, Bachelor)	
Years of teaching	
Concentration/focus of credential or degree (e.g., child development, early education)	
Professional development (PD) or training record	
Total number of hours of PD over last year	
Topics covered in PD/trainings	
Performance reviews and development plans	
Practices related to learning environments (including classrooms and family child care settings)	**Not at All, Somewhat, Fully**
Observational assessments of classroom quality (e.g., CLASS, ERS)	
Technical assistance (e.g., number of hours, goals, progress made)	
Curriculum used	
Practices related to service data	**Not at All, Somewhat, Fully**
Tracking of which children receive particular services (e.g., transportation)	
Frequency of services (e.g., number of family meetings or home visits)	
Coordination of services (e.g., list of other agencies providing services to children or families, for each child/family)	
Disability services (e.g., number of physical or occupational therapy, speech/language visits/services)	
Practices related to program data	**Not at All, Somewhat, Fully**
Revenue sources/amounts (e.g., Head Start, subsidy, parent fee)	
Family engagement activities/involvement (e.g., number of families attending meetings)	
Family survey of program satisfaction	

Worksheet #2: Inventory of current data and identification of gaps.

Priority Practices	List additional data that you do not have but would like to have to help address your program's priority questions. Note if your program plans to start collecting that data or if another organization already collects it.	
Next Steps and Timeline	What are the next steps to gaining access to this data? What is the timeline for completing each step?	
Possible Challenges	What are possible challenges in accomplishing the next steps and what strategies will you use to address them?	
Responsible Parties and Resources Needed	Who will be responsible for working on this? What resources are needed (staff, time, etc.)?	

3. Engage data savvy staff

The third best practice involves programs ensuring that staff have the capacity and are trained to be able to collect, manage, link, analyze, and interpret data. Programs with data savvy staff are better prepared to make full use of the data that their program collects as well as any data they have access to from other organizations. Data savvy staff includes, for instance, those without extensive technical knowledge but who understand *why* data are important and realize the benefits of linking data, as well as those with greater technical knowledge who can both do some data work on their own and also act as liaisons with data experts for the more sophisticated data-related work. It may be helpful for programs to provide access to on-going professional development and training opportunities related to data use and linking, either through on-site training or sending staff elsewhere for training. On-going training may be needed to keep up with ever-changing technology advancements as well as to train staff who have been recently employed or switched roles.

Related Resources

Data Activities Inventory: Leader's Level, Head Start National Center on Program Management and Fiscal Operations (PMFO)

Data in Head Start and Early Head Start, Head Start National Center on Program Management and Fiscal Operations (PMFO)

Case Study #2: The Learning Center for Families' Use of Data to Support Children's Healthy Development

Data Direction #2: Discussing Data with Families

Checklist #3: Engaging staff who are data savvy in the linking and use of data

Practices related to professional development	Not at All, Somewhat, Fully
Professional development opportunities are available to you, other leaders in your programs, and your teaching staff to improve skills in data collection, management, linking, and use	
Program funds are used to support staff who attend data-related training	
Leaders in your program seek out their own professional development opportunities to improve the linking and use of data in your program	
Staff receive training about how to talk with families about the use of data and how to meaningfully engage families in decisions about data collection and use	
Practices related to expertise	**Not at All, Somewhat, Fully**
Your program employs information technology staff with data management, linking, use, and/or general data expertise	
There is a person (e.g., consultant) or organization (e.g., university) available to help your program manage, use, and understand the data collected	

Worksheet #3: Planning for engaging a staff who is knowledgeable and well-trained to link data

Priority Practices	List 1 or 2 trainings that you would like yourself or your staff to participate in to improve skills in using and linking data. List 1 or 2 external partners (e.g., consultants, university researchers) you would like to engage to help your program manage or use linked data.	
Next Steps and Timeline	What are your next steps in identifying which staff you would like to have this training? What is the timeline for completing each step?	
Possible Challenges	What are possible challenges in accomplishing the next steps and what strategies will you use to address them?	
Responsible Parties and Resources Needed	Who will be responsible for identifying particular trainings and registering staff? What resources are needed (staff, time, etc.)?	

4. Use technology that supports data linking

Programs that have adequate technology are able to use data that are linked with data from another organization or agency. Therefore, the fourth best practice focuses on adequate technological capacity. This includes:

✓ Having the hardware, which is the physical equipment or machines such as computers and/or tablets,

✓ The appropriate software, which is the computer or web-based programs and tools such as Microsoft Excel, statistical software, or other vendor software packages needed to successfully use data from different sources, and

✓ Other technology that helps staff use and link data, like wireless internet connection or telecommunications devices.

Adequate hardware allows staff to enter data directly into computers or tablets rather than having data transferred from paper documents. Technological software includes the programs that allow staff to enter, store, manage, extract, and analyze data. ECE programs may use a variety of different types of software, depending on their needs. Head Start programs, for example, often use specialized software developed by external vendors that allow them to enter, store, and manage information about their children and families. These software packages often help programs report required information to their funders (e.g., required data for the Program Information Report, or PIR, for Head Start). Maintaining the hardware and software used in the program is a specialized task for an information technology professional with the skills and knowledge to keep technology resources up-to-date.

Checklist #4: Use of technology to support data linking

Practices related to hardware	Not at All, Somewhat, Fully
Computers, laptops, and/or tablets in classrooms or on-site, to facilitate regular data entry	
Hardware is replaced or updated to meet current technology standards (e.g., every 3 years)	
Practices related to software	**Not at All, Somewhat, Fully**
Access to spreadsheet software (e.g., Microsoft Excel) or customized reports (e.g., Microsoft Access) for organizing and analyzing data	
Specialized program management software to house data about children and families (e.g., ChildPlus, COPA, Promis, CAP 60)	
Specialized software to log data about children's developmental assessments (e.g. TS Gold, Work Sampling System)	
Ability to bridge or connect between program management and assessment/curriculum software (e.g., ability to connect ChildPlus and TS Gold)	
Ability to merge data stored in different datasets into one file (e.g., through statistical software and staff technical expertise)	
Practices related to other technology	**Not at All, Somewhat, Fully**
Use of the federal E-rate program[1] for discounted technology and communications hardware	
Program has wireless internet access available at all of its sites	

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[1] The federal E-rate program offers discounted telecommunications and internet access to some Head Start and school-based ECE programs. Head Start and school-based ECE programs can access E-rate discounts if they have been designated educational entities by the state in which they are located. Note that all programs that receive funds through the federal E-rate program must be in compliance with the Children's Internet Protection Act (CIPA). For more information on CIPA compliance, see: http://e-ratecentral.com/CIPA/cipa_checklist.pdf.

Priority Practices	List 1 or 2 hardware or software improvements you want to make that would help you link data.	
Next Steps and Timeline	What are the next steps for making these hardware and software improvements? What is the timeline for completing each step?	
Possible Challenges	What are possible challenges in accomplishing the next steps and what strategies will you use to address them?	
Responsible Parties and Resources Needed	Who will be responsible for making each improvement? What resources are needed (staff, time, etc.)?	

5. Implement data management standards

Successful data linking happens when best practices are implemented to ensure that all data are collected at a high level of quality and managed in a way that maintains confidentiality. Therefore, the fifth best practice involves implementing data management standards. Staff with the skills and knowledge to link data can help:

✓ Determine and oversee how data will be collected and managed

✓ Ensure that data that are collected meet existing data privacy and confidentiality regulations (e.g., FERPA, IDEA Part B and C, Head Start Program Performance Standards)[2]

✓ Implement and update data collection and management plans

✓ Engage families in discussions and inform them about data use

The same staff will not always be working on each of these activities. To ensure that the program follows best practices, staff may find it useful to establish data management standards like double-checking data for errors and documenting data practices both within and between programs using linked data. States that have Statewide Longitudinal Data Systems (SLDS)[3] or Early Childhood Integrated Data Systems (ECIDS)[4] might have existing standards for data management, governance, and confidentiality that could guide ECE programs' own practices. Data best practices can be overlooked during busy day-to-day operations, which can cause problems with data quality and security.

Checklist #5: Use of established data standards to ensure quality data collection, linking, analysis, and use

Practices related to unique identification	Not at All, Somewhat, Fully
Alphanumeric IDs are assigned to children and their families (e.g., Julian Jackson is assigned child ID A72) that are **NOT** associated with any personally identifying information (e.g., social security number, date of birth, name, address)	
When entering confidential information (e.g., health information, child assessment results) into a dataset, IDs are used instead of names or initials	
Practices related to privacy and confidentiality	**Not at All, Somewhat, Fully**
Staff receive training about data privacy and confidentiality[5]	

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[2] These are examples only. Not all early childhood programs are required to comply with the requirements of FERPA, IDEA, or Head Start when sharing or linking data. Additionally, other federal and state privacy laws, such as the Children's Online Privacy Protection Rule (COPPA), may also apply. Requirements to comply with privacy laws or regulations vary depending on the type of agency, the type of data to be shared or linked, and the intended use of that data. Consult the Privacy Technical Assistance Center for additional information on FERPA: http://ptac.ed.gov/early-childhood-data-privacy. See the Center for IDEA Early Childhood Data Systems to learn more about IDEA privacy provisions: http://dasycenter.org/idea-and-ferpa-privacy-provisions-understanding-the-basics/. To learn more about COPPA, visit: https://www.ftc.gov/tips-advice/business-center/privacy-and-security/children%27s-privacy.

[3] For more information about SLDS, please visit the U.S. Department of Education website: http://nces.ed.gov/programs/slds/

[4] For more information about ECIDS, please visit the U.S. Department of Education website: https://nces.ed.gov/programs/slds/pdf/WhatisanECIDS.pdf

[5] There are a range of state and federal laws that may apply regarding the protection of information collected on children and families. See the resources in footnote 2 above for additional information.

Practices related to privacy and confidentiality	Not at All, Somewhat, Fully
Families know what data on their children or family are collected and shared, and have the opportunity to opt out where appropriate and feasible	
The program uses an established data sharing agreement when linking data with other organizations	
Data privacy and confidentiality are routinely discussed with families, including the use and linking of data (e.g., in handouts or flyers; at family engagement meetings, policy council meetings, conferences, or orientation)	
Practices related to documentation of data	**Not at All, Somewhat, Fully**
Codebooks or data dictionaries are maintained for any data that the program manages itself	
Information about software programs (e.g., ChildPlus, COPA, Promis, CAP 60) is available through the manuals or other documentation provided by the developer	
Practices related to technical guidance	**Not at All, Somewhat, Fully**
The organization consults with data experts on issues outside its capacity (e.g., data governance, privacy, developing data sharing agreements, establishing unique ID systems)	

Worksheet #5: *Planning for implementing data management standards*

Priority Practices	List 1 or 2 data management practices you would like to focus on improving.	
Next Steps and Timeline	What are the next steps needed to make improvements to these practices? What is the timeline for completing each step?	
Possible Challenges	What are possible challenges in accomplishing the next steps and what strategies will you use to address them?	
Responsible Parties and Resources Needed	Who will be responsible for these next steps? What resources are needed (staff, time, etc.)?	

6. Establish organizational practices to support data linking and use

For programs interested in using linked data, the final best practice in this guide focuses on is the importance of creating an internal culture that supports data linking and use. Organizations with strong data cultures are ones that:

✓ Promote data linking and incorporate data into most or all aspects of program operations

✓ Use data to drive decision-making

✓ Have leaders who understand the importance of using data for the ongoing improvement and sustainability of the program

Strong data cultures make efforts to ensure that all members of the organization, not just those in leadership positions, understand the importance of using data. Organizations that develop strong data cultures have good opportunities to build relations with other organizations to link data in ways that are mutually beneficial.

Related Resources

Linking Education and Social Services Data To Improve Child Welfare Casey Family Programs, National Center for Educational Accountability, and Data Quality Campaign

Conquering the Trials and Tribulations of Data Sharing and Linking, The Center for IDEA Early Childhood Data Systems (DaSy)

A Resource Guide for Head Start Programs: Moving Beyond a Culture of Compliance to a Culture of Continuous Improvement, Urban Institute and the Office of Planning, Research and Evaluation

Case Study #5: AVANCE-Houston's Partnership with the Houston Independent School District

Data Direction #2: Discussing Data with Families

Checklist #6: *Establish practices that promote data linking and use as part of regular program operations*

Practices related to fostering a data culture	Not at All, Somewhat, Fully
Responsibility for data collection and management is shared, and not one person's job, to help ensure that the knowledge and expertise stay in the organization even if some staff leave	
Staff in different roles (e.g., directors, teachers, data specialists, receptionists) understand the importance of data collection and use for program operations and improvement	
Practices related to community relationships	**Not at All, Somewhat, Fully**
Program leaders have relationships with community organizations (e.g., universities, research non-profits that are data savvy) to assist with data collection, linking, analysis, interpretation, and/or dissemination	
Program leaders have relationships with other leaders (e.g., in education, health, human services) who help promote using data for program improvement	
Programs leaders collaborate with parents to use data to better serve families and children	
Practices related to funding	**Not at All, Somewhat, Fully**
Program leaders have identified sources of funding (e.g., through grants,) that can be used to support data linking projects	
Program leaders have applied to use funding to support their data linking projects	

Worksheet #6: Planning for establishing organization practices to support data linking and use

Priority Practices	List 1 or 2 activities you would like to do to improve your organization's data culture. Or list one 1 or 2 organizations you'd like to partner with to link data.	
Next Steps and Timeline	What are the next steps for doing this? What is the timeline for completing each step?	
Possible Challenges	What are possible challenges in accomplishing the next steps and what strategies will you use to address them?	
Responsible Parties and Resources Needed	Who is responsible for these next steps? What resources are needed (staff, time, etc.)?	

Appendix A. Instructions for Technical Assistance Providers

This guide is intended to be completed by ECE programs, possibly with the assistance of a technical assistance provider or data expert. A data expert is a person or organization with knowledge about data linking and use, generally, and in ECE programs specifically. If you are a TA provider, there are a few considerations to keep in mind as you work through this guide with programs.

✓ *Initial evaluation:* Prior to using this planning guide, TA providers should evaluate whether the program has a basic level of knowledge and skill in using data. Programs that are very early in the process of learning about data use might not be ready to complete this guide. With those programs, you may choose to focus on strengthening their basic data collection knowledge and practices and revisit this guide once they are more established. Programs that are in the mid-range of sophistication in data use are the ideal audience for this guide and will find it most helpful. Programs that are highly sophisticated in the use of data may find that they are already implementing many of the practices described here. In this situation, you may choose to focus on strengthening some of the more complex practices like implementing data management standards and establishing organizational practices to support data linking and use. You can also use this guide to help them make improvements to their data linking projects already underway.

✓ *Planning tool versus assessment:* This is not an assessment, meaning that the purpose of this guide is not to score or rate programs on how well they are doing with data linking. This guide is intended to be a planning tool that facilitates data linking and use for program improvement purposes. **Not all of the practices in this guide need to be in place for data linking to be possible.** Rather, it is meant to help programs identify a few achievable goals that will get them closer to being able to link data. To be most helpful, program staff should periodically review the information in this guide to revisit and revise their goals and plans as necessary.

✓ *Who to work with:* This guide should be completed with the director of the ECE program. She may also want to include other staff in the planning process who have direct knowledge about some of the best practices covered in the guide. These staff might include database managers, program managers, or staff in other administrative positions.

✓ *Delivery method:* Ideally, this guide will be completed face-to-face. Phone meetings are an option should face-to-face meetings be infeasible.

✓ *Process:* Whoever is participating in the process of completing this guide should read through it prior to the first planning session. The initial portion of the conversation should be used to address any outstanding questions the program staff has about data linking and use, what it is and why it is important. Likewise, for each best practice, it would be useful to talk about what it is and why it is important. When completing the checklists, ask program staff to think about not just whether they are doing or not doing the sub-practices, but the *extent* of their implementation. That is, they may be implementing a sub-practice only minimally and could decide to do more as part of their action plan. Use the results of the checklist to identify one or two sub-practices to improve and outline the plan using the planning worksheet. Be specific: designate responsible parties to follow through on the sub-practices and identify a reasonable timeline for accomplishing each activity or action step.

✓ *Follow-up:* Check on a program's progress at regular intervals like one, three, and six months after the initial planning sessions. These check-in sessions can be done by phone, e-mail, or in person.

✓ *Questions to consider:* Programs may need assistance in deciding which sub-practices in the worksheets to focus on for improvement. Sub-practices from the checklists they are "Not at All" or "Somewhat" implementing are first choice options, but it might also help to pose questions for them to consider if they are having trouble homing in on just one or two sub-practices. Here are possible questions you might ask programs that need assistance in identifying sub-practices for improvement.

   o Identify priority questions to answer with linked data

      ▪ What questions do you want to answer that would require linking data?

      ▪ What other data do you need to help you address priorities for improving your program?

      ▪ What organization collects that data?

   o Inventory your current data and identify additional data needs

      ▪ Is your program collecting the data needed to address your priorities for program improvement?

- What additional data could you use to help you better understand your program? This could be new data collected by the program or data obtained from another organization.

- o Engage data savvy staff

  - Do you know of and seek out data-related professional development opportunities for your staff?

  - Are there funds to support staff who attends data-related trainings?

  - How have you incorporated data training into your own professional development?

- o Use technology that supports data linking

  - Do you have the access to the hardware that allows staff to enter data in a timely and easy manner?

  - Do you need special software to analyze your linked data?

- o Implement data management standards

  - What additional steps can you take to make sure that your data are confidential if they are linked with another program?

  - What kinds of documentation would help you describe the kinds of data you collect, link, and use?

- o Establish organizational practices to support data linking and use

  - How do you and other program leaders support a data culture?

  - What could you do to strengthen your data culture?

  - What other leaders in your community could you partner with to link data?

Appendix B. Glossary

Term	Definition
Alphanumeric unique ID	A unique combination of numbers and letters used to identify a child, family, or ECE program in lieu of using private information like name, birthdate or address.
Bridge	A software mechanism that connects two distinct datasets or data systems. A bridge is typically developed by one software developer to link their proprietary software to another commonly used software package. For example, a program could use a bridge to connect program management and assessment/curriculum software (e.g., ability to connect ChildPlus and TS Gold).
Program management software (ChildPlus, COPA, Promis, CAP 60)	Vendor software packages used to collect, house and report on program management data collected in Head Start programs. The four listed here are some of the most widely used in Head Start programs.
Classroom Assessment Scoring System (CLASS)	The Classroom Assessment Scoring System (CLASS) is an assessment tool used in ECE programs to assess and improve effective teaching strategies. There are separate CLASS tools for infants, toddlers and preschoolers.
Codebooks (Data Dictionary)	A document containing descriptions of the data elements in a data system. Examples are the data element name, length of allowed characters for storing the data element, definition, and other technical information (e.g., how and where the data were collected, data format, how the data relate to other data).[6]
Confidentiality	Protection of data and information from unauthorized or unintended access.
Continuous Quality Improvement	The process-based, data-driven approach to improving the quality of a product or service. It operates under the belief that there is always room for improving operations, processes, and activities to increase quality.[7]
Curriculum-based Instructional Assessment	Assessments of children's learning and progress that are directly linked to the provision of specific curricula. An example of a curriculum-based instructional assessment is Teaching Strategies Gold.
Data	Information that ECE programs collect about their children, families, and staff, their services, and the program itself.
Data Culture	Organizations with strong data cultures are ones that: (1) Promote data linking and incorporate data into most or all aspects of program operations, (2) Use data to drive decision-making, and (3) Have leaders who understand the importance of using data for the ongoing improvement and sustainability of the program.
Data Expert	A person or organization with knowledge about data linking and use, generally, and in ECE programs specifically.
Data Governance	An organizational approach to data and information management that is formalized as a set of policies and procedures that encompass the full life cycle of data, from acquisition to use to disposal. This includes establishing decision-making authority, policies, procedures, and standards regarding data security and privacy protection, data inventories, content and records management, data quality control, data access, data security and risk management, data sharing and dissemination, as well as ongoing compliance monitoring of all the above-mentioned activities.[8]
Data Savvy Staff	There are two types of data savvy staff: (1) Those without extensive technical knowledge but who understand *why* data are important and that it can be beneficial to link data, and (2) Those with greater technical knowledge who can both do some data work on their own and also act as liaisons with data experts for the more sophisticated data-related work.
Data Sharing Agreement	Policies put in place to guide decisions about data exchanges and reporting with educational institutions, researchers, policymakers, parents, and third-party contractors.[9]
Developmental Screening	Tests to assess whether children are meeting age-appropriate developmental milestones. Screenings are used to decide whether to refer a child for more comprehensive assessment to determine whether the child has a developmental delay.

[6] R*esource:* The ABCs of Data Dictionaries, The Center for IDEA Early Childhood Data Systems (DaSy).
[7] Resource: Robert Wood Johnson Foundation
[8] R*esource: Data Governance Checklist,* Privacy Technical Assistance Center (PTAC).
[9] R*esource: Data Governance Checklist,* Privacy Technical Assistance Center (PTAC).

Term	Definition
Early Childhood Integrated Data Systems (ECIDS)	An ECIDS collects, integrates, maintains, stores, and reports information from early childhood programs across multiple agencies within a state that serve children and families from birth to age eight. Typically, the data included in an ECIDS are related to the individual child, the child's family, the classroom, the program/providers, and other services that provide comprehensive care and education for young children.[10]
Environment Rating Scales (ERS)	The Environment Rating Scales (ERIS) is an observational assessment of the environment and instruction in ECE programs. There are separate ERS tools for infants and toddlers (ITERS), preschoolers (ECERS-R, ECERS-3), curricula (ECERS-E) and family child care (FCCERS).
Family Educational Rights and Privacy Act (FERPA)	A Federal law that protects the privacy of student education records.[11]
Federal E-Rate Program	The E-Rate program offers discounted telecommunications and internet access to some Head Start and school-based ECE programs. Head Start and school-based ECE programs that have been designated educational entities by the state they are located in are able to access E-rate discounts.
Hardware	The physical equipment or machines such as computers and/or tablets needed to link data. Adequate hardware allows staff to enter data directly into computers or tablets rather than having data transferred from paper documents.
IDEA Part B and C	The Individuals with Disabilities Education Act (IDEA) Part B provides educational funding for students with disabilities, ages 3 through 21. IDEA Part C provides services for infants and toddlers, birth through age 2, with developmental delays or who are at risk of developing delays. IDEA Part B and C include protections of the privacy of these children's information and the confidentiality of any data collected about them.
Information Technology Staff	Employees who maintain and support technology infrastructure such as computers, tablets, software, and communications systems.
Linked Data	Two separate data systems or datasets are connected or merged together. This allows information about an individual child or family that is saved in different places to be combined together into one spreadsheet or one dataset.
Microsoft Access	A spreadsheet software program to house, organize and analyze data.
Microsoft Excel	A spreadsheet software program to house, organize and develop data reports.
Observational Assessments of Classroom Quality	Standardized measures of the quality of classroom instruction and environment performed by an objective observer who is external to the daily operations of the ECE program.
Privacy	Privacy is the control over the type and amount of data collected about or from a person.
Software	The computer or web-based programs and tools such as Microsoft Excel or vendor software packages needed to successfully use data from different sources. Technological software includes the programs that allow staff to enter, store, manage, extract, and analyze data.
Statewide Longitudinal Data Systems (SLDS)	These systems are intended to enhance the ability of States to efficiently and accurately manage, analyze, and use education data, including individual student records. The SLDSs should help states, districts, schools, educators, and other stakeholders to make data-informed decisions to improve student learning and outcomes, as well as to facilitate research to increase student achievement and close achievement gaps.[12]
Developmental assessment (Teaching Strategies Gold, Work Sampling System)	These tools document young children's skills in multiple domains of development. ECE program staff may use these assessments to guide classroom instruction. Programs may store these data electronically in vendor-provided software packages or other formats.
Technical Assistance (TA) Provider	A person who provides support or coaching to staff at an ECE program with the goals of improving program operations and service delivery.

[10] R*esource:* https://nces.ed.gov/programs/slds/pdf/WhatisanECIDS.pdf, National Center for Education Statistics
[11] Resource: Family Educational Rights and Privacy Act (FERPA), U.S. Department of Education
[12] R*esource:* http://nces.ed.gov/programs/slds/, U.S. Department of Education

Appendix C. Development of this resource

We used a three-stage process to develop this resource. In stage one, we reviewed existing resources and engaged in a listening session with Head Start grantees to compile a list of possible best practices and activities that support data linking. In stage two, we tested these practices for applicability through a series of conversations with Head Start grantees and other ECE programs. The list of practices and activities were refined following these conversations, and a draft version of this planning guide was created. In stage three, we tested the planning guide by interviewing directors of eight Head Start grantees and other ECE programs. Interviewees reviewed the guide prior to the interview and were walked through completion of the checklists and worksheets. They were asked for their feedback on the content and format of the guide. A final version of the guide was created based on this feedback, along with input from federal colleagues in the U. S. Department of Health and Human Services.

Stage One: Resource review and listening session

We reviewed existing resources in early childhood as well as in other fields of study to identify criteria and practices that ECE programs need to have in place in order to use linked data. Priority was given to any existing criteria that were specific to ECE programs, but because there is little information in this area, the search was expanded to examine criteria from other fields, including the general data management field. We focused more heavily on practices that precede data linking or use because they are important to have in place before programs can actually engage in data linking activities. We also gathered ideas for the criteria by reviewing the *Strength in Numbers: Supporting Quality Improvement in Early Care and Education Programs through Sharing and Linking Data* brief. The brief provided a useful starting point to understand the challenges programs must overcome before they can use linked data and the benefits to them once those challenges have been addressed.

Focus groups were conducted as part of a listening session with Head Start grantees on March 31, 2015 at the National Head Start Association Annual Conference and Expo in Washington, DC. Approximately fifty people attended the session to discuss topics related to the use of linked data, such as: questions that programs would be able to answer if they linked their data, ways that data are used to make decisions about program improvement, challenges programs have in linking and sharing data, practices or structural characteristics that programs need to have in place to be prepared to use linked data, and resources that could support programs to use linked data.

Stage Two: Refining the best practices and activities

We held conversations with the directors of eight Head Start and ECE programs to assess the applicability of the practices compiled in Stage One. The focus of these conversations was to determine whether these practices should be refined, dropped, or new ones added. The conversations also helped to determine whether the criteria within the themes were structured to be fairly independent of one another, such that programs can work on them simultaneously. Finally, the practices were tested to ensure that they are applicable to a wide range of programs, from those using basic approaches to those using more sophisticated practices for linking data. After revising the list of practices, we created a draft version of this guide that included all of the major sections: introduction, descriptions of the practices, checklists and worksheets.

Stage Three: Testing the planning guide

In the final stage, we completed eight pilot-test interviews with Head Start grantees and other ECE programs. Interviewees were most often the program directors, but a few included research staff. We sent the planning guide to interviewees for their review prior to the interview. Each interview consisted of the interviewee responding to each item on the checklists and answering the questions in the worksheets for the six best practices. They were asked to rate on a scale of 1 to 5 their program's success at implementing each practice. Finally, they were asked for feedback about the format of the guide and suggestions for how it could be improved. Minor changes to the guide were made following the completion of these interviews. A final review of the guide was completed by stakeholders of this project to gather their feedback.

Acknowledgments

Suggested citation: Friese, S., Maxwell, K. L., Epstein, D., & Abrams, J. (2016). *A planning guide for linking data to support program improvement in early care and education*. Report #2016-39. Bethesda, MD: Child Trends.

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