Technical Report for the Desired Results Developmental Profile (2015)

Prepared for California Department of Education

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Contents

Tables

Figures

Appendices

Abbreviations and Editorial Note

Abbreviations

AERA = American Educational Research Association

APA = American Psychological Association

APR = annual performance report

ATL-REG = Approaches to Learning–Self-Regulation

BAS = BEAR Assessment System

CA-ELDS = California's Early Learning and Development System

CDE = California Department of Education

COG = Cognition, Including Math and Science

DIF = differential item functioning

DRDP = Desired Results Developmental Profile

EAP = expected a posteriori

ED = earlier development

ELCD = Early Learning and Care Division

ELD = English-Language Development

FC = full continuum

HSELOF = Head Start Early Learning Outcomes Framework

HSS = History–Social Science

ICC = item characteristic curve

IDEA = Individuals with Disabilities Education Act

IDEA 2004 = Individuals with Disabilities Education Improvement Act 2004

IEP = individualized education program

IFSP = individualized family service plan

IOM = Institute of Medicine

IRT = item response theory

ITLDF = Infant/Toddler Learning & Development Foundations

LANG = Language development sub-domain from the Language and Literacy Development domain. This abbreviation is used in the ELCD's preschool domain-scale reports.

LIT = Literacy development sub-domain from the Language and Literacy Development domain. This abbreviation is used in the ELCD's preschool domain-scale reports.

LD = later development

LLD = Language and Literacy Development

MRCML = multidimensional random coefficients multinomial logit

NAEYC = National Association for the Education of Young Children

NASEM = National Academies of Sciences, Engineering, and Medicine

NCME = National Council on Measurement in Education

NRC = National Research Council

OSEP = the Office of Special Education Programs

PCM = partial credit model

PD-HLTH = Physical Development–Health

PLF = Preschool Learning Foundations

PV = plausible value

SED = The abbreviation SED is used to mean two things: Special Education Division and Social and Emotional Development domain. The meaning of each term can be clearly determined in context.

SPP = state performance plan

UC BEAR = University of California Berkeley Evaluation and Assessment Research Center

VPA = Visual and Performing Arts

Editorial Note

Although the word *data* in research contexts is generally treated as plural, throughout this document *data* is treated as singular, per the guidelines in the California Department of Education Style Manual (CDE 2018).

Executive Summary

The Desired Results Developmental Profile (DRDP) (DRDP [2015]) is an observational assessment instrument developed by the California Department of Education (CDE) for all young children from early infancy to kindergarten entry (CDE 2017). It is required for use with children participating in early childhood settings funded through two CDE divisions: the Early Learning and Care Division (ELCD) and the Special Education Division (SED).

The DRDP (2015) is an integral part of California's Early Learning and Development System (CA-ELDS), which provides the context for the formative use of the DRDP instrument by CDE-funded programs. The content of the DRDP (2015) is aligned to and used for summative reporting related to the Office of Special Education Programs (OSEP) child outcomes and the Head Start Early Learning Outcomes Framework (HSELOF).

The development of the DRDP (2015) instrument began in fall 2011 and was planned and carried out by the DRDP Collaborative, which is an intra-agency collaboration between the ELCD, the SED, and their contractors. The overarching goal guiding the development of the DRDP (2015) was to have one overall assessment approach for all children in ELCD and SED programs that provided flexibility in how the assessment is used to ensure developmentally appropriate assessment. The DRDP (2015) instrument operationalizes developmental continua from early infancy to kindergarten entry into eight constructs that represent domains of development. Each domain is assessed using multiple measures, and each measure consists of a

sequence of developmental levels or a progression along which a child's observed knowledge, skills, and behaviors are assessed.

Guided by federal and state reporting requirements, published early childhood guidelines, and psychometric standards for assessment, the DRDP Collaborative identified 10 quality indicators as important to address throughout the development of the DRDP (2015) instrument. These indicators ensure that the instrument adheres to recommended practices for assessment in early childhood settings and is appropriate for use with all young children in ELCD and SED early childhood education programs. Table 1 presents the 10 quality indicators, including descriptions of and key DRDP features relevant to each indicator.

Table 1. Correspondence of the DRDP (2015) to the 10 Quality Indicators

Quality Indicator	Description	Relevant Key Features of the DRDP (2015)
1. Alignment	Specifies how the content of the DRDP (2015) corresponds to the state's expectations for early learning and related content developed by the CDE	• Corresponds to state early learning foundations (standards) • Is derived from the child development research literature • Is integrated with the other components of the CA-ELDS
2. Acceptability	Specifies the extent to which (a) the assessment has relevant content that is "considered worthwhile and acceptable" to parents and professionals; (b) the administration procedures are acceptable to teachers, administrators, and parents; and (c) the instrument detects changes that are noticeable and apparent to those who are familiar with the child	• Enables the SED to meet federal reporting requirements to OSEP • Meets the requirements of Head Start and the HSELOF • Enables state-level reporting on the ELCD's progress in supporting early learning and development for children • Is supported via professional development to instrument users • Is readable, accessible, and usable

Quality Indicator	Description	Relevant Key Features of the DRDP (2015)
3. Authenticity	Refers to the extent to which behaviors assessed are naturally occurring (not tested) and observable in familiar environments by familiar people	Is used to assess children's knowledge, skills, and behaviors that are • observable, measurable, and documented on an ongoing basis • demonstrated, as part of a high-quality early learning curriculum, throughout daily activities and routines familiar to the child and likely to be observed across settings and programs • evident to assessors who know the children well and can include information provided through communication with parents and other teachers
4. Cultural and Linguistic Appropriateness	Refers to the extent to which the diverse cultural and linguistic characteristics of the population to be assessed are considered throughout instrument development and potential sources of bias are addressed	• Is appropriate for use with children from the broad range of cultural backgrounds represented within CDE-funded programs • Is appropriate for use with children whose families use languages other than English • Is supported by additional resources for linguistically diverse assessors
5. Multifactors	Refers to the extent to which measure ratings would be informed by various sources of evidence gathered across settings, on multiple occasions, and through a variety of methods	• Has measure ratings that are informed by multiple sources of evidence • Has measure ratings that are informed by evidence gathered on multiple occasions • Supports multiple methods for gathering and documenting evidence
6. Sensitivity	Specifies the extent to which the DRDP (2015) domains and measures were designed to detect differences in development and learning, as well as progress over time for both children who are	• Detects differences in development and learning within each domain • Detects changes in growth over time for individual children

Quality Indicator	Description	Relevant Key Features of the DRDP (2015)
	typically developing and children with disabilities	(differences in scores over time) • Detects differences in development and learning between groups of children
7. Universal Design	Refers to the extent to which principles were applied during the development of the DRDP (2015) to ensure the appropriateness of the instrument for all children, including those with disabilities and other special needs	During instrument development, • considered the entire population of children to be assessed with the instrument • excluded potential construct-irrelevant cognitive, sensory, emotional, and physical barriers • was reviewed for potential sources of bias related to children with disabilities • was designed to be amenable to accommodations
8. Utility	Refers to the extent to which the instrument supports the use of assessment results to guide instructional and program planning for individual children and groups of children	• Reports information about children's developmental progress based on psychometrically valid and reliable evidence for each domain • Has reports that were designed to facilitate curriculum planning and inform program and support services for individual children and for groups of children, including the development of goals that are included in IFSP and IEP planning • Has reports that support communication with family members about individual children's learning and development • Can be used for reporting on OSEP child outcomes
9. Validity	Refers to the extent to which the DRDP (2015) "measures what it purports to measure" and "results support meaningful inferences for	• Adheres to professional standards for validity with regard to content validity, response processes, internal

Quality Indicator	Description	Relevant Key Features of the DRDP (2015)
	certain intended purposes" (National Research Council 2008, 427)	structure, relations to other variables, and consequences of assessment (including fairness)
10. Reliability	Refers to the extent to which the DRDP (2015) provides for consistent measurement	• Adheres to professional standards for score reliability with regard to internal consistency and interrater reliability

IEP = individualized education program; IFSP = individualized family service plan

In conclusion, the DRDP (2015) provides for valid and reliable assessment of individual children's progress in key areas of development identified by California's early learning foundations, child development research literature, and OSEP's child outcomes. A tool designed for observing children's natural engagement in learning, it is an authentic assessment, supported by professional development, and can detect small differences in development over time. It was designed to be used with all children, including children with disabilities and children who are culturally and linguistically diverse; potential biases in assessment for a particular group of children were addressed during instrument development. The results of the DRDP support communication with families and curriculum planning by early childhood teachers for individual children and groups of children. In addition, results can be aggregated to inform program, agency, and state reviews of progress toward meeting goals and outcomes over time. Evidence that the DRDP (2015) meets the criteria specified for each indicator in table 1 is provided throughout the DRDP Technical Report.

About This Document

The purpose of this document is to outline the technical properties of the *Desired Results Developmental Profile (2015): An Early Childhood Developmental Continuum* (CDE 2017). These properties stem from the specifications that guided the development of the DRDP (2015), to produce a statewide early childhood assessment. In other words, this document describes criteria for a high-quality early childhood assessment, presented within 10 indicators, and provides evidence for how the DRDP (2015) meets the criteria for each of the indicators.

The content of this document is organized into six sections. The first section (1.0) provides an *introduction* to the development of the DRDP (2015). The second section (2.0) describes the initial *considerations* during instrument development, including alignment, constructs, measurement model, and design. The third section (3.0) provides definitions of each of the *quality indicators*, along with descriptions of the criteria for meeting each of the indicators and evidence for how the DRDP (2015) meets the criteria. The fourth section (4.0) provides information about the *research* studies for the DRDP. The final two sections, Appendices (5.0) and References (6.0), support the information presented in this report.

1.0 Introduction

The Desired Results Developmental Profile (DRDP) (DRDP [2015]) is an observational assessment instrument developed by the California Department of Education (CDE) for all young children from early infancy to kindergarten entry participating in state-funded, early childhood programs (CDE 2017). Information from the DRDP (2015) is used to describe the progress of children's development and learning across time for individual and groups of children (formative assessment).[1] The DRDP also provides for valid and reliable assessment and reporting of children's cumulative progress at a designated point in time (summative assessment).[2]

When used formatively, the DRDP (2015) facilitates the production of developmental profiles for each child and for groups of children across the major domains of learning and development. It is designed for teachers to observe, document, and reflect on the learning, development, and progress of all children in an early childhood setting. Within these contexts, the DRDP provides teachers and special educators with information about what children know and can do in early childhood settings and within adult-planned learning activities. When used summatively, the DRDP facilitates aggregate reporting of how well children's cumulative learning and development at a designated point in time (e.g., when children exit special education

[1] Formative assessment is defined as an "assessment designed to monitor progress toward an objective and used to guide curricular and instructional decisions" (National Research Council 2008, 425).

[2] Summative assessment is defined as an "assessment that typically documents how much learning has occurred at a point in time; its purpose is to measure the level of child, school, or program success" (Association for Supervision and Curriculum Development 2008, as cited in National Research Council 2008, 427).

services) has been supported through special education services or through statewide efforts and initiatives to support early learning for all children.

Use of the DRDP (2015) is required with children participating in early childhood settings funded through two CDE divisions: the Early Learning and Care Division (ELCD) and the Special Education Division (SED). The ELCD serves a large population of young children throughout the state who are dual language learners and who are from families with low incomes. The SED serves a portion of the state's population of infants and toddlers with individualized family service plans (IFSPs) and preschool-aged children with individualized education programs (IEPs). Even as the authors of the DRDP (2015) considered the diverse characteristics of the populations with whom the instrument was intended to be used, describing early learning progressions that reflect the child development research literature for typically developing children was an important goal.

In 2011, the CDE had three early childhood DRDP assessment instruments: the DRDP-IT© 2010, the DRDP-PS© 2010, and the DRDP *access* for children with IEPs. As part of an intra-agency collaboration, the ELCD, the SED, and their contractors[3] embarked on a project to consolidate the three separate early childhood instruments into a single observational assessment continuum from early infancy to kindergarten entry (CDE 2017). This effort resulted in the single DRDP (2015) instrument for use in the field for all children, birth-to-kindergarten age. The goals of this collaborative project

[3] The DRDP contractors for the ELCD were the WestEd Center for Child and Family Studies and the University of California Berkeley Evaluation and Assessment Research Center. The DRDP contractor for the SED was the Desired Results Access Project at the Napa County Office of Education.

were to design the DRDP (2015) to be aligned to the CDE early learning and development foundations,[4] to satisfy state and federal accountability requirements, and to assess the developmental levels and progress of infants, toddlers, and preschool-aged children, essentially birth to kindergarten entry.[5]

Uses of the Instrument

There are multiple uses for the DRDP (2015). Assessment information gained from using the DRDP is intended to support teachers with planning next steps for scaffolding young children's learning in key areas identified by California's learning foundations. Teachers and administrators can use the data to gauge the status and progress of children's development and learning in an effort to inform instructional and programming decisions in support of individuals and groups within the programs. In addition, teachers may communicate with families about the results of the DRDP (2015) as one part of larger conversations about supporting children's learning and development. Furthermore, results are aggregated both for the SED's state and federal reporting of progress over time for children with IFSPs and IEPs and for the ELCD's state-level reporting of children's learning and development in relation to early learning goals.

[4] California's early learning foundations include the Infant/Toddler Learning & Development Foundations (CDE 2009) and all three volumes of the California Preschool Learning Foundations (CDE 2008, 2010b, 2012).

[5] The DRDP-K, a continuation of the DRDP (2015) continuum, was developed by the ELCD for use with children in kindergarten settings. Technical properties of the DRDP-K are provided elsewhere and not addressed in this document.

Terms Used Throughout This Document

DRDP (2015)

The terms *DRDP (2015)* and *DRDP* refer to the entire assessment instrument, including measures that are rated and the user's guide that resides at the front of the instrument. Both terms are used interchangeably throughout this document.

The term *DRDP (2015) Infant/Toddler View* refers to the domains, measures, and developmental levels that are intended for use with children in infant/toddler programs. For more information about the domains and measures included in this view and when it is used, refer to *Desired Results Developmental Profile (2015): An Early Childhood Developmental Continuum* (CDE 2017).

The term *DRDP (2015) Preschool View* refers to the domains, measures, and developmental levels that are intended for use with children in preschool programs. For more information about the domains and measures included in this view and when it is used, refer to *Desired Results Developmental Profile (2015): An Early Childhood Developmental Continuum* (CDE 2017).

Teachers

The term *teachers* in this document refers to teachers in early childhood programs, including infant care teachers in CDE-funded infant/toddler programs; teachers in CDE-funded preschool programs, including California State Preschool Programs and Head Start; staff in Family Child Care Home Education Network Programs who complete the DRDP (2015) on behalf of family child care home providers; and special education teachers and service providers working in CDE local education agencies.

Infant/Toddler and Preschool Settings

The term *infant/toddler setting* refers to settings that are intended to support the learning and development of children from birth to 36 months of age and may include CDE-funded infant/toddler programs, family child care homes, or any other settings where Part C[6] special education services are provided.

The term *preschool setting* refers to settings that are intended to support the learning and development of preschool-aged children and may include CDE-funded programs, family child care homes, or any other settings where Part B[7] special education services are provided.

Children, Parents, and Families

The term *children* refers to all children from birth to kindergarten entry in early childhood settings funded by the ELCD or SED.

The term *parent* refers to a biological parent, adoptive parent, stepparent, foster parent, caretaker relative, legal guardian, domestic partner of the parent, or any other adult living with a child who has responsibility for the care and welfare of the child.

The terms *family members* and *families* refers to parents and other adults who may, at times, have responsibility for the care and welfare of the child and who may provide information about or support for children's learning and development.

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[6] The Individuals with Disabilities Education Act defines Part C as including "provisions related to formula grants that assist states in providing early intervention services for infants and toddlers birth through age two and their families." For more information, refer to https://sites.ed.gov/idea/statuteregulations/.

[7] The Individuals with Disabilities Education Act defines Part B as including "provisions related to formula grants that assist states in providing a free appropriate public education in the least restrictive environment for children with disabilities ages three through 21" (including preschool). For more information, refer to https://sites.ed.gov/idea/statuteregulations/.

Timeline for Development of the DRDP (2015)

The development of the DRDP (2015) instrument began in fall 2011. Content development occurred from fall 2011 through summer 2014 through an iterative process of writing, review, and refinement by child development research experts and contractors. In fall 2012, the contractors engaged additional experts, from the areas of assessment, special education, higher education, and cultural and linguistic diversity, to review and provide feedback on the draft instrument. Feedback was used to refine the DRDP prior to a pilot study, which was conducted in spring 2013. Feedback from the pilot study was used to further refine the DRDP, which, once refined, was then used in a field study in spring 2014. Cognitive interviews were conducted with teachers during the field study, and data for the calibration studies was collected in fall 2014 and spring 2015. Statewide implementation by ELCD and SED programs began in fall 2015.[8] Additional studies and activities were conducted throughout this time frame and since then to further support instrument development and use.

The DRDP Collaborative

The DRDP Collaborative is an intra-agency collaboration between two CDE divisions, the ELCD and the SED, and their contractors, WestEd Center for Child and Family Studies, the University of California Berkeley Evaluation and Assessment Research Center (UC BEAR), and the Desired Results Access Project at the Napa County Office of Education. The whole Collaborative met at least monthly via webinar and twice annually in person for the duration of the project to plan and coordinate

[8] The instrument was implemented by "early adopters" in ELCD-funded programs during calibration study data collection in fall 2014 and spring 2015.

instrument development and research activities. The activities of the DRDP Collaborative were carried out through four work groups: (1) Development Group, (2) Examples Review Group, (3) Research Group, and (4) Reports Development Group.

Representatives from WestEd and the Desired Results Access Project, which comprised the DRDP Collaborative Development Group, reviewed the draft measures; revised for cohesiveness of presentation of content both across domains and across measures within each domain; and revised the definitions and descriptors for each developmental level (the group applied a consistent methodology for how descriptors were written). As part of this review, the Development Group made sure that each developmental level of each measure was qualitatively distinct and clearly reflected the progression of children's development across each measure's developmental levels.

Representatives from the CDE, the Desired Results Access Project, UC BEAR, and WestEd comprised the DRDP Collaborative Examples Review Group. Once the definitions and descriptors were finalized for each measure, this team reviewed and revised examples for each developmental level for each measure of the DRDP (2015) to make sure that examples represented readily observable behaviors in early childhood settings. Examples were reviewed for universal design, appropriateness, and broad representation of the experiences of all children in CDE-funded programs, including children with disabilities and children from culturally and linguistically diverse backgrounds.

Representatives from UC BEAR, WestEd, and the Desired Results Access Project comprised the DRDP Collaborative Research Group. This team was responsible for designing and implementing all research activities, including determining appropriate

methodologies, defining the samples, and conducting analyses. The Research Group summarized results from research studies and presented them to the Development Group to inform continued refinements to the instrument.

Representatives from the Desired Results Access Project, UC BEAR, and WestEd comprised the DRDP Collaborative Reports Development Group. This team was responsible for designing and developing accurate and useful reports that include psychometrically valid and reliable domain-scaled scores. The reports were designed to support the use of DRDP results for (a) curriculum and program planning and (b) development of IFSP and IEP learning goals. The Reports Development Group also developed written guidance to support interpretation of the reports by teachers and administrators.

2.0 Considerations During Instrument Development

The overarching goal guiding the development of the DRDP (2015) was to have one overall assessment approach for all children in ELCD and SED programs that provided flexibility in how the assessment is used to ensure developmentally appropriate assessment. The initial decision to develop two views for the DRDP (2015)—(1) the Infant/Toddler View and (2) the Preschool View—was the result.[9]

The following key principles guided the development of the DRDP (2015) in that the assessment should

1. provide a general orientation to facilitating development and learning in key domains at each stage and age;
2. focus on qualitative differences within development in major developmental domains;
3. focus on the child's current level of development rather than on what the child has not yet mastered, while at the same time taking interest in "emerging" or partially mastered knowledge and skills that can further contribute to the curriculum planning process;
4. help teachers track the developmental progress of individual children;
5. be universally designed for use with all children;
6. be reflective of children's cultural and linguistic experiences;
7. be completed by teachers and adults who are familiar with the child;

[9] In fall 2016, the Preschool Fundamental View was released. This view included a subset of domains from the original Preschool View. The original Preschool View was renamed in fall 2016 to "Preschool Comprehensive View."

8. consist of observing naturally occurring learning and behavior rather than setting up situations to observe and record a child performing an isolated skill;
9. promote an observation and documentation process that supports, rather than interferes with, classroom daily interactions, routines, and activities; and
10. consist of a continuum that spans early infancy up to kindergarten entry (full continuum).

To realize the overarching goal and adhere to these 10 principles, four key considerations, specified below, provided the context and the criteria to be satisfied in the development of the DRDP (2015):

- CDE content alignment priorities
- Construct considerations
- Measurement model considerations
- Design considerations

Content Alignment Priorities

CDE Content Alignment Priorities

California's Early Learning and Development System (CA-ELDS) provides the context for the formative use of the DRDP instrument by CDE-funded programs. The CA-ELDS provides an integrated set of research and evidence-based resources that support early learning and development through recommended practices in early education. It consists of five components: (1) early learning foundations, (2) curriculum frameworks, (3) assessment of children's progress, (4) program guidelines and related resources, and (5) professional development. Refer to appendix 1 for a description of the CA-ELDS.

The DRDP (2015) represents the third CA-ELDS component: assessment of children's progress. The CDE's Infant/Toddler Learning & Development Foundations (ITLDF) and the Preschool Learning Foundations (PLF), together making up the first or core CA-ELDS component, provided the research base for the DRDP (2015), which, in turn, provided a tool based on the same research used for the foundations for documenting an individual child's progress in key learning and developmental areas described by the foundations. The domains of measurement in the DRDP generally align with the domains addressed by the foundations. Refer to appendix 2 for domain correspondence between the DRDP and the foundations.[10]

The curriculum frameworks, the second CA-ELDS component, guide planning for individual children and groups of children based on all domains of learning presented in the DRDP (2015). Program guidelines and related resources, the fourth CA-ELDS component, provide a framework for CDE programs to support children's learning and development in the domains covered by the DRDP. CA-ELDS professional development opportunities, the fifth CA-ELDS component, support CDE programs with implementing the DRDP.

Federal Alignment Priorities

Alignment to Office of Special Education Programs Child Outcomes

The Individuals with Disabilities Education Improvement Act 2004 (IDEA 2004) included a heightened emphasis on accountability with its focus on improving

[10] Detailed summaries of the correspondence between the DRDP and the foundations are available at https://www.desiredresults.us/drdp-2015-aligned-california-foundations. The content of the DRDP was derived from the child development research literature. Domain research summaries for the DRDP are available for download at https://www.desiredresults.us/research-summaries-drdp-2015-domain.

educational results for children with disabilities. The provisions of IDEA 2004 direct states to develop a state performance plan (SPP) and to submit annual performance reports (APRs) related to the indicators specified in the SPP. Each SPP indicator must have baseline data and measurable and rigorous targets.

One SPP indicator requires states to report on the percentage of infants and toddlers with IFSPs or preschool-aged children with IEPs who demonstrate improved

- positive social and emotional skills (including social relationships);
- acquisition and use of knowledge and skills (including early language and communication as well as early literacy); and
- use of appropriate behaviors to meet their needs.

The child outcomes for early intervention programs (children aged birth to three years) are reported in Indicator 3 of the Part C SPP/APR, and the child outcomes for early childhood special education programs are reported in Indicator 7 of the Part B SPP/APR. The Office of Special Education Programs (OSEP) then determines how well the state's programs have helped children in early intervention and early childhood special education programs make progress in these three key outcome areas of early learning and development. The SED uses the information to determine whether local school district programs are making a positive difference for young children in California and their families.

Alignment to Head Start Early Learning Outcomes Framework

The Head Start Early Learning Outcomes Framework: Ages Birth to Five (HSELOF) presents five broad areas of early learning, referred to as central domains. The framework is designed to show the continuum of learning for infants, toddlers, and

preschoolers. It is grounded in comprehensive research around what young children should know and be able to do during their early years.[11]

The HSELOF five central domains are as follows:

1. Approaches to Learning
2. Social and Emotional Development
3. Language and Literacy
4. Cognition
5. Perceptual, Motor, and Physical Development

The five central domains apply to both the infant/toddler and preschool-age periods, with greater differentiation of domains delineated for preschool children. Refer to appendix 3 for a graphic depicting the five central domains of the HSELOF as they are applied to the infant/toddler and preschool-age periods.

Constructs

The DRDP (2015) instrument operationalizes developmental continua from early infancy to kindergarten entry into eight domains of development. A domain represents a distinct area of learning and development for children defined by developmental theory and early childhood practice. Each domain is assessed using multiple measures that each represent the individual assessment items of the DRDP and consist of a sequence of developmental levels or a progression along which a child's observed knowledge, skills, and behaviors are assessed. Refer to appendix 4 for a list of DRDP (2015) measures within each domain.

[11] For more information about the HSELOF, see https://eclkc.ohs.acf.hhs.gov/school-readiness/article/head-start-early-learning-outcomes-framework.

The names of the eight overarching DRDP (2015) domains, their acronyms, and how they are operationalized, are provided below.

Approaches to Learning–Self-Regulation

The measures of the Approaches to Learning–Self-Regulation (ATL-REG) domain assess two related areas recognized as important for young children's school readiness and success: approaches to learning and self-regulation. These areas have been combined into one domain because of the strong connections between them. The approaches to learning skills include attention maintenance, engagement and persistence, and curiosity and initiative. The self-regulation skills include self-comforting, self-control of feelings and behavior, imitation, and shared use of space and materials.

Social and Emotional Development

The measures of the Social and Emotional Development (SED) domain assess children's developing abilities to understand and interact with others and to form positive relationships with nurturing adults and their peers. The SED domain includes identity of self in relation to others, social and emotional understanding, relationships and social interactions with familiar adults, relationships and interactions with peers, and symbolic and sociodramatic play.

Language and Literacy Development

The measures of the Language and Literacy Development (LLD) domain assess the progress of all children in developing foundational language and literacy skills. The LLD domain includes receptive and expressive language, communication, literacy, comprehension of text, concepts about print, phonological awareness, letter and word knowledge, and emergent writing. These skills can be demonstrated in any language

and by any mode of communication. Language and literacy skills in a child's first language form the foundation for learning English. Therefore, dual language learners may demonstrate knowledge and skills in their home language, in English, or in both languages.

English-Language Development

The measures of the English-Language Development (ELD) domain assess the progress of children who are dual language learners (children whose home language is one other than English) in learning to use English. The developmental progression described in the four ELD measures is related to the child's experiences with English (amount of exposure), not the child's age. The ELD measures are completed only for preschool-aged dual language learners.

Cognition, Including Math and Science

The Cognition, Including Math and Science (COG) domain focuses on observation, exploration of people and objects, and investigation of objects and concepts. The measures in this domain include spatial relationships, cause and effect, classification, number sense of quantity, number sense of math operations, measurement, patterning, shapes, inquiry through observation and investigation, documentation and communication of inquiry, and knowledge of the natural world.

Physical Development–Health

The measures of the Physical Development–Health (PD-HLTH) domain assess motor development and the development of routines related to personal care, safety, and nutrition. This domain includes measures of perceptual-motor skills and movement concepts, gross locomotor movement skills, gross motor manipulative skills, fine motor

manipulative skills, active physical play, nutrition, safety, and personal care routines (hygiene, feeding, dressing).

History–Social Science

The History–Social Science (HSS) domain focuses on learning about the expectations of social situations, how to participate within a group, and the relationship between people and the environment in which they live. The measures in this domain include sense of time, sense of place, ecology, conflict negotiation, and responsible conduct.

Visual and Performing Arts

The Visual and Performing Arts (VPA) domain focuses on awareness and engagement in four areas of artistic expression. The knowledge or skill areas measured in this domain include visual art, music, drama, and dance.

Measurement Model Considerations

The overarching goal in developing the DRDP (2015) was to have valid and reliable assessments of individual children's progress in key areas of development identified by the early learning foundations. Once established, the results would be used for formative purposes (e.g., to support curriculum planning by early childhood teachers for individual children and groups of children and to support program planning by early childhood administrators). In addition, results would be aggregated to inform program, agency, and state reviews of progress toward meeting goals and outcomes over time. This section discusses the measurement approach for producing domain-scaled ratings

and scores for the DRDP (2015), including details about the rating process and the statistical model for score estimation.

As discussed in the previous section, the assessment domains for the DRDP (2015) were determined by California's early learning foundations, the child development research literature, and OSEP's child outcomes. The key areas of children's learning and development from the early learning foundations are grouped into assessment domains, which are latent constructs that cannot be directly observed. However, children's specific behaviors, knowledge, and skills can be observed and rated in a systematic fashion. A measurement goal for the DRDP (2015) was to construct the assessment in a manner that would support teachers' abilities to consistently assign ratings based on children's observable displays of behavior, knowledge, and skills.

The desired measurement outcome for the DRDP was a methodology for consistent production of valid and reliable estimates of children's developmental progress within each domain, using information gathered from individual measures about children's knowledge, skills, and behaviors associated with that domain. In addition, the assessment, which reflects the child development research literature, needs to be readily interpretable by all early childhood teachers using the DRDP. To do so, measures needed to be presented in a simple and straightforward manner that clearly demonstrates how learning and development in each area progresses from early infancy through kindergarten entry.

This rationale led to the selection of a measurement approach, item response theory (IRT), that treats the assessment as an interaction between a child's ability and a

measure's difficulty.[12] As applied to the DRDP, the IRT indicator of "child ability" is an individual child's set of ratings for measures in a domain. "Measure difficulty," as related to the DRDP, is the estimated level of challenge required to progress through each of the levels represented in a measure's developmental progression or continuum.

A beneficial result of using IRT is that child ability estimates and measure difficulty estimates fall on the same interval-level scale for each domain. The development of an interval-level scale, called the "domain scale," is accomplished through a process of model calibration that produces model parameter estimates of item-difficulty and item-stage thresholds. In this way, a numerical approximation of the latent construct can be obtained in the form of DRDP *domain-scaled scores*. Thresholds between the developmental levels on the domain scale are determined based on the results from the calibration process.

These domain-scaled scores and their associated standard errors, produced by IRT, enables reporting of information about development for individual children and groups of children at given points in time and over time. Domain-scaled scores enable comparisons of children's progress over time, as well as aggregated reporting.[13] Aggregation of domain ratings is possible as a direct result of the conversion of ordinal individual measure ratings to interval-level domain-scaled scores. *Domain ratings*, the qualitative descriptions of the DRDP (2015) domain-scaled scores, are provided to the field (teachers, special educators, parents, program administrators).[14]

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[12] Introductions to IRT can be found in Hambleton, Swaminathan, and Rogers (1991) and Embretson and Reise (2000).

[13] Standard errors are not provided in group-level reporting.

[14] Medians serve as the method for aggregating domain-scaled scores for groups of children.

Five elements of the DRDP measurement approach discussed in this section are (1) the rating process, (2) the level of measurement, (3) the measurement model, (4) construct multidimensionality, and (5) a continuum rating scale.

Rating Process

The process for using the DRDP (2015) begins with reflection about children's current knowledge and skills based on evidence collected in natural settings (e.g., early care and education classrooms or home). Evidence of children's knowledge and skills is gathered through teacher observations of children's behaviors, family observations communicated to teachers, and examples of children's work.

The measures of the DRDP (2015) are presented to raters in a simple and straightforward manner, clearly demonstrating how learning and development in each area typically progress from early infancy to kindergarten entry. Each measure consists of multiple parts, including a definition, developmental levels, descriptors, and examples, to guide the users in their selections of a rating option for that measure. Definitions specify the aspects of development described in each measure's continuum. The levels within each measure represent ordered and qualitatively distinct points along the developmental progression or continuum that range from earlier to later levels of development. Descriptors define the behaviors, knowledge, and skills characteristic of typical child development at each level. Examples focus the raters' attention on specific observable behaviors that a child may demonstrate to indicate mastery of a particular developmental level.

The instrument was designed such that those who know the children well can identify the descriptor that best describes the child's current level of mastery, using the

examples as a guide. Therefore, it is important to note that the examples provided in the DRDP (2015) instrument are not the only ways for a child to demonstrate mastery at a given developmental level. Each example represents *one of many possible ways* that a child may demonstrate the behaviors, knowledge, or skills that indicate mastery at a given developmental level.

Furthermore, because every example may not specifically describe every child's experience, the collection of instrument examples is intended to represent a sampling of the broad range of knowledge, skills, and behaviors that can be observed in an early childhood setting and to determine a rating for a particular child as it relates to the opportunities and experiences available for that child. It is expected that, over time, teachers and service providers will accumulate additional examples of their own and deepen their understanding of each developmental level through their continued use of the instrument.

Level of Measurement

As stated previously, when used formatively, the DRDP (2015) facilitates the production of developmental profiles for each child and for groups of children across the major domains of learning and development. As such, the instrument was designed to represent children's progress along continua in each early learning and development domain. Fundamental to this approach was the intention to construct the DRDP (2015) so that it describes qualitatively distinct levels of development along each continuum.

The decision to use qualitatively distinct levels was rooted in an understanding that children's learning and development could be accurately described as sequences of distinct levels that build upon each other. This technique places the focus of each

rating on detecting the child's behaviors, knowledge, and skills that are indicative of development at each level, rather than on more subjectively identifying the quality with which the behaviors, knowledge, and skills were executed. In addition, qualitatively distinct levels enable teachers to evaluate each level using a binary decision-making process—that is, "has the child mastered this developmental level?"

Measurement Model

The DRDP (2015) was developed based on principles of the BEAR Assessment System (BAS; Wilson 2005; Wilson and Sloane 2000). The BAS is an integrated approach to creating assessments that provide meaningful interpretations of a child's progress relative to carefully defined learning and development goals. Using this approach, each DRDP domain was designed to describe qualitative descriptors of knowledge, skills, or behaviors that were organized into developmental levels along an ordered sequence. The qualitatively distinct levels were ordered from earlier levels of development to later levels of development within each measure of the instrument. The use of qualitatively distinct ordered developmental levels ensures that each DRDP measure supports ordinal measurement. Taken together, these qualitative, ordered ratings on each measure within a domain are combined through IRT modeling to produce one interval-level scale score for each domain (domain-scaled score).

Each measure in the DRDP (2015) is rated along an ordinal rating scale that represents a developmental continuum, and each measure is assigned to only one DRDP domain. The multidimensional structure of the DRDP (2015) was grounded in the multidimensional random coefficients multinomial logit (MRCML) model (Adams, Wilson, and Wang 1997). The MRCML approach is applied when multiple latent

constructs are present within a single overarching latent framework, as is the case with the DRDP.

The MRCML is an extension of the Rasch Model (Rasch 1960). Thus, as applied to the DRDP, the MRCML model was specified as a between-item multidimensional partial credit model (PCM), which is an extension of the unidimensional PCM (Masters 1982). The PCM is appropriate for the DRDP because it can be applied when (a) there are varied numbers of developmental levels across measures that are grouped together within domains, (b) the measures are rated along an ordinal scale, and (c) the ratings are converted to interval-level domain-scaled scores.

One major advantage of the IRT measurement approach is that it allows for different developmental levels on a measure to vary in amount of challenge or complexity (allows for different probabilities for being rated at each level of a measure). As applied to the DRDP, this means that knowledge and skills that typically develop earlier or later than other knowledge and skills are accounted for in the quantitative models that produce the domain-scaled scores.

The software program ConQuest 4 (Adams, Wu, and Wilson 2015) and the expected a posteriori (EAP) score estimation method were used to estimate children's DRDP domain scores. The resulting domain-scaled scores are the numeric representation of a child's level of development on the domain scale and are situated on the same scale as the measure and domain properties. Domain-scaled scores for individual children are the EAP estimates.

A child's true proficiency can never be perfectly known with any assessment tool. Thus, IRT provides standard error estimates for each scaled score for each child along

the same scale where the measure and domain properties reside. The MRCML produces estimates of standard errors that provide the range within which each child's true level of development is most likely to lie (for each domain). The EAP estimates and standard errors were produced using a Monte Carlo sampling technique through the application of the ConQuest modeling software.

In conclusion, the desired measurement outcome for the DRDP (2015) was to have a tool that consistently produces valid, reliable, and useful estimates of children's developmental progress within each domain, using information gathered from individual measures about children's behaviors, knowledge, and skills associated with that domain. The assessment, which reflects the child development research literature, needed to be readily interpretable by all early childhood teachers using the DRDP. To do so, measures were presented in a simple and straightforward manner that clearly demonstrates how learning and development in each area typically progresses for children from early infancy to kindergarten entry.

Construct Multidimensionality

As discussed previously, the framework for the DRDP (2015) specified eight latent constructs that describe children's development from early infancy to kindergarten entry and that correspond to the early learning foundations and are aligned to the OSEP child outcomes (ATL-REG, SED, LLD, ELD, COG, PD-HLTH, HSS, and VPA). During early childhood, children grow and learn in interrelated and integrated ways across developmental constructs (Institute of Medicine [IOM] and National Research Council [NRC] 2015); development across the constructs overlap: "they do not develop or

operate in isolation. Each enables and mutually supports learning and development in the others" (IOM and NRC 2015, 4-1).

Because of the integrated nature of development (growth and learning in one domain is highly related to or influenced by other domains), the measurement model for the DRDP can use the correlation between domains to increase the accuracy, or reliability, of measurement. The MRCML model, described earlier, is appropriate for the DRDP because the instrument consists of several latent constructs that are interrelated.

Continuum Rating Scale

As children grow and develop, their competencies become more differentiated, from general to more specific knowledge and skills, and some competencies require more developmental time[15] to master than others. Thus, the DRDP (2015) measurement approach allows the number of developmental levels across measures within a domain to vary to accommodate these considerations. A variable number of developmental levels across measures was an essential component in the construction of the DRDP to ensure that it would be a developmentally appropriate assessment.

The number of developmental levels provides for appropriate measurement of the competencies that vary across measures, depending on the knowledge, skills, or behaviors appropriate for the developmental continua for each measure. Broad developmental continua for each measure were purposefully constructed—measures can have as many levels as needed to sufficiently and appropriately describe the levels of learning related to that area of development. In this way, all children, from early

[15] "The role of developmental time in the dramatic unfolding of brain structure and function and the acquisition of concomitant human capacities has become increasingly important in explaining early development" (IOM and NRC 2015, 3–11).

infancy to kindergarten entry, could be appropriately placed somewhere on the continuum, minimizing floor and ceiling effects.

The specific qualitatively distinct levels of the DRDP are organized into four categories and two to three sub-categories, resulting in five to nine developmental levels for each measure. The four categories are Responding, Exploring, Building, and Integrating. The sub-categories of Earlier, Middle, and Later, provide further refinement within each of the four broader categories. The four broad categories, applicable sub-categories, and the definition of the four broad categories are presented below:

- *Responding (Earlier, Later)*: Knowledge, skills, or behaviors that develop from basic responses (through using senses and through actions) to differentiated responses. Children generally engage in back-and-forth interactions with familiar adults and communicate through nonverbal messages.
- *Exploring (Earlier, Middle, Later)*: Knowledge, skills, or behaviors that include active exploration including purposeful movement, purposeful exploration and manipulation of objects, purposeful communication, and the beginnings of cooperation with adults and peers. Children generally begin this period by using nonverbal means to communicate and, over time, grow in their abilities to communicate verbally or use other conventional forms of language.
- *Building (Earlier, Middle, Later)*: Knowledge, skills, or behaviors that demonstrate growing understanding of how people and objects relate to one another, how to investigate ideas, and how things work. Children use language to express thoughts and feelings, to learn specific early literacy and

numeracy skills, and to increasingly participate in small group interactions and cooperative activities with others.

- *Integrating (Earlier)*: Knowledge, skills, or behaviors that demonstrate the ability to connect and combine strategies to express complex thoughts and feelings, solve multistep problems, and participate in a wide range of activities that involve social and emotional, self-regulatory, cognitive, linguistic, and physical skills. Children begin to engage in mutually supportive relationships and interactions.

Note that these levels are defined by qualitative differences in the sophistication of children's learning and development as they progress along the continua, based on the research literature and informed by practice. The levels were not defined using an age-normative perspective, which would link each level to a certain "typical age." Rather, the approach used here is criterion referenced. Thus, the developmental age at which children typically master each level will most likely differ among domains. For example, a child may not be expected to master a level, such as Building Middle, at the same age across two domains at the same time.

The developmental levels of the ELD domain differ from the above categorizations and instead represent the developmental progression for the acquisition of English as a second language during the preschool years. The developmental levels for the ELD domain are Discovering Language, Discovering English, Exploring English, Developing English, Building English, and Integrating English.

A consideration for the developmental appropriateness of the DRDP (2015) was which knowledge and skills would be assessed for infants/toddlers and which would be

assessed for preschool-aged children. California's early learning foundations and the child development research literature guided the determination of measures for infants and toddlers and measures for preschool-aged children.[16] In many cases, the same measures applied to both groups of children (full continuum [FC] measures). Measures that were developed specifically for use with infants and toddlers (earlier development [ED] measures) do not have later developmental levels and reflect infant/toddler curriculum priorities for children's development and learning. Measures that were developed specifically for use with preschool-aged children (later development [LD] measures) do not have earlier developmental levels and reflect preschool curriculum priorities for children's development and learning.

This consideration resulted in three forms of measures used throughout the DRDP (2015). ED measures describe the development that typically occurs in infant/toddler and early preschool years. LD measures describe the development that typically occurs in the preschool years and early kindergarten. FC measures describe the development from early infancy to early kindergarten. Refer to table 2 for the developmental levels included in each of the three forms of measures.

Table 2. DRDP (2015) Rating Scale Levels

Responding		Exploring			Building			Integrating
Earlier	Later	Earlier	Middle	Later	Earlier	Middle	Later	Earlier
ED	ED	ED	ED	ED	ED			
		LD	LD	LD	LD	LD	LD	LD
FC	FC	FC	FC	FC	FC	FC	FC	FC

[16] Domain research summaries for the DRDP are available for download at https://www.desiredresults.us/research-summaries-drdp-2015-domain.

Design Considerations

The design of the DRDP (2015) instrument was intended to support teachers in making accurate ratings and to use the instrument formatively. The assumption of accurate ratings is, of course, also necessary for using the DRDP results for summative purposes.

Five design elements were considered for the DRDP (2015) to support accurate ratings and ease of use by teachers: (1) format and layout, (2) developmental levels, (3) descriptors, (4) examples, and (5) determination of ratings.

When used formatively, documenting an individual child's learning and development deepens a teacher's understanding of how to support that child. As teachers observe and document how children engage in learning, especially during child-initiated play, teachers simultaneously reflect on what they observe; document significant aspects through, for example, anecdotal notes or photos; and begin to interpret each child's knowledge, skills, and behaviors. Ongoing observation, reflection, and documentation occur throughout each day. Teachers continually gain insights and find new ways to connect with the children's developing competencies, expand children's thinking, and encourage further exploration of an emerging idea or ability. In addition, the day-to-day documentation of children's learning experiences becomes the source material for periodic completion of the DRDP assessment to gain an understanding of children's learning and development.

Format and Layout

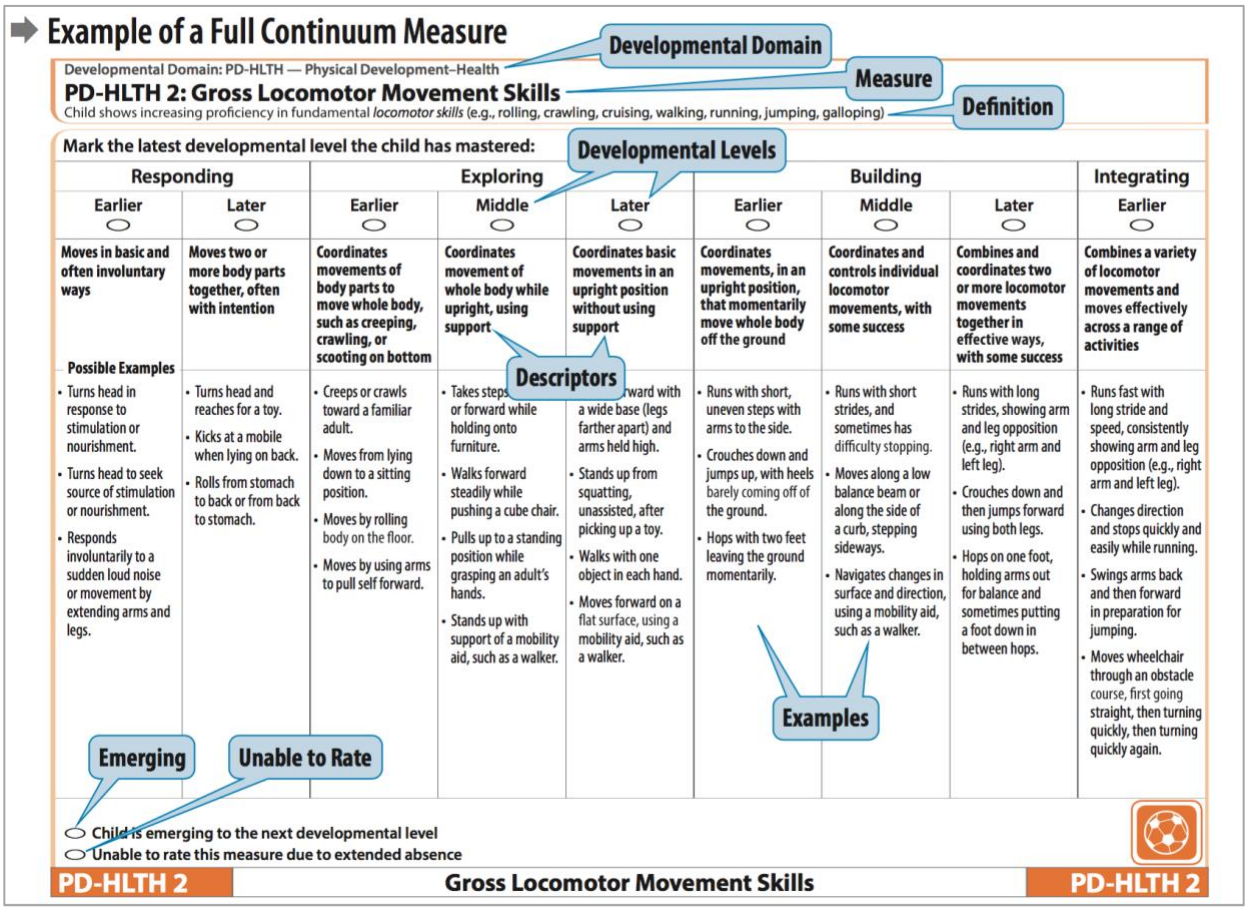
The format and layout of the paper-based instrument is intended to support teachers in making accurate ratings and to support formative uses of the instrument

(refer to figure 1). As such, all the criteria for assigning a rating is provided on each measure page; the rubric is built into the rating process.

Overall, the format is intended to support developmentally appropriate and formative practice. For example, the horizontal layout organizes Earlier and Later levels of development on an ordered continuum, which presents development as a progression from basic responses to more differentiated skills rather than a hierarchy in which some skills could be interpreted as “better” than earlier developing skills. The developmental levels were selected to convey developmental meaning by using familiar words (e.g., responding, exploring, building, integrating) that positively portray each child’s current level of learning and development. In this way, each level describes a distinct aspect of development to support accurate ratings and to communicate about children’s development in a strengths-based way with parents and others.

Each measure is a research-based developmental continuum representing a developmental construct that aligns to the CDE’s foundations. As mentioned earlier, the foundations identify the content of the CDE’s early learning and development system; thus, alignment to the foundations gives each component a common focus and makes the entire system coherent. Aligned DRDP instruments make possible valid and reliable assessment of the progress of individual children that connects with the focus of intentional efforts to support learning and development. Through regular use of the DRDP (2015), teachers gain increased knowledge of child development, as expressed through the measures’ research-based developmental continua.

Figure 1. Example of the Layout and Elements of the Paper-Based Instrument Measure Page



Developmental Levels

Criteria for the developmental levels were established and followed during their construction for each measure. The names of the developmental levels provide meaningful information to assessors and families and characterize a criterion-referenced developmental progression. They are intended to be value-neutral and only communicate information about each developmental level.

Descriptors

The descriptors provide meaningful information to assessors and families and authentically describe child development. Together, the collection of descriptors within

each measure comprise a developmental continuum of qualitatively distinct developmental levels supported by the child development literature.

Examples

Each descriptor includes several examples of behaviors that are consistent with that developmental level, demonstrate the use of adaptations, and reflect children with disabilities and the culturally and linguistically diverse children in California. Together, the examples for each developmental level represent a range of possible ways a child might demonstrate the descriptor for that level. Examples reflect knowledge, skills, or behaviors that may occur across different early childhood settings, including children's responses to specific communication from adults (e.g., asking questions, intentional instruction, conversations, and requests). For more detailed information, refer to appendix 5.

Determination of Ratings

Teachers assign measure ratings for individual children by selecting the level along the continuum that best describes each child's development that, at the time of the rating, was most consistently demonstrated across different settings, including evidence contributed by other people. A child may occasionally demonstrate knowledge, skills, or behaviors at an earlier or later developmental level, but in general the child demonstrates behaviors representative of one level. Children in all age groups may demonstrate mastery of the knowledge and skills of a developmental level using their home language.

If the child has mastered a developmental level but is also demonstrating some of the behaviors described for the next level (although not yet easily or consistently), the

child may be emerging to the next level. Teachers must rate the developmental level the child has mastered before indicating that the child is emerging to the next level. Indicating that the child is “emerging” to the next developmental level is an option that may be helpful to teachers in planning curriculum. However, it does not affect the measure rating. If the child is rated at the final level of the developmental continuum for a measure, “emerging” does not apply because the instrument does not include the next developmental level.

In some rare instances, the assessor may be unable to rate a child’s developmental level on a particular measure. For example, a child’s extremely inconsistent attendance may limit opportunities to observe the child’s behavior. In this case, the assessor may select “unable to rate” for that measure. It is expected that all measures in the DRDP instruments will be completed most of the time.

3.0 Quality Indicators Specified During the Development of the DRDP (2015)

Ten quality indicators were identified by members of the DRDP Collaborative as important to address throughout the development of the DRDP (2015). The selection of these indicators was guided by federal and state reporting requirements and published early childhood guidelines and psychometric standards for assessment (American Educational Research Association [AERA], American Psychological Association [APA], and National Council on Measurement in Education [NCME] 2014; National Association for the Education of Young Children [NAEYC] 2009; NRC 2008). These 10 quality indicators were intended to ensure that the instrument adheres to the standards and recommended practices for assessment in early childhood settings and is appropriate, as well as developmentally appropriate, for assessing all young children enrolled in ELCD and SED early childhood education programs.

The 10 quality indicators that guided the development of the DRDP (2015) are listed below:

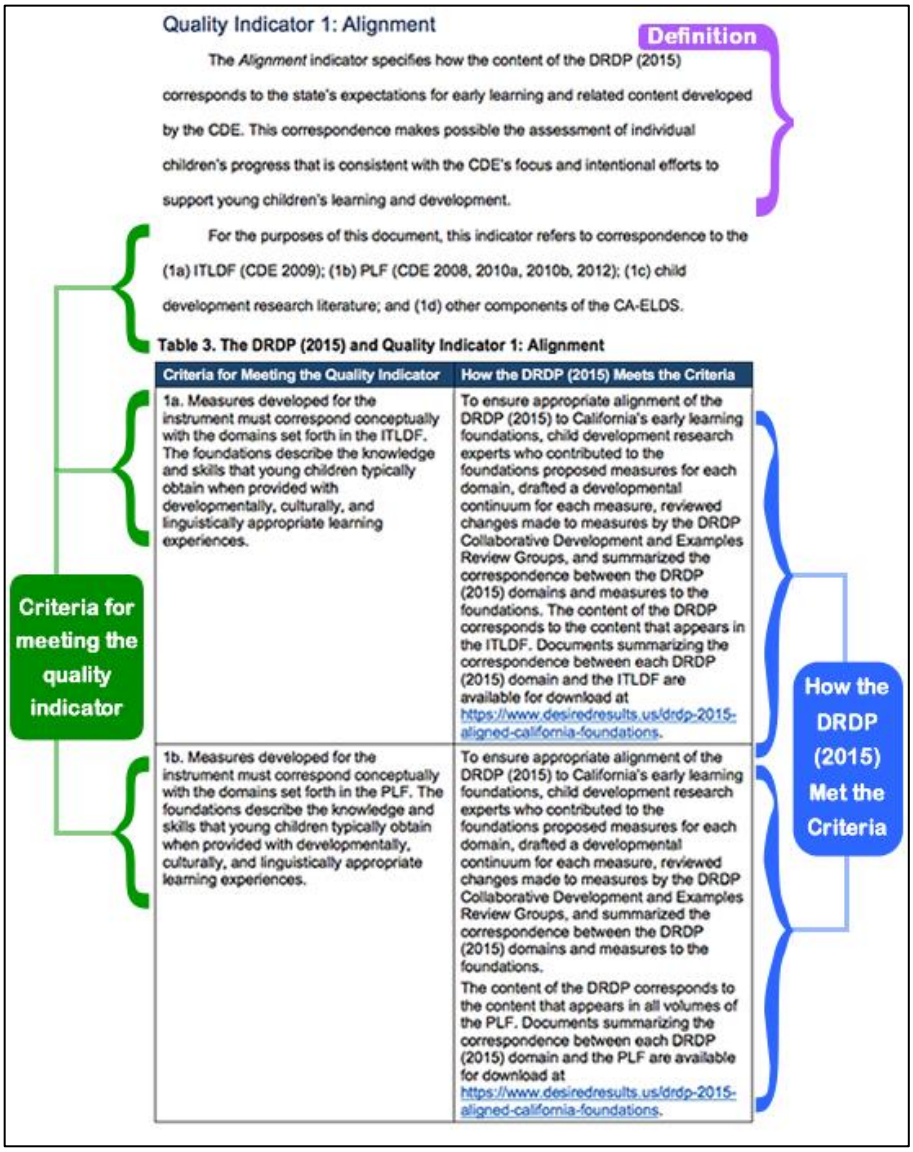
1. Alignment
2. Acceptability
3. Authenticity
4. Cultural and Linguistic Appropriateness
5. Multifactors
6. Sensitivity
7. Universal Design
8. Utility

9. Validity

10. Reliability

This section presents each of the 10 quality indicators, including definitions of each indicator, descriptions of the criteria for meeting each of the indicators, and evidence for how the DRDP (2015) meets each of the criteria. Figure 2 provides an example of the layout used for all indicators. It shows the definition of indicator 1, the criteria for meeting the indicator, and how the DRDP meets the criteria.

Figure 2. Definition, Criteria, and How the DRDP (2015) Meets Indicator 1 Criteria



Quality Indicator 1: Alignment

The *Alignment* indicator specifies how the content of the DRDP (2015) corresponds to the state's expectations for early learning and related content developed by the CDE. This correspondence makes possible the assessment of individual children's progress that is consistent with the CDE's focus and intentional efforts to support young children's learning and development.

For the purposes of this document, this indicator refers to correspondence to the (1a) ITLDF (CDE 2009); (1b) PLF (CDE 2008, 2010a, 2010b, 2012); (1c) child development research literature; and (1d) other components of the CA-ELDS.

Table 3. The DRDP (2015) and Quality Indicator 1: Alignment

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
1a. Measures developed for the instrument must correspond conceptually with the domains set forth in the ITLDF. The foundations describe the knowledge and skills that young children typically obtain when provided with developmentally, culturally, and linguistically appropriate learning experiences.	To ensure appropriate alignment of the DRDP (2015) to California's early learning foundations, child development research experts who contributed to the foundations proposed measures for each domain, drafted a developmental continuum for each measure, reviewed changes made to measures by the DRDP Collaborative Development and Examples Review Groups, and summarized the correspondence between the DRDP (2015) domains and measures to the foundations. The content of the DRDP corresponds to the content that appears in the ITLDF. Documents summarizing the correspondence between each DRDP (2015) domain and the ITLDF are available for download at https://www.desiredresults.us/drdp-2015-aligned-california-foundations.
1b. Measures developed for the instrument must correspond conceptually with the domains set forth in the PLF. The foundations describe the knowledge and skills that young children typically obtain when provided with developmentally, culturally, and linguistically appropriate learning experiences.	To ensure appropriate alignment of the DRDP (2015) to California's early learning foundations, child development research experts who contributed to the foundations proposed measures for each domain, drafted a developmental continuum for each measure, reviewed changes made to

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	measures by the DRDP Collaborative Development and Examples Review Groups, and summarized the correspondence between the DRDP (2015) domains and measures to the foundations. The content of the DRDP corresponds to the content that appears in all volumes of the PLF. Documents summarizing the correspondence between each DRDP (2015) domain and the PLF are available for download at https://www.desiredresults.us/drdp-2015-aligned-california-foundations.
1c. The continuum for each measure must be derived from the child development research literature.	The content of the DRDP (2015) was derived from the child development research literature. The constructs measured through the DRDP are written as research-based developmental continua of knowledge, skills, and behaviors. The child development research experts who authored the foundations contributed to the development of the DRDP measures and prepared domain research summaries, including references to current child development research literature. Domain research summaries for the DRDP are available for download at https://www.desiredresults.us/research-summaries-drdp-2015-domain.
1d. The content of the DRDP must integrate with the other components of the CA-ELDS, which provides the context for the formative use of the DRDP instrument and specifies the CDE's activities to support early learning. CDE-funded programs are expected to deliver services that are integrated with the components of the CA-ELDS. At the center of the CA-ELDS are California's early learning foundations, while the other essential components include the DRDP, program guidelines, professional development, and curriculum frameworks. Refer to appendix 1 for a description of the CA-ELDS.	The DRDP (2015) represents a component of the CA-ELDS, the assessment of children's developmental progress, and integrates with all other components of the CA-ELDS. To ensure that the content of the DRDP (2015) was in accordance with the other components of the CA-ELDS, representatives of the DRDP Collaborative Development and Examples Review Groups ensured that the final selection of measures within domains and the content of descriptors and examples within measures were consistent with the guidance provided by the CDE through program guidelines, professional development, and curriculum frameworks.

Quality Indicator 2: Acceptability

The *Acceptability* indicator specifies the extent to which the assessment has relevant content that is "considered worthwhile and acceptable" to parents and professionals (Bagnato, Neisworth, and Pretti-Frontczak 2010, 23). In addition, the administration procedures are acceptable to teachers, administrators, and parents, and the instrument detects changes that are noticeable and apparent to those who are familiar with the child.

For the purposes of this document, this indicator refers to (2a) the appropriateness for the SED's federal reporting requirements to OSEP; (2b) the appropriateness for meeting the requirements of Head Start and the HSELOF; (2c) the appropriateness for state-level reporting on the ELCD's progress in supporting early learning and development for children in California; (2d) the provision of appropriate professional development to instrument users; and (2e) readability, accessibility, and usability.

Table 4. The DRDP (2015) and Quality Indicator 2: Acceptability

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
2a. The DRDP (2015) must be appropriate for the SED's federal reporting requirements to OSEP.	The alignment of the DRDP (2015) for preschool-aged children to the SPP/APR child outcomes indicators was examined in fall 2015. The alignment provides the structure for how the DRDP (2015) results can be used to calculate the progress of infants/toddlers and preschool-aged children for each of the child outcomes. Refer to appendix 7 to see the alignment of the DRDP (2015) to OSEP child outcomes. A Sensitivity Study was conducted by the SED's contractor in fall 2014 and spring 2015. The results of this study suggest that the DRDP (2015) could sufficiently detect growth over time for children served in SED early intervention and preschool special education

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	programs and were acceptable for OSEP child outcomes reporting. For more details of the Sensitivity Study, refer to appendix 8.
2b. The DRDP (2015) must be appropriate for meeting the requirements of Head Start and the HSELOF. Refer to appendix 3 for the HSELOF central domains, organized by infant/toddler and preschool levels.	Extensive study of the alignment between the DRDP (2015) and the HSELOF indicated that the developmental skills presented in the DRDP correspond overall to the skills presented in the HSELOF, with a few exceptions, as specified below: • In general, the 29 measures in the DRDP Infant/Toddler View closely corresponded to the 21 sub-domains of the HSELOF. In a few cases, a given developmental concept, skill, or behavior appears in a different domain in the HSELOF than in the DRDP (e.g., "Imitation and Symbolic Representation and Play" in the HSELOF Cognition domain relates to "Imitation" in the DRDP ATL-REG domain and to "Symbolic and Sociodramatic Play" in the DRDP SED domain). • In some cases, the HSELOF contains more individual goals within a domain than the number of concepts, skills, and behaviors that the DRDP Preschool View of the instrument explicitly addresses, so multiple HSELOF goals are associated with single DRDP progressions (measures). In a few cases, a given developmental concept, skill, or behavior appears in a different domain in the HSELOF than in the DRDP (e.g., in the HSELOF, "Creativity" is categorized in the Approaches to Learning domain, while it is categorized in the VPA domain in the DRDP PS View). Detailed summaries of the correspondence between the DRDP and the HSELOF, referred to above, are available online at https://www.desiredresults.us/research.
2c. The DRDP (2015) must be appropriate for state-level reporting on the ELCD's progress in supporting early learning and development for children in California.	The ELCD's contractors applied a criterion-mapping procedure in spring 2016 to DRDP (2015) data measuring children's learning and development that is relevant for state-level reporting. The criterion-mapping procedure is a powerful combination of a developmentally informed alignment process and the

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	multidimensional IRT measurement model. It allows early learning data to be translated into criterion-based, psychometrically substantiated readiness zones. For the DRDP, these zones were defined by committees of child development research experts and teachers using the CA-ELDS. Specifically, the committees provided recommended boundaries in relation to the ITLDF and the PLF for five DRDP domains. These criterion zone boundaries were then used to calculate the percentage of children in each age group in each criterion zone for each domain. These reports support the ELCD in reflecting on children's development, at given points in time and over time, in relation to the ITDLF and PLF and identify areas for further support through the CA-ELDS.
2d. Appropriate professional development must be provided to support DRDP (2015) instrument users.	The CDE provides professional development in the form of in-person and online training and online resources. DRDP professional development promotes teachers' understanding of the research-based content of DRDP measures, how to observe and collect evidence, how to determine ratings based on collected evidence, and how to use the results of the assessment in ongoing curriculum and program planning. In addition, the CDE provides professional development on the use of the DRDP to support developmentally appropriate curriculum and program planning, formative early childhood practice, and development and monitoring of IFSP outcomes and IEP learning goals. Professional development resources for ELCD users are available at https://www.desiredresults.us/. Professional development resources for SED users is available at https://draccess.org/professionaldevelopment.
2e. The DRDP (2015) must be readable, accessible, and usable, with appropriate training and guidance, by the intended audience of ELCD and SED teachers and applicable to the populations they serve.	The measures were written such that assessors would understand their underlying constructs. Developmental sequences were described in ways that are readable and clearly explain the constructs being observed. Each of these components was verified through panel reviews with experts and cognitive interviews with teachers and special educators. Results

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	were used to guide review and development of the instrument through the DRDP Collaborative Development Group. Panel reviews were conducted with assessment experts, representatives from higher education, experts in dual language learning, experts in cultural and linguistic diversity, and special education experts during fall 2012. Panelists, within their respective areas of expertise, provided critical, comprehensive reviews of the DRDP (2015) instrument, including the instructions provided to users, layout of measures, clarity of measure definitions and descriptors, and appropriateness of examples and other content for different users of the DRDP (2015). Refer to appendix 6 for a detailed description of the panel reviews. Cognitive interviews were conducted with 16 ELCD teachers and 16 SED special educators during spring 2014. Teachers and service providers provided feedback on the layout and readability of the DRDP (2015) measures and offered their insights into their understanding of the content and rating levels of measures through a simulated measure rating task. A cross-section of measures across DRDP domains was selected for use in the cognitive interviews. Refer to appendix 6 for a detailed description of the cognitive interview process. The DRDP (2015) pilot study was conducted with 69 ELCD teachers and 91 SED special educators during spring 2013. Teachers were asked to select a sample of children with varying characteristics. They then rated the measures and the difficulty of determining the ratings. Follow-up telephone interviews with participants yielded more specific information about the ways that the measures were easy or hard to read, understand, and assign ratings for each child.

Quality Indicator 3: Authenticity

The *Authenticity* indicator refers to the extent to which behaviors assessed are naturally occurring (not tested) and observable in familiar environments by familiar people (Bagnato, Neisworth, and Pretti-Frontczak 2010; NRC 2008).

For the purposes of this document, this indicator refers to assessing knowledge, skills, and behaviors that are (3a) observable, measurable, and documented on an ongoing basis; (3b) demonstrated throughout the child's daily activities and routines that are part of a high-quality early learning curriculum, are familiar to the child, and are likely to be observed across settings and programs; and (3c) evident to assessors who know the child well and can include information provided through communication with parents and other teachers.

Table 5. The DRDP (2015) and Quality Indicator 3: Authenticity

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
3a. Knowledge, skills, and behaviors that are assessed on the DRDP (2015) should be observable, measurable, and documented on an ongoing basis.	An initial step in determining the constructs to be addressed in the DRDP (2015) was the decision that the instrument would be observation-based and therefore inclusive of knowledge, skills, and behaviors that could be observed by teachers and others who know the children well. Measure content was developed to include descriptions of knowledge, skills, and behaviors that could be observed in early learning settings. The DRDP Collaborative Development and Examples Review Groups reviewed and revised the content of each measure to ensure that the descriptors and examples accurately reflected children's development at each level. The instrument describes children's knowledge, skills, and behaviors through developmental continua that are composed of several qualitatively distinct developmental levels. Each level consists of a descriptor and a set of observable examples. Taken together, each measure's descriptors increase in complexity and differentiation as the continuum

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	progresses from early infancy to kindergarten entry. Guidance is provided to teachers in the front of the instrument (CDE 2017) and through training to document their observations of children's knowledge, skills, and behaviors in an ongoing way, and then to use this documentation as evidence to support their DRDP ratings. Teachers are encouraged to consider the numerous examples and the wide variety of ways that they may observe a child's mastery of a developmental level.
3b. Knowledge, skills, and behaviors that are assessed on the DRDP (2015) should be demonstrated through children's daily activities and routines that are part of a high-quality early learning curriculum, are familiar to the child, and are likely to be observed across settings and programs.	The DRDP (2015) was developed to be completed by teachers based on children's knowledge, skills, and behaviors that are demonstrated through their typical daily activities and routines over time and in their natural settings. The DRDP Collaborative Development and Examples Review Groups reviewed and revised the wording of the definition, descriptors, and examples of each measure to ensure that they • would occur as part of children's typical daily activities and routines, and • are descriptive of activities and routines that would be present in high-quality early learning settings. The child development research experts who contributed to the foundations reviewed and concurred with the revisions to measures.
3c. Knowledge, skills, and behaviors that are assessed on the DRDP (2015) should be evident to assessors who know the children well and can include information provided through communication with parents and other teachers.	The DRDP (2015) was developed to be completed by teachers based on children's knowledge, skills, and behaviors that are evident to teachers who know the children well. Over time, as they are getting to know the children, teachers document their direct observations of children's knowledge, skills, behaviors, and work samples, as well as information obtained from others who know the children well. Teachers use this documentation to complete their ratings on the DRDP. The SED's contractor developed a suite of materials that guide teachers and service providers in leading focused conversations with

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	families to gather information for completing the DRDP for children with IFSPs and IEPs. This resource is available for download at https://draccess.org/leadingconversations. The DRDP Collaborative Development and Examples Review Groups reviewed and revised the wording of the definition, descriptors, and examples of each measure regarding the extent to which they were conducive to assignment of ratings based on evidence gathered over time by teachers and others who know the children well. The child development research experts who contributed to the foundations reviewed and concurred with the revisions to measures. A pilot study was conducted with 69 ELCD teachers and 91 SED special educators during spring 2013. ELCD teachers were asked to select a sample of children with a variety of temperaments (e.g., a shy child, an outgoing child). SED teachers and service providers were asked to select a sample of children with different types of disabilities and representing a range of severity of disability. All assessors were asked to rate how easy or hard it was to determine ratings for each child on each measure. Follow-up telephone interviews with pilot study teachers and service providers yielded specific information about the ways that the behaviors, knowledge, and skills described in measures were evident to teachers for the wide range of children served by the CDE. Cognitive interviews were conducted with 16 ELCD teachers and 16 SED special educators during spring 2014. Teachers and service providers provided feedback on how easy or hard it was to determine ratings on a sample of DRDP (2015) measures. In addition, teachers provided feedback on the layout and readability of the measures and described their understanding of the descriptors, the examples, and the rating process. Refer to appendix 6 for a fuller description of the cognitive interview process. The DRDP Collaborative Development Group used the information from the pilot study and cognitive interviews to refine the measures.

Quality Indicator 4: Cultural and Linguistic Appropriateness

The *Cultural and Linguistic Appropriateness* indicator refers to the extent to which (a) the diverse cultural and linguistic characteristics of the population to be assessed are considered throughout instrument development, and (b) the sources of bias are addressed (National Academies of Sciences, Engineering, and Medicine [NASEM] 2017; NAEYC 2009; NRC 2008). California's population is culturally and linguistically diverse—74 percent of all children ages birth to five, in 2016, were identified as having a race/ethnicity other than white/not Hispanic,[17] and 60 percent of the state's young child population (ages birth to eight), in 2015, were dual language learners (Park, O'Toole, and Katsiaficas 2017).

For the purposes of this document, this indicator refers to the extent to which (4a) the content of the instrument was constructed appropriately for use with children from the broad range of cultural backgrounds represented within CDE-funded programs; (4b) the content of the instrument was constructed appropriately for use with the linguistically diverse population of children in CDE-funded programs; and (4c) additional resources support the use of the instrument by linguistically diverse assessors.

Table 6. The DRDP (2015) and Quality Indicator 4: Cultural and Linguistic Appropriateness

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
4a. The content of the DRDP must be constructed appropriately for use with the culturally diverse population of children in CDE-funded programs.	The content of the DRDP (2015) was developed in accordance with the other components of the CA-ELDS and is therefore consistent with the guidance provided by the CDE through the foundations, program guidelines, professional development, and curriculum frameworks for cultural appropriateness.

[17] Demographic data was obtained from https://datacenter.kidscount.org/data.

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	Cultural considerations informed the determination of required measures for the ELCD. The DRDP Collaborative Examples Review Group created examples that represented cultural diversity. Examples were included to make visible objects and practices that have cultural significance and could be representative of children assessed with the DRDP. A panel review by content experts in cultural diversity confirmed that the selection of measures included in the DRDP was appropriate for children from diverse cultural communities. Panelists provided recommendations for fine-tuning the content of measures for greater cultural appropriateness and more authentic cultural representations. The DRDP Collaborative Development Group revised the DRDP content based on panelists' feedback. For the research studies and instrument calibration, comparable samples of children were purposefully recruited from each of California's three major geographic regions (Northern California, Central Valley, Southern California) to be inclusive of the vast cultural diversity of children served by the CDE. The cultural diversity of families varies across regions, and this sampling approach yielded diverse samples of children for each study.
4b. The content of the DRDP must be constructed appropriately for use with the linguistically diverse population of children in CDE-funded programs.	California's demographics and research-based assessment practices led to a focus on dual language learners for the development and calibration of the DRDP (2015). To launch the DRDP (2015) statewide, careful consideration was given at every step of development to design an instrument that would produce valid, reliable, and appropriate data for dual language learners—this process was not supplemental but rather integral to the entire assessment process. The user's guide that resides at the front of the instrument (CDE 2017) includes instructions clarifying that children may demonstrate mastery of the behaviors, knowledge, and skills described in the

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	measures in their home language, in English, or in both languages. A set of four English-language development measures were created to assess children's progress in learning English for use with children whose home language is one other than English. The DRDP Collaborative Examples Review Group included a content representative in linguistic diversity. Examples were included to clarify that children can demonstrate mastery of developmental levels when using a language other than English. Panel review by content experts in linguistic diversity confirmed that the selection of measures for the LLD and ELD domains included in the DRDP was appropriate for children from diverse linguistic communities. Panelists provided recommendations for fine-tuning the content of measures for greater linguistic appropriateness, for example, adding a footnote addressing non-alphabetic languages for specific LLD measures. The DRDP Collaborative Development Group revised the DRDP content based on panelists' feedback. For the pilot, field, and calibration research studies, the research team targeted recruitment efforts to ensure that at least half of the children included in each study were dual language learners. During the studies, the instrument and embedded user's guide were provided in both English and Spanish, with instructions to consider the child's primary language when determining ratings for the DRDP.[18] Parent consent forms and study descriptions were made available to parents in both English and Spanish.
4c. Additional resources must be provided that support the use of the DRDP (2015) by linguistically diverse assessors.	For DRDP (2015) implementation in fall 2015, Spanish Language Resource Guides (for infant/toddler and preschool) and a Chinese Language Resource Guide (for preschool) were made available to the field. The determination of these languages for the

[18] Language resource guides for the DRDP (2015) in Spanish and Traditional Chinese are available for download at https://www.desiredresults.us/drdp-forms.

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	Resource Guides was based on requests from the field. Translations were carefully reviewed and considered the linguistic varieties of the target language (e.g., use of Spanish varies across nationalities). The language resource guides are available at https://www.desiredresults.us/drdp-forms.

Quality Indicator 5: Multifactors

The *Multifactors* indicator refers to the extent to which measure ratings would be informed by various sources of evidence that are gathered across settings on multiple occasions and through a variety of methods (Bagnato, Neisworth, and Pretti-Frontczak 2010).

For the purposes of this document, this indicator refers to the extent to which the DRDP (2015) was designed so that the determination of measure ratings would be (5a) informed by multiple sources of evidence; (5b) informed by evidence gathered on multiple occasions; and (5c) supported by multiple methods for gathering and documenting evidence.

Table 7. The DRDP (2015) and Quality Indicator 5: Multifactors

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
5a. The determination of measure ratings must be supported by multiple sources of evidence.	The DRDP (2015) was designed to include examples that reflect a variety of sources of evidence to support measure ratings, such as through teacher observation of and interaction with the child and information reported by family members or other teachers Guidance for incorporating multiple sources of evidence into the selection of DRDP (2015) ratings is provided in the user's guide that is located in the front of the instrument, as well as in the DRDP instrument appendices E and F (CDE 2017). Assessors are encouraged to use all the information they know about the child (including their observations of children's

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	knowledge, skills, behaviors, and work samples) and information provided by others (including assistant teachers, family members, or other special education/general education providers). The instrument and embedded user's guide are available for download at https://www.desiredresults.us and https://www.draccess.org.
5b. The determination of measure ratings must be informed by evidence gathered on multiple occasions.	Guidance for assigning ratings for the DRDP (2015) is provided in the user's guide that is located in the front of the instrument (CDE 2017). Assessors are instructed to use evidence gathered on multiple occasions (including their observations of children's knowledge, skills, behaviors, and work samples) and information provided by others (including assistant teachers, family members, or other special education/general education providers) to make rating determinations. The instrument and embedded user's guide are available for download at https://www.desiredresults.us and https://www.draccess.org.
5c. The determination of measure ratings must be supported by multiple methods for gathering and documenting evidence.	Guidance for determining measure ratings is provided through DRDP (2015) professional development, in the form of in-person and online training and online resources. Teachers are encouraged to use multiple methods for gathering and documenting evidence that informs ratings, such as anecdotal records, photographs, video- and audio-recorded examples, and examples reported from other adults in the child's life. Professional development resources for ELCD users are available at https://www.desiredresults.us/. Professional development resources for SED users are available at https://draccess.org/.

Quality Indicator 6: Sensitivity

The *Sensitivity* indicator specifies the extent to which the DRDP (2015) domains and measures were designed to detect differences in development and learning (Bagnato, Neisworth, and Pretti-Frontczak 2010) as well as progress over time for both children who are typically developing and children with disabilities.

For the purposes of this document, this indicator refers to the extent to which the instrument is designed to detect (6a) differences in development and learning within each domain; (6b) changes in growth over time for individual children (differences in scores over time); and (6c) differences in development and learning between groups of children.

Table 8. The DRDP (2015) and Quality Indicator 6: Sensitivity

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
6a. The DRDP (2015) must be constructed to detect differences in development and learning within each domain.	The DRDP (2015) describes children's knowledge, skills, and behaviors through measures and related developmental continua. Each continuum is composed of several qualitatively distinct developmental levels that yield an ordinal-level rating. The ordinal ratings across measures are aggregated to produce interval-level scaled scores. Measurement at the domain level is based on a sufficient number of measures of development and learning across domains.
6b. The DRDP (2015) must be constructed to detect changes in growth over time for individual children (differences in scores over time).	A Sensitivity Study was conducted by SED contractors in 2014–15. The results of this study suggest that the DRDP (2015) could sufficiently detect growth over time for children served by the SED. The measure of change over time was obtained by determining the difference in aggregated domain raw scores between Time 1 (entry) and Time 2 (exit). Refer to appendix 8 for more details about the SED Sensitivity Study. Domain-scaled scores provide for consistent measurement of differences in developmental progress over time. Measurement at the

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	domain level is based on a sufficient number of measures to detect change over time.
6c. The content of the DRDP must be constructed to detect differences in development and learning between groups of children.	Domain-scaled scores provide for measurement of differences between groups of children, such as for use in program evaluation and research studies. Measurement at the domain level is based on a sufficient number of measures to detect differences in development and learning between groups of children.

Quality Indicator 7: Universal Design

The *Universal Design* indicator refers to the extent to which principles were applied during the development of the DRDP (2015) to ensure the appropriateness of the instrument for all children, including those with disabilities and other special needs (Thompson, Johnstone, and Thurlow 2002). Refer to appendix 9 for more detailed information about principles of universal design.

For the purposes of this document, this indicator refers to the extent to which principles of universal design were applied to ensure (7a) the entire population of children to be assessed with the instrument was considered during instrument development; (7b) potential construct-irrelevant cognitive, sensory, emotional, and physical barriers were excluded during development; (7c) the instrument was reviewed for potential sources of bias related to children with disabilities; and (7d) use of the DRDP is designed to be amenable to accommodations (AERA, APA, and NCME 2014; Thompson, Johnstone, and Thurlow 2002).

Table 9. The DRDP (2015) and Quality Indicator 7: Universal Design

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
7a. The entire population who might be assessed with the DRDP (2015) must be	The DRDP Collaborative Development Group applied concepts of universal design

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
considered during instrument development and in instrument field and calibration testing.	throughout instrument development. Considerations for children with disabilities were included (1) when determining instrument content, such as measure names, descriptors, and examples, as well as (2) when providing guidance for assessment users. DRDP measure content was written to allow for determination of mastery across disability categories. The measures were reviewed by a panel of special education content experts to determine appropriateness for children with disabilities. Revisions to the measures were made by the Development Group following the recommendations by this panel. A pilot study was conducted during spring 2013; 91 special educators were asked to select a sample of children who had a variety of disabilities using the California IDEA disability categories and to rate how easy or hard it was to determine ratings for each child on each measure. Follow-up telephone interviews with service providers yielded specific information about the ways that the measures were easy or hard to rate for different disability categories. The Development Group used the information from the pilot study to refine the measures. Children representing all disability categories identified by the California IDEA disability categories were included in the field and calibration studies according to the reported percentage of occurrence found in early intervention and special education preschool programs. As part of the calibration analyses, the numbers of children across these disability categories, severity of disabilities,[19] gender, and age were addressed (refer to appendix 10).
7b. Potential construct-irrelevant cognitive, sensory, emotional, and physical barriers must be addressed during instrument development.	The DRDP Collaborative Development Group reviewed all measures and suggested revisions to ensure that they were written in a way that did not preclude giving full credit to children who have physical, sensory,

[19] Teachers of children with IFSPs or IEPs completed the ABILITIES Index (Simeonsson and Bailey 1991) to determine the severity of disability for the sample of children in the study.

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	cognitive, communication, or social and emotional disabilities. Suggested revisions to the wording of measures by the Development Group were then reviewed by the child development research experts who originally developed the measures to ensure that changes to remove potential construct-irrelevant variance did not change the underlying meaning of the constructs. Sufficient samples of children from a variety of IDEA disability categories and severity of disability were purposefully recruited for the DRDP research studies to enable evaluation of construct irrelevance: • SED contractors reviewed the disability categories for the sample of children in the study to verify that the calibration study sample sufficiently and appropriately contained a broad range of disability types. Refer to appendix 10 for a summary of the SED calibration sample by disability category. • The ABILITIES Index (Simeonsson and Bailey 1991) ratings were collected during the calibration study and used to verify that the calibration study sample included a range of disability severity for children in the SED sample.
7c. The instrument must be reviewed for potential sources of bias related to children with disabilities.[20]	To launch the DRDP (2015) statewide, careful consideration was given at every step of development to design an instrument that would produce valid and reliable data for children with disabilities—this process was not supplemental but rather integral to the entire assessment development process. The DRDP Collaborative Development and Examples Review Groups included content representatives from special education. Selected examples were included to be representative of children with disabilities who are assessed with the DRDP in their early care and education or other learning environments.

[20] Bias in an instrument can be reviewed through a field test that can determine item difficulty for various groups of children (AERA, APA, and NCME 2014).

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	Panel review by content experts in special education confirmed the selection of measures included in the DRDP and made recommendations for fine-tuning measures. Appropriate revisions were made to the DRDP content based on their feedback to ensure authenticity of representations for children with disabilities. Preliminary differential item functioning (DIF)[21] analysis conducted post-calibration provided evidence that DRDP (2015) measures were not biased overall for children with disabilities in relation to typically developing peers served in ELCD programs.
7d. The instrument must be designed to be amenable to accommodations.[22]	The DRDP (2015) includes instructions for assessors on the use of adaptations[23] to ensure the assessment accurately measures a child's abilities rather than the impact of a child's disability. Adaptations, as specified in the IFSP or IEP, must be in place for the child during the normal course of the day and should also be in place during observations for the DRDP (2015). Seven broad categories of adaptations have been identified for children with IFSPs and IEPs for the DRDP. Appendix D of the DRDP instrument includes comprehensive definitions of the adaptations (CDE 2017). Additional resources for adaptations are available at https://draccess.org/adaptations.

[21] Studies of DIF analysis indicate "when students equated on relevant ability but representing different groups do not have the same probability of responding correctly to test items" (Thompson, Johnstone, and Thurlow 2002, 9).

[22] *Accommodations* are defined as "adaptations in assessment tools and standards to permit children with disabilities or English language learners to show what they know and can do" (NRC 2008, 423).

[23] *Adaptations* are defined as "changes in the environment or differences in observed behavior that allow children with IFSPs or IEPs to be more accurately assessed in their typical settings" (CDE 2017, Intro-6).

Quality Indicator 8: Utility

The *Utility* indicator refers to the extent to which the instrument supports the use of assessment results to guide instruction and program planning for individual children and groups of children (Bagnato, Neisworth, and Pretti-Frontczak 2010).

For the purposes of this document, this indicator refers to the extent to which (8a) reports provide information about children's developmental progress based on psychometrically valid and reliable domain-scaled scores; (8b) reports are designed to facilitate curriculum planning and inform program and support services for individual children and for groups of children, including the development of goals that are included in IFSP and IEP planning; (8c) reports support communication with family members about individual children's learning and development; and (8d) assessment results can be used for reporting on OSEP child outcomes.

Table 10. The DRDP (2015) and Quality Indicator 8: Utility

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
8a. DRDP (2015) reports must provide information about children's developmental progress based on psychometrically valid and reliable domain-scaled scores.	DRDP (2015) domain-scaled scores are computed through a statistical model based on IRT. A domain-scaled score portrays the developmental progression of knowledge, skills, and behaviors that encompass the collection of measures included in that DRDP domain. DRDP reports provide the resulting psychometrically valid domain-scaled scores. For DRDP reports, all levels for each domain follow a progression from early infancy (starting at the left) to kindergarten entry (toward the right), in a manner similar to the developmental progression on the DRDP (2015) instrument. The key difference is that the domain scale in the report reflects the psychometric transformation of the developmental levels based on the data collected during the calibration studies for the DRDP (2015), resulting in levels of unequal intervals, whereas the developmental

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	progression displayed on the DRDP (2015) instrument represents the developmental levels as if they were equal intervals. Only the domain-scale reports show the amount of challenge or complexity of each level of a measure, which is indicated by the varying widths of the measure's different levels. The DRDP reports were designed with consistent presentation of content and information for a wide range of users, such as teachers, administrators, and parents.
8b. DRDP (2015) reports must be designed to facilitate curriculum planning and inform program and support services for individual children and for groups of children, including the development of goals that are included in IFSP and IEP planning.	The DRDP Collaborative Reports Development Group designed reports to support the use of assessment results for (a) curriculum and program planning and (b) development of IFSP outcomes and IEP goals. The Reports Development Group also developed written guidance to support interpretation of the reports by teachers and administrators. DRDP (2015) reports, provided to teachers and administrators, summarize the developmental progress of individual and groups of children. Domain ratings (e.g., Responding Earlier) are provided to the field (teachers, special educators, program administrators) through domain-scale reports for individual children and for groups of children. The domain ratings and standard errors are displayed on domain-scale reports for individual children to support accurate inferences. The DRDP group reports provide aggregated domain ratings for a group of children as a direct result of the conversion of ordinal individual measure ratings to interval-level domain-scaled scores. Refer to appendix 11 for a description of available DRDP (2015) reports.
8c. DRDP (2015) reports must support communication with family members about individual children's learning and development.	DRDP (2015) reports summarize the developmental progress of individual children and are provided to teachers and administrators to share with parents. Domain ratings, the qualitative descriptions of the DRDP domain-scaled scores, are provided to parents through domain-scale reports that include domain ratings and standard errors for individual children. Refer to appendix 11 for a description of available DRDP (2015)

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	reports. Written guidance is provided to support interpretation of the reports by parents and other family members.
8d. DRDP (2015) assessment results must satisfy OSEP child outcomes reporting requirements.	The SED contractor has developed an interactive website that provides aggregated summaries of DRDP (2015) assessment results in relation to OSEP child outcomes. Results summarize current status and progress over time of special education agencies in meeting OSEP child outcomes. The interactive website is available at http://indicator7reports.draccess.org/.

Quality Indicator 9: Validity

The *Validity* indicator refers to the "extent to which an instrument measures what it purports to measure; the extent to which an assessment's results support meaningful inferences for certain intended purposes" (NRC 2008, 427).

For the purposes of this document, this indicator refers to the extent to which the DRDP (2015) adheres to professional standards for validity outlined in the *Standards for Educational and Psychological Testing* (AERA, APA, and NCME 2014): (9a) content validity, (9b) response processes, (9c) internal structure, (9d) relations to other variables, and (9e) consequences of assessment (including fairness).

Although the accumulation of validity evidence is an ongoing process, table 11 references substantial existing evidence supporting the validity of the DRDP (2015) instrument for its intended purposes, such as measurement of the status and the development of children, formative assessment, state and federal reporting (summative assessment), and certain research and evaluation activities.

Table 11. The DRDP (2015) and Quality Indicator 9: Validity

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
9a. The instrument must demonstrate sufficient content validity.[24]	DRDP (2015) measures collectively represent the breadth and salience of each domain in California's ITLDF and PLF. Summaries of the correspondence of the DRDP to the content that appears in the ITLDF and PLF are available for download at https://www.desiredresults.us/drdp-2015-aligned-california-foundations. The content of DRDP measures are supported by research in the field of child development that spans infancy through kindergarten entry. Domain research summaries for the DRDP, including references, are available for download at https://www.desiredresults.us/research-summaries-drdp-2015-domain.
9b. The instrument must demonstrate sufficient response process validity.[25]	Cognitive interviews were conducted with 16 ELCD teachers and 16 SED special educators during spring 2014. Observations of teachers and service providers as they rated DRDP (2015) measures provided evidence of the fit between the intent of the measures and the resulting ratings. Refer to appendix 6 for a fuller description of the cognitive interview process.
9c. The instrument must demonstrate sufficient internal structure validity.[26]	Psychometric analysis and analysis of individual measures were used to collect evidence of the expected order of and relationships between item/step difficulty and child performance across domains. The threshold levels within each domain were ordered as anticipated. On average, the older

[24] To build evidence regarding the content of an assessment, the researcher needs to analyze "the relationship between the content of a test and the construct it is intended to measure" (AERA, APA, and NCME 2014, 14).

[25] According to the *Standards for Educational and Psychological Testing*, "theoretical and empirical analyses of the response processes of test takers can provide evidence concerning the fit between the construct and the detailed nature of performance or response actually engaged in by test takers" (AERA, APA, and NCME 2014, 15).

[26] According to the *Standards for Educational and Psychological Testing*, "analyses of the internal structure of a test can indicate the degree to which the relationships among test items and test components conform to the construct on which the proposed test score interpretations are based" (AERA, APA, and NCME 2014, 16).

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	children consistently were rated at later developmental levels than younger children. Sample Wright Maps are provided in appendix 14.
9d. The instrument must be appropriately related to other variables.[27]	Data for the ELCD Concurrent Validity Study was collected in fall 2016 and spring 2017. The study was designed to investigate the relationship between the DRDP (2015) instrument and other assessments[28] of child development. These other assessments, which have documented validity and reliability, have been widely used in early education research to assess the same constructs that were assessed with the DRDP (e.g., language and literacy development, gross motor and fine motor development, and mathematical development). Assessments were collected for 106 infants and toddlers and 126 preschool-aged children. Statistically significant correlations between the DRDP and the other assessments ranged from 0.29 to 0.51 when controlling for children's ages. A

[27] "The intended interpretation for a given use implies that the construct should be related to some other variables, and, as a result, analyses of the relationships of test scores to variables external to the test provide another important source of validity evidence" (AERA, APA, and NCME 2014, 16). Different external variables can be used to confirm or disconfirm the validity of an instrument for its intended purpose.

[28] The other assessment of child development used in the DRDP (2015) Concurrent Validity Study with infants and toddlers was Bayley Scales of Infant Development – III (Bayley 2006). The other assessments of child development used in the DRDP (2015) Concurrent Validity Study with preschool-aged children were Expressive One Word Picture Vocabulary Test, 4th Edition (Martin and Brownell 2010a); Receptive One Word Picture Vocabulary Test, 4th Edition (Martin and Brownell 2010b); Woodcock-Johnson Achievement Tests, Third Edition, Tests 1-Letter & Word Recognition, 7-Spelling, 13-Word Attack, 10-Applied Problems, 18a-Concepts, 18b-Number Series (Woodcock, McGrew, and Mather 2001); Preschool and Kindergarten Behavior Scale–2: Social Skills Subscale and Problem Behaviors Subscale (Merrell 2002); Expressive One Word Picture Vocabulary Test, Spanish Bilingual Edition (Martin and Brownell 2012a); Receptive One Word Picture Vocabulary Test, Spanish Bilingual Edition (Martin and Brownell 2012b); Batería III Woodcock-Muñoz Pruebas de aprovechamiento: 1-Identificacación de letras y palabras, 7-Ortografia, 13-Análisis de palabras, 10-Problemas aplicados, 18a-Conceptos, 18b-Series numericas (Muñoz-Sandoval et al. 2005); and Peabody Developmental Motor Scales (Folio and Fewll 2000).

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	summary of results is available for download at https://www.desiredresults.us/research.
9e. The instrument should demonstrate sufficient consequential validity.[29]	The impact of the DRDP (2015) assessment on children, teachers, and programs is monitored in an ongoing way through professional development activities, teacher surveys, and analysis of data collected following assessment implementation.

Quality Indicator 10: Reliability

The *Reliability* indicator refers to "the consistency of measurements, gauged by any of several methods, including when the testing procedure is … administered by different raters (inter-rater reliability)" (NRC 2008, 427).

For the purposes of this document, this indicator refers to the extent to which the DRDP (2015) adheres to professional standards for score reliability outlined in the *Standards for Educational and Psychological Testing* (AERA, APA, and NCME 2014): (10a) internal consistency and (10b) interrater reliability.

Table 12. The DRDP (2015) and Quality Indicator 10: Reliability

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
10a. The instrument must demonstrate sufficient internal consistency score reliability.[30]	A DRDP (2015) calibration analysis was conducted in spring 2015 to examine the order of measure difficulty estimates within and across domains. The expected a posteriori/plausible value (EAP/PV) reliability

[29] Consequential validity is an overarching examination of issues with real-world use of the instrument. "Some consequences of test use follow directly from the interpretation of test scores for uses intended by the test developer" (AERA, APA, and NCME 2014, 19). Evidence based on consequences can be traced to either construct-irrelevant variance or construct underrepresentation.

[30] A measure based on the correlations of each item with all other items on the same test (or the same subscale on a larger test), internal consistency measures whether several items that propose to measure the same general construct produce similar scores.

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	indices[31] ranged from 0.73 to 0.99, indicating that DRDP (2015) domains and sub-domains all had adequate score reliability. EAP/PV reliability indices are an estimate of how reliably the measures can be used to distinguish students' underlying abilities. Refer to appendix 12 for domain separation EAP/PV reliability estimates.
10b. The instrument must demonstrate sufficient interrater score reliability.[32]	SED DRDP (2015) interrater reliability data was collected in fall 2014 and spring 2015. The focus of the study was to gather evidence about rating agreements between pairs of special education assessors who independently rated the same child on the same DRDP measures within the same time period. Thirty-one unique assessor pairs completed the DRDP assessment for one to four children per pair. Interrater agreement percentages were calculated for both exact agreement (results ranged from 48 to 81 percent) and agreement within one rating level (results ranged from 83 to 98 percent; Desired Results Access Project 2015). ELCD DRDP (2015) interrater reliability data was collected in fall 2015 and spring 2016. The focus of the study was to examine the relationship between rater agreement and the circumstances that influence rater agreement. Data was collected from 82 pairs of teachers in early childhood settings (42 pairs from infant/toddler settings and 40 pairs from preschool settings) who independently rated the same children on the same DRDP (2015) measures within the same time period. Pairs represented 37 early childhood programs from across California. Data was reported for a total of 421 children (214 infants/toddlers and 207 preschool-aged children). Interrater agreement percentages were calculated using individual measure ratings for both exact

[31] Reliability coefficients of 0.75 or higher are considered good, although values of at least 0.55 are deemed satisfactory for group comparisons (Rost 2013).

[32] The degree of agreement between two raters while rating the same child on the same instrument, interrater reliability is particularly important for ratings and data obtained through observation because this type of data involves subtle discriminations (AERA, APA, and NCME 2014).

Criteria for Meeting the Quality Indicator	How the DRDP (2015) Meets the Criteria
	agreement (results ranged from 54 to 64 percent for infants/toddlers and from 50 to 75 percent for preschool-aged children) and agreement within one rating level (results ranged from 87 to 98 percent for infants/toddlers and from 84 to 97 percent for preschool-aged children). Interrater agreement percentages were calculated using domain-scaled ratings for exact agreement because this is the information that is provided to teachers and administrators through DRDP reports to support planning for individual children and programs (exact agreement for domain-scaled ratings ranged from 95 to 100 percent for infants/toddlers and from 92 to 97 percent for preschool-aged children). A summary of results is available for download at https://www.desiredresults.us/research.

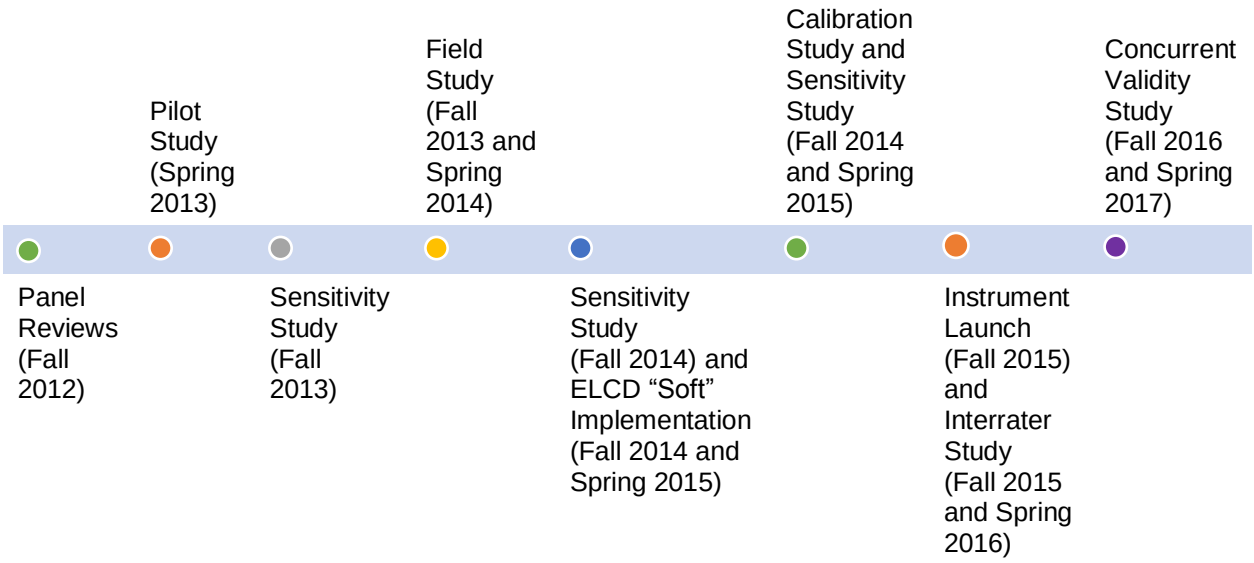
PV = plausible value

4.0 Research Studies for the DRDP (2015)

The development of the measurement scale for the final version of the DRDP (2015) was based on the results of the calibration study. The calibration process provided the estimation of model parameters that uniquely defined the measurement model for the final version of the DRDP (2015). Practically speaking, the calibration process provided the information for the final measurement scale, the cut-points that define the domain-rating levels, and ultimately, the student ability estimates.

A series of experimental study periods and a "soft" implementation by early adopters of the DRDP (2015) preceded full implementation in the fall of 2015. Data collection for the studies commenced with the pilot study of the instrument in spring 2013 and concluded with a formal calibration of the instrument in spring 2015. Refer to figure 3 for a timeline of DRDP research studies.

Figure 3. Timeline of DRDP (2015) Research Studies



Pre-calibration Studies of the DRDP (2015)

Panel Reviews (Fall 2012)

Panel reviews were conducted with assessment experts, representatives from higher education, experts in dual language learning, and special education experts during fall 2012. Panelists provided a critical review and offered feedback about the layout and content of the DRDP (2015) within their respective areas of expertise. Refer to appendix 6 for a detailed description of the panel reviews.

Pilot Study (Spring 2013)

The primary purpose of the pilot study was to gather information about the use of the DRDP (2015) across a variety of early care and learning environments for children with and without IFSPs or IEPs. The secondary purpose was to prepare a "calibration-ready" instrument by examining the acceptability, interpretability, understandability, feasibility, and usability of the instrument.

Field Study (Fall 2013 and Spring 2014)

The purpose of the field study was to conduct a preliminary calibration for the DRDP (2015). The results of the study were used to inform refinements to the domains and measures before finalizing and calibrating the instrument.

A number of participants, 32 teachers and service providers, took part in optional research activities such as cognitive interviews. For those teachers serving children with IFSPs or IEPs, a survey of the child's degree of disability and an interrater agreement study were conducted concurrently.

Cognitive Interviews (Fall 2013 and Spring 2014)

Cognitive interviews, also known as "rate alouds," allowed for the discovery of instrument issues and were used to investigate trends in how raters understood and interpreted the content and format of the assessment. During the process, each team of researchers observed raters' use of the assessment and asked the raters to express in detail why they were making the decisions they made. For this cycle of study, changes to measure definitions, descriptors, or examples were proposed when user interpretation did not align with intended interpretations; elements of the instrument were confusing or ambiguous, making it difficult to assign a rating or to do so consistently; raters' abilities to recognize skills and behaviors of all children were limited; and factors such as readability, structure, or length hindered the rater from being able to use the assessment. Refer to appendix 6 for a detailed description of the cognitive interviews.

Sensitivity Study (Fall 2014 to Spring 2015)

Under federal reporting requirements, the SED must describe change over time for children receiving services for six months or more.[33] Furthermore, OSEP Indicator 7 for Part B, Summary Statement 1, requires an indicator of child progress that is achieved between entry and exit. Thus, in direct response to these requirements, the sensitivity of the DRDP (2015) represents the capacity of the instrument to detect change over time.

[33] See the Progress Categories section at http://ectacenter.org/~pdfs/eco/WAchildandfamilyoutcomesglance12-6-10LB.pdf for more information on the six-month reporting requirement.

For the 2014–15 DRDP (2015) Sensitivity Study, the measure of change over time was obtained by determining the difference in raw scores between Time 1 (entry) and Time 2 (exit) (e.g., Time 2 score minus Time 1 score). The first rating period for this study was completed at the end of November 2014, and the second rating period was completed at the end of May 2015. The results of this study suggest that the DRDP (2015) could detect growth over time for children served by the SED. Refer to appendix 8 for a detailed description of the Sensitivity Study.

Description of the Multidimensional Structure for the Calibration Measurement Model

To support planning for individual children and groups of children that is consistent with the foundations and the OSEP child outcomes, groups of representative measures were assembled into domains to describe developmental constructs. Although the DRDP (2015) measures appear to be grouped into eight independent domains (ATL-REG, SED, LLD, ELD, COG, PD-HLTH, HSS, VPA), in reality, a complex multidimensional structure reflects the development for children of different ages and settings: the analysis of the DRDP scores reflects this complex structure. Table 13 describes the six multidimensional and unidimensional IRT models used to generate DRDP domain-scaled scores. In addition, table 14 describes alternative conceptualizations of results from the *same* models in table 13, for various purposes described below. The multidimensional structure, and the alternative groupings, were developed during a collaborative process between the ELCD, the SED, and their contractors and reflects the OSEP child outcomes.

The theoretically similar relationships among constructs enables multiple constructs to be combined analytically. As demonstrated through California's early learning foundations, children's development is less differentiated during the infant/toddler age periods and more differentiated during the preschool-age period. For example, the language development (LANG) and literacy development (LIT) sub-domains,[34] from the LLD domain, in preschool have their roots in overall language and literacy development, as expressed in the LLD domain in the infant/toddler view of the DRDP (2015). Similarly, learning math and science in preschool is rooted in general cognitive learning during the infant/toddler years. The interrelationships between the ATL-REG and SED domains allow for these domains to be analyzed as one dimension for the DRDP (2015).

To accommodate the different compositions of earlier development, later development, and full continuum measures across domains and the observation of children's growth across the five domains of the infant/toddler view and eight domains of the preschool view, six dimensions, based on groups of DRDP (2015) domains, were analyzed.

Table 13. Analytical Dimensions of the DRDP (2015) in Relation to the Domains of the DRDP (2015)

Six Analytical Dimensions of the DRDP (2015)	Related Domains and Sub-domains in the DRDP (2015)	
	IT View	**PS View**
Dimension 1: ATL-REG and SED	ATL-REG SED	ATL-REG SED

[34] Language development (LANG) and literacy development (LIT) are LLD sub-domains used in reports for preschool-age children.

Six Analytical Dimensions of the DRDP (2015)	Related Domains and Sub-domains in the DRDP (2015)	
	IT View	**PS View**
Dimension 2: LLD: LANG, LLD: LIT, COG: MATH, and COG: SCI	LLD COG	LLD: LANG LLD: LIT COG: MATH COG: SCI
Dimension 3: PD-HLTH	PD-HLTH	PD-HLTH: PD PD-HLTH: HLTH
Dimension 4: ELD	Not included in the IT View	ELD
Dimension 5: HSS	Not included in the IT View	HSS
Dimension 6: VPA	Not included in the IT View	VPA

The DRDP (2015) domains and sub-domains were further analyzed into three dimensions that correspond to the OSEP requirements for monitoring the progress of infants and toddlers with IFSPs and preschool children with IEPs (refer to table 14). The set of three outcomes of early learning and development, provided below, offer a global structure for the DRDP (2015) domains:

1. *Social relationships*, which includes getting along with other children and relating well with adults
2. *Use of knowledge and skills*, which refers to thinking, reasoning, and problem solving, including early skills in language, literacy, and math
3. *Taking action to meet needs*, which includes feeding, dressing, self-care, and following rules related to health and safety

In addition, a complex analytical structure exists across the eight domains within the DRDP (2015). The first five learning and development domains (ATL-REG, SED, LLD, COG, and PD-HLTH) were modeled as three multidimensional constructs and are

used for OSEP reporting (refer to table 14). The three remaining learning and development domains (ELD, HSS, VPA) were modeled as three unidimensional measurement constructs and are not used for OSEP reporting.

The three OSEP child outcomes, the analytical dimensions, and the model types for the DRDP (2015) domains and sub-domains are provided in table 14 below.

Table 14. The Analytical Dimensions of All DRDP (2015) Domains

OSEP Child Outcome	Relationship to the Six Analytical Dimensions of the DRDP (2015)	Related Domains and Sub-domains in the DRDP (2015)		Model Type
		IT View	PS View	
Outcome 1: Social relationships	Dimension 1: ATL-REG and SED	ATL-REG SED	ATL-REG SED	Multidimensional
Outcome 2: Use of knowledge and skills	Dimension 2: LLD: LANG, LLD: LIT, COG: MATH, and COG: SCI	LLD COG	LLD: LANG LLD: LIT COG: MATH COG: SCI	Multidimensional
Outcome 3: Taking action to meet needs	Dimension 3: PD-HLTH	PD-HLTH	PD-HLTH: PD PD-HLTH: HLTH	Multidimensional
Not applicable	Dimension 4: ELD	Not included in the IT View	ELD	Unidimensional
Not applicable	Dimension 5: HSS	Not included in the IT View	HSS	Unidimensional
Not applicable	Dimension 6: VPA	Not included in the IT View	VPA	Unidimensional

Calibration Study Samples

The study participants consisted of teachers and children from early childhood programs throughout the state of California and who had participated during the spring 2015 term for the purpose of instrument scale calibration. Participating teachers were

self-selected from CDE programs that responded to an open call to agency administrators for study participants. Participating children were either infants, toddlers, or preschool children enrolled in early childhood programs managed by the ELCD or those who received services supported by the SED.

Initial launch of the DRDP (2015) was set for the fall of 2015, and the call to ELCD programs was open to any program that wished to early adopt the new instrument during the spring of 2015. SED program participation was limited to approximately 1,500 students because removal of more than 1,500 students would reduce the data available for the annual federal report to OSEP.

Only those records with full and complete ratings across all measures within a domain were included in the study. As such, the number of students included in the study differs by each of the instrument domains and varies from 18,528 on the HSS domain to 21,210 on the PD-HLTH domain.

Proportion of the Overall Sample by California Department of Education Division

A goal for the DRDP (2015) calibration study was to have a final sample for developing the calibration measurement model that sufficiently reflected the range of knowledge, skills, and behaviors of children served by both the ELCD and the SED. Therefore, the DRDP Collaborative decided to draw specific proportions from the overall sample: children served by the ELCD would reflect 80 percent of the final sample in each age group, and children served by the SED would reflect 20 percent of the final sample. In addition, infants and toddlers would reflect 30 percent of the calibration sample, and preschool-aged children would reflect 70 percent of the calibration sample. Because the overall (raw) sample of students did not produce these percentages,

weights representing the calculated proportion of the desired percentages to the overall percentages were applied to each of the cell values. This process was applied at instrument domain levels and generated weight-adjusted values that produced the desired proportions. Table 15 displays the raw and weight-adjusted samples for each CDE division, by analytical dimension and age groups.

Table 15. Raw and Weight-Adjusted DRDP (2015) Calibration Sample by CDE Division and Age Group for Each Analytical Dimension

Analytical Dimension	Raw Sample		Weight-Adjusted Sample	
CDE Division	**Infant/Toddler**	**Preschool**	**Infant/Toddler**	**Preschool**
Dimension 1: ATL-REG and SED	2,668	18,729	6,419	14,978
ELCD	2,287	17,645	5,135	11,982
SED	381	1,084	1,284	2,996
Dimension 2: LLD: LANG, LLD: LIT, COG: MATH, and COG: SCI	2,759	18,580	6,346	14,808
ELCD	2,574	17,496	5,077	11,846
SED	381	1,084	1,269	2,962
Dimension 3: PD-HLTH	2,650	18,794	6,434	15,011
ELCD	2,269	17,710	5,147	12,009
SED	381	1,084	1,287	3.002
Dimension 4: ELD	0	10,166	0	10,166
ELCD	0	9,730	0	8,133
SED	0	436	0	2,033
Dimension 5: HSS	0	18,823	0	18,823
ELCD	0	17,739	0	15,058
SED	0	1,084	0	3,765
Dimension 6: VPA	0	18,834	0	18,834
ELCD	0	17,750	0	15,067
SED	0	1,084	0	3,767

Calibration Results

Frequency Distribution of Measure Ratings

Frequency tables of response ratings, by children's ages and CDE division, were constructed and reviewed. Frequency distributions of the rating data were disaggregated by education division, measure level, and child age. The DRDP Collaborative Development Group reviewed results as one of several pieces of information to guide refinements to measures and to confirm final instrument content. Overall, for most domains, the frequency of ratings was distributed as expected, with older children more often assigned ratings at LD levels and younger children more often assigned ratings at ED levels on each measure's continuum. The measures in the ELD domain were the exception because the continuum for English-language development for dual language learners is related to the availability of learning opportunities in English rather than to maturational age.

Symmetry of the Distribution

When examining the symmetry of the distribution of ratings for a given measure, it was important to note whether the shape of the distribution appeared to be single-peaked (unimodal), double-peaked (bimodal), or multiple-peaked (multimodal). That is, when all response ratings are displayed together, multiple peaks (modes) might indicate that more than one underlying distribution was present. It was desired for measures in most domains to be unimodal, representing one underlying distribution. Overall, for most domains, measure distributions were unimodal (refer to figures A-8, A-9, A-10, A-12, A-13 in appendix 10). The exception was the ELD domain, for which the measures had multimodal distributions (refer to figure A-11 in appendix 10).

Fit Statistics

Measure (item) fit statistics provided by the IRT analysis are an indicator of how well the data fits the model (refer to appendix 13). Adequate measure fit is an important indicator that the psychometric model being used is appropriate. A measure whose behavior does not fit the measurement model is referred to as a misfitting measure. Appendix 13 presents *infit* statistics for each measure. Relative to other fit statistics, infit reduces the influence of outliers on estimated model fit and, instead, increases the sensitivity to misfit between items and persons with similar levels of difficulty and latent traits, respectively.

Infit can be thought of as the ratio between observed variance and predicted variance: the ideal infit value is 1 (observed variance = predicted variance). However, limited unexpected variance is allowed. Two forms of rating patterns can be used to identify measures that have infit issues. An overly consistent pattern occurs when raters provide the same or similar ratings across all measures within a domain. An overly inconsistent pattern occurs when raters provide a more divergent set of ratings across the domain than would be expected. For this study, infit values greater than 1.33 indicate that the data for a measure is overly random, and infit values less than 0.75 indicate that the data for a measure is overly consistent. Based on these results, there were no concerns about measure fit.

A measure's separation reliability estimate "indicates how well the item parameters are separated; it has a maximum of one and a minimum of zero" (Wu et al. 2007, 25). As applied to the DRDP, the separation reliability estimate indicates the degree of distinctiveness of the interval-level ratings obtained through the calibration process. The domain separation reliability estimate is an aggregated estimate of the

separation reliability estimates for all of the measures in that domain grouping. The separation reliability indices of 0.99 indicated that the developmental levels within each DRDP (2015) grouping of domains were highly distinct. Refer to appendix 12 for the domain separation reliability estimates.

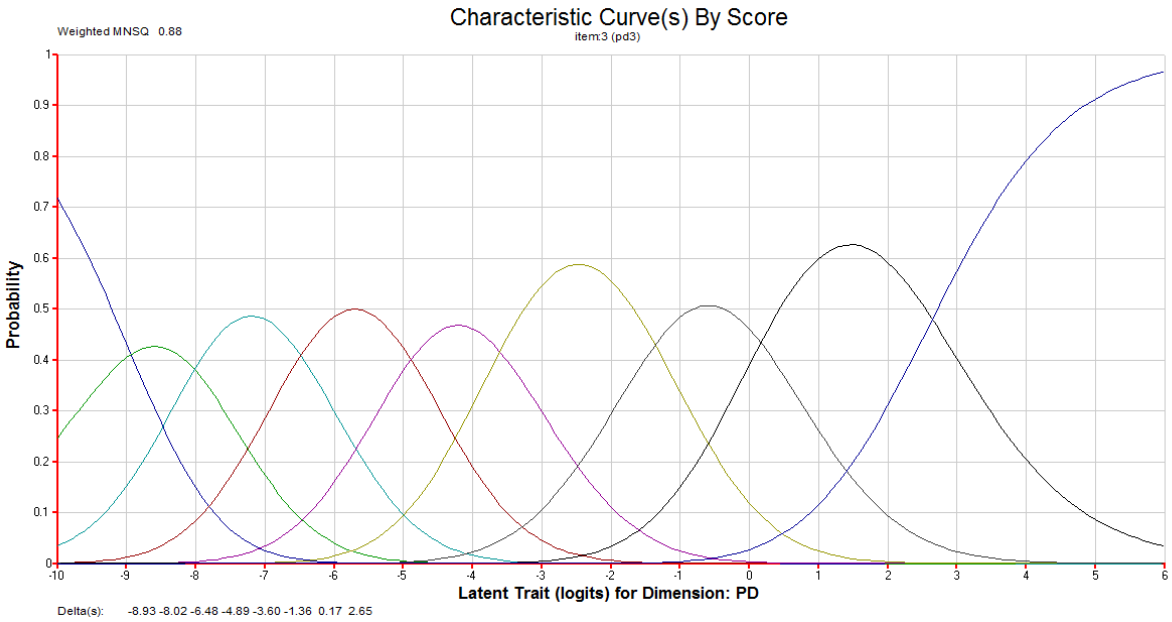
The precision of person estimates in the current study was reported by the EAP/PV reliability coefficient, which represents the explained variance in the estimated model divided by total person variance and is comparable with Cronbach's α (Bond and Fox 2006; Rost 2004; Walter 2005). In other words, the EAP/PV reliability indices are an estimate of how reliably the measures can be used to distinguish children's underlying abilities. Reliability coefficients of 0.75 or higher are considered good, although values of at least 0.55 are deemed satisfactory for group comparisons (Rost 2013). The EAP/PV reliability indices ranged from 0.73 to 0.99, indicating that the DRDP (2015) domains and sub-domains all had adequate score reliability. Refer to appendix 12 for the domain EAP/PV reliability estimates.

Item Characteristic Curves

Item characteristic curves (ICCs) are graphical representations of the probabilities of endorsing a particular rating level and are displayed across the continuum of possible ability levels (measured in logits) for each measure on the DRDP. Figure 4 displays a sample ICC for the PD-03 measure. The *x*-axis represents the distribution of ability, whereas the *y*-axis indicates the probability of being assigned a rating in a particular category. Each of the colored lines represents a different rating category. For the DRDP (2015), the ICC graphically shows the probability of being assigned a rating at each developmental level. Along the developmental continuum

(that is, from left to right on the *x*-axis of figure 4), the probability of a child being assigned a particular developmental level may increase or decrease, but, ultimately, the curve reaches a peak where the probability of being assigned a rating at that level is the greatest.

Figure 4. Item Characteristic Curve for Measure PD-03 (Six Levels)



The research team examined ICCs for all the measures on the DRDP (2015) to verify the sequencing and functioning of the developmental levels (e.g., whether levels were subsumed, too close together, or piled up in the middle of the distribution). The peak of the ICC for each level was expected to be above a probability rating of 0.5. The research team determined that all of the DRDP measures—and rating categories—demonstrated adequate functioning. The ICCs were ordered, and the category peaks showed distinct separation across the distribution of ability.

Wright Maps

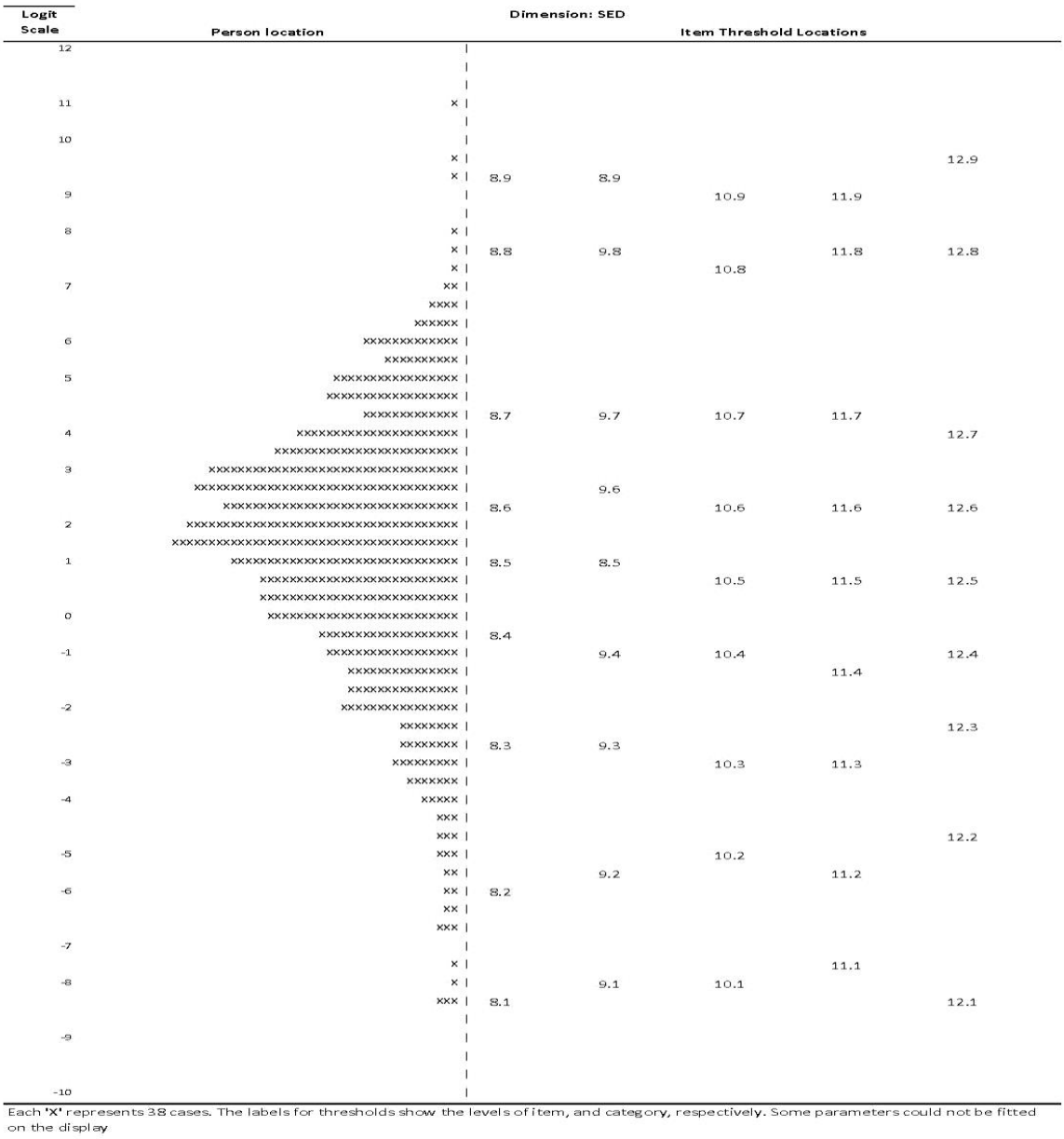
A Wright Map is a graphical tool that provides a visual description of both children's scores and the difficulty of assessment items (measures), including steps, on a common measurement scale. Wright Maps are commonly used in IRT analyses for a variety of purposes, including (1) visualizing the score distribution, (2) checking whether the measures and rating-scale categories (in the polytomous case) adequately cover the distribution of domain scores and thus provide reliable measurement across the score distribution, and (3) confirming the internal structure of the rating scale. One Wright Map was produced for each dimension in the model, whereas the results are reported at the domain level. Note that each dimension (including persons and items) is on a separate measurement scale, and, thus, domains can only be directly compared with other domains in the same dimension and should not be directly compared with domains in other dimensions.

Figure 5 shows the Wright Map for the DRDP SED domain. On the far left of the figure is the scale on which items and persons are measured, in numerical units known as logits. In the next column to the right is the person distribution (across the entire calibration sample); each X represents 38 cases from this sample. On the right side of the figure, each of the five columns represents the Thurstonian thresholds for a single item. These are in the form of X.Y, where X represents the measure number (labeled in order of appearance in the calibration data set), and Y represents the order number assigned to the developmental level (assigned such that the Responding Earlier level is zero and each later level of development receives a higher number).

Thurstonian thresholds represent the point at which a child at that level has a 50 percent probability of being assigned a rating at that developmental level or at a later

developmental level, and a 50 percent probability of being assigned a rating at an earlier developmental level. Thus, 8.1 is the point at which a child at that level has a 50 percent probability of being assigned a rating of Responding Later or later, and a 50 percent probability of being assigned a rating of Responding Earlier.

Figure 5. Wright Map for DRDP (2015) SED Domain



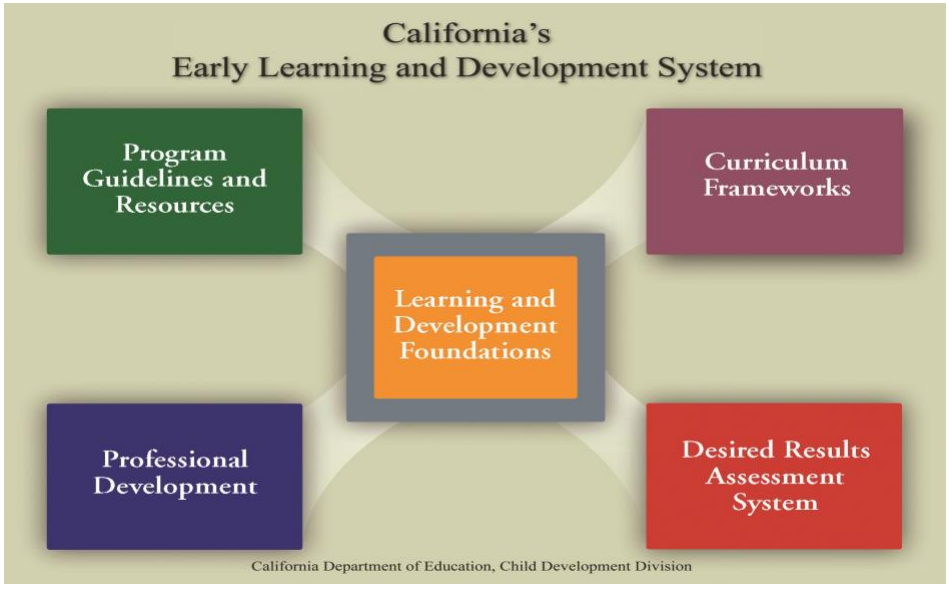
The Wright Maps in appendix 14 present information about the technical adequacy of the DRDP (2015). First, the distributions of children are roughly normal, which argues against misspecification of the dimensional structure (extra latent dimensions). Second, the steps of the measures have adequate coverage across the range of the score distribution, especially for the three OSEP dimensions. Third, the step difficulties are well ordered, suggesting the dimensions have adequate internal structure. The evidence from the Wright Maps supports the intended use of the DRDP.

5.0 Appendices

Appendix 1: California's Early Learning and Development System

The DRDP (2015) assessment is based on the CA-ELDS, which provides the context for the formative use of the DRDP instrument. The CA-ELDS provides an integrated set of research and evidence-based resources that support early learning and development through recommended practices in early education. It consists of five components: (1) early learning foundations, (2) curriculum frameworks, (3) assessment of children's progress, (4) program guidelines and related resources, and (5) professional development. Each component in the system provides resources that focus on a different aspect of supporting the efforts of early childhood teachers and link to the resources of every other component of the system (refer to figure A-6). CDE-funded programs are expected to deliver services that are integrated with the components of the CA-ELDS.

Figure A-6. California's Early Learning and Development System



Learning and Development Foundations

At the center of the CA-ELDS are California's early learning foundations (CDE 2008, 2009, 2010b, 2012). The purpose of the foundations is to promote understanding of young children's learning and development and to guide instructional practice. The foundations describe knowledge and skills that young children typically develop when provided with developmentally, culturally, and linguistically appropriate learning experiences. In other words, the foundations describe what all young children typically learn with appropriate support. The key areas of child development described within the foundations were used to support construct development for the DRDP.

The ITLDF consist of four domains: (1) Social-Emotional Development, (2) Language Development, (3) Cognitive Development, and (4) Perceptual and Motor Development. The PLF consist of nine domains: (1) Social-Emotional Development, (2) Language and Literacy, (3) English Language Development (for English learners), (4) Mathematics, (5) Visual and Performing Arts, (6) Physical Development, (7) Health, (8) History–Social Science, and (9) Science. These domains represent crucial areas of learning and development for young children. Within a particular domain, the foundations collectively provide a comprehensive overview of development in that domain.

The CDE ensured that the foundations accurately reflect current research by engaging leading experts in each developmental area to conduct research reviews and write the foundations based on those reviews. Both the research reviews and the draft foundations underwent extensive review and refinement by research experts, stakeholders, and focus groups of early childhood educators.

Curriculum Frameworks

Ongoing curriculum planning is an integral part of intentional teaching. The California Infant/Toddler Curriculum Frameworks and the California Preschool Curriculum Frameworks, Volumes 1, 2, and 3 (CDE 2010a, 2011, 2013), are the resources in the CA-ELDS that pertain to planning for children's learning. The curriculum frameworks include principles, concepts, and practices that reflect a developmentally appropriate approach to planning learning environments, interactions, experiences, and daily routines and activities for young children. These approaches are flexible and designed to foster respect for the diversity of young children, teachers, communities, and programs in California. Overall, the curriculum frameworks present an integrated approach to the planning of environments, interactions, and strategies to support young children's learning in the relevant domains.

Program Guidelines and Resources

The Preschool Program Guidelines (CDE 2015), Infant/Toddler Learning & Development Program Guidelines (CDE 2006), and other resources provide guidance to the early learning system for creating quality programs for infants, toddlers, and preschool-aged children. They present broad recommendations for program quality based on research, theory, and practice, and are available for programs seeking to provide high-quality early care and education services. The recommendations set forth in the program guidelines and related resources set the stage for intentional teaching and curriculum planning centered on the foundations.

Professional Development

Professional development is the key to making the CA-ELDS an integral part of daily practice for practitioners in early childhood settings. As such, the CDE takes a multifaceted approach to promoting the use of the CA-ELDS with professional development resources.[35] Initiatives include the preparation and ongoing professional development of early childhood teachers and special educators in two-year and four-year colleges. To guide efforts that foster professional development, the CDE partnered with First 5 California to develop the California Early Childhood Educator (ECE) Competencies, which are aligned with the foundations and all other resources in the CA-ELDS. The California ECE Competencies describe the knowledge, skills, and dispositions that early childhood educators need to provide high-quality care and education to young children and their families. The term *early childhood educator* includes everyone responsible for the care and education of young children.

Desired Results Assessment System

Teachers gain general knowledge of child development from the foundations and ideas for supporting learning from the curriculum frameworks. Neither of these resources inform teachers about individual children's learning and developmental progress. The DRDP (2015) is the resource within the CA-ELDS that assists teachers with documenting individual children's progress and is part of the ELCD's Desired Results assessment system.[36] Other components of the ELCD's Desired Results

[35] A list of the professional development resources provided by the ELCD is available at https://www.cde.ca.gov/sp/cd/re/cddprofdevtrain.asp.

[36] For more information about the ELCD's Desired Results assessment system, visit https://www.desiredresults.us/about-us.

assessment system include the Desired Results Parent Survey, the Environment Rating Scales, and a program self-assessment. As a group, these instruments and other documents comprise the assessment component of the more encompassing CA-ELDS.

Appendix 2: Process for Developing DRDP (2015) Measures Aligned to the Foundations

DRDP (2015) content corresponds to the CA-ELDS and the early learning foundations. The process of developing an aligned DRDP instrument began with employing the same child development research experts who developed the foundations to draw on their respective areas of expertise to initially draft DRDP measures. The child development research experts initially drafted the DRDP measures by reviewing the foundations and keeping in mind the essential components of the DRDP (that is, that measures collectively represent the breadth of each domain, are salient to later academic achievement, and describe observable behaviors in young children in everyday routines and activities).

To sufficiently cover the content of the foundations and to have continuity across the infant/toddler and preschool-age periods, the DRDP (2015) Infant/Toddler View consists of five domains while the DRDP Preschool View consists of eight domains. The correspondence between the DRDP (2015) and the foundations are provided in tables A-16 and A-17.

Table A-16. Correspondence of the DRDP (2015) Infant/Toddler View to the California Infant/Toddler Learning & Development Foundations

DRDP (2015) Infant/Toddler View Domains	Corresponding Domains in the Infant/Toddler Learning & Development Foundations
Approaches to Learning–Self-Regulation	• Cognitive Development • Social-Emotional Development
Social and Emotional Development	• Cognitive Development • Social-Emotional Development
Language and Literacy Development	• Language Development
Cognition, Including Math and Science	• Cognitive Development

DRDP (2015) Infant/Toddler View Domains	Corresponding Domains in the Infant/Toddler Learning & Development Foundations
Physical Development–Health	• Cognitive Development • Perceptual and Motor Development • Social-Emotional Development

Table A-17. Correspondence of the DRDP (2015) Preschool Comprehensive View to the California Preschool Learning Foundations

DRDP (2015) Preschool Comprehensive View Domains/Sub-domains	Preschool Learning Foundations, Volumes 1–3
Approaches to Learning–Self-Regulation	• History–Social Science (vol. 3) • Social-Emotional Development (vol. 1)
Social and Emotional Development	• History–Social Science (vol. 3) • Social-Emotional Development (vol. 1)
Language and Literacy Development *(LANG and LIT sub-domains)*	• Language and Literacy (vol. 1)
English-Language Development	• English-Language Development (vol. 1)
Cognition, Including Math and Science *(MATH and SCI sub-domains)*	• Mathematics (vol. 1) • Science (vol. 3)
Physical Development–Health *(PD and HLTH sub-domains)*	• Physical Development (vol. 2) • Health (vol. 2)
History–Social Science	• History–Social Science (vol. 3) • Social-Emotional Development (vol. 1)
Visual and Performing Arts	• Visual and Performing Arts (vol. 2)

To the greatest extent possible and as supported by the research literature, measures spanned child development for children from early infancy up to kindergarten entry (FC measures). Some measures were developed for use with infants and toddlers (IT) or preschool-aged children (PS) and do not span the full continuum. During instrument development, it was determined that each DRDP domain or sub-domain must have a minimum of four measures, with at least two FC measures. A minimum of four measures per domain or sub-domain ensures minimum acceptable scale score

reliability and accuracy in estimating children's development in a given domain or sub-domain. A minimum of two FC measures per domain or sub-domain supports the birth-to-kindergarten continuum for that domain or sub-domain.

By being aligned with the foundations, the domains and sub-domains of the DRDP (2015) represent California's research-based priorities for early development and learning. In California, preschool learning foundations that cover the same domains addressed by the state's kindergarten academic content standards and that complement those content areas with attention to social and emotional development and English-language development at the preschool level are high priority. Like the learning in such domains as language and literacy and mathematics, the concepts learned in social and emotional development and English-language development domains also contribute significantly to young children's readiness for school (Phillips and Shonkoff 2000; NRC 2001).

Finally, the developmental progressions or continua for measures within each domain of the DRDP (2015) must be consistent with the foundations and benchmarks typically expected for specific age ranges. To span the entire developmental range appropriate for all children from birth to kindergarten entry, the latest developmental level described in each measure of the DRDP (2015) must accommodate some children whose observed knowledge, skills, and behaviors correspond to a later developmental level than that identified as typical at around 60 months of age in the PLF. This provision is to avoid a ceiling effect on the instrument for preschool-aged children.

Once drafted, the measures underwent a rigorous and iterative process of review and editing by the DRDP Collaborative Development and Examples Review Groups.

Additional review and feedback were provided by SED- and ELCD-identified experts and external reviewers from California's early childhood higher education, special education, and culture and language diversity communities. Overall, the DRDP (2015) represents a sample of the content addressed in the foundations and standards, broadly covering the most salient knowledge and skills in early childhood and refined through rigorous and extensive external and internal reviews.

Appendix 3: Head Start Early Learning Outcomes Framework

The HSELOF presents five broad areas of early learning, referred to as central domains. The framework is designed to show the continuum of learning for infants, toddlers, and preschoolers. It is grounded in comprehensive research around what young children should know and be able to do during their early years.[37]

The five central domains apply to both the infant/toddler and preschool-age periods, with greater differentiation of domains delineated for preschool children. Figure A-7[38] provides a graphic depicting the five central domains of the HSELOF as they are applied to the infant/toddler and preschool-age periods.

Figure A-7. Head Start Child Outcomes Framework

	Central Domains				
	Approaches to Learning	**Social and Emotional Development**	**Language and Literacy**	**Cognition**	**Perceptual, Motor, and Physical Development**
Infant / Toddler Domains	Approaches to Learning	Social and Emotional Development	Language and Communication	Cognition	Perceptual, Motor, and Physical Development
Preschooler Domains	Approaches to Learning	Social and Emotional Development	Language and Communication Literacy	Mathematics Development Scientific Reasoning	Perceptual, Motor, and Physical Development

[37] To learn more about the HSELOF, see https://eclkc.ohs.acf.hhs.gov/school-readiness/article/head-start-early-learning-outcomes-framework.

[38] The graphic was retrieved from https://eclkc.ohs.acf.hhs.gov/hslc/hs/sr/approach/elof.

Appendix 4: DRDP (2015) Measures Within Domains

There are two versions of the DRDP (2015)—one for use with infants and toddlers (Infant/Toddler [IT] View) and the other for use with preschool-aged children (Preschool [PS] View). A list of the measures required for each version of the instrument are provided in table A-18.

Table A-18. DRDP (2015) Measures Within Domains for the Infant/Toddler and Preschool Views

Domain/Measure	IT View	PS View
Minimum number of required measures	*29*	*46*
Approaches to Learning–Self-Regulation (ATL-REG)	5	4
1 Attention maintenance	✓	+
2 Self-comforting	✓	+
3 Imitation	✓	+
4 Curiosity and initiative in learning	✓	✓
5 Self-control of feelings and behavior	✓	✓
6 Engagement and persistence		✓
7 Shared use of space and materials		✓
Social and Emotional Development (SED)	5	5
1 Identity of self in relation to others	✓	✓
2 Social and emotional understanding	✓	✓
3 Relationships and social interactions with familiar adults	✓	✓
4 Relationships and social interactions with peers	✓	✓

Domain/Measure	IT View	PS View
Minimum number of required measures	*29*	*46*
5 Symbolic and sociodramatic play	✓	✓
Language and Literacy Development (LLD)	5	10
1 Understanding of language (receptive)	✓	✓
2 Responsiveness to language	✓	✓
3 Communication and use of language (expressive)	✓	✓
4 Reciprocal communication and conversations	✓	✓
5 Interest in literacy	✓	✓
6 Comprehension of age-appropriate text		✓
7 Concepts about print		✓
8 Phonological awareness		✓
9 Letter and word knowledge		✓
10 Emergent writing		✓
English-Language Development (ELD)		(4)
1 Comprehension of English (receptive English)		*
2 Self-expression in English (expressive English)		*
3 Understanding and response to English literacy activities		*
4 Symbol, letter, and print knowledge in English		*
Cognition, Including Math and Science (COG)	6	10
1 Spatial relationships	✓	+
2 Classification	✓	✓
3 Number sense of quantity	✓	✓

Domain/Measure	IT View	PS View
Minimum number of required measures	*29*	*46*
4 Number sense of math operations		✓
5 Measurement		✓
6 Patterning		✓
7 Shapes		✓
8 Cause and effect	✓	✓
9 Inquiry through observation and investigation	✓	✓
10 Documentation and communication of inquiry		✓
11 Knowledge of the natural world	✓	✓
Physical Development–Health (PD-HLTH)	8	8
1 Perceptual-motor skills and movement concepts	✓	✓
2 Gross locomotor movement skills	✓	✓
3 Gross motor manipulative skills	✓	✓
4 Fine motor manipulative skills	✓	✓
5 Safety	✓	✓
6 Personal care routines: hygiene	✓	✓
7 Personal care routines: feeding	✓	+
8 Personal care routines: dressing	✓	+
9 Active physical play		✓
10 Nutrition		✓
History–Social Science (HSS)		5
1 Sense of time		✓
2 Sense of place		✓
3 Ecology		✓

Domain/Measure	IT View	PS View
Minimum number of required measures	*29*	*46*
4 Conflict negotiation		✓
5 Responsible conduct as a group member		✓
Visual and Performing Arts (VPA)		4
1 Visual art		✓
2 Music		✓
3 Drama		✓
4 Dance		✓

* Conditional ELD measures for preschool.
+ Conditional preschool measures that are used by the SED for OSEP reporting for preschool children with an IEP and are optional for ELCD preschool children.
IT = infant/toddler; PS = preschool

Appendix 5: DRDP (2015) Examples Process and Elements

Examples were a key element in the development of DRDP (2015) measures and were initially drafted by the child development research experts. The examples then went through a process of extensive review and revision by the DRDP Collaborative Reports Development and Examples Review Groups to produce the final set of examples for each measure.

The DRDP Collaborative determined that DRDP (2015) examples should be readily observable for the assessors and help them in their own use of the instrument. The following guidelines were used to inform the work of the Examples Review Group:

- At least three examples should be provided for each developmental level.
- Examples should clearly illustrate the descriptors, with each aspect of the descriptor being reflected in one or more of the examples.
- The wording of examples should be concise and consistent across measures.
- The principles of universal design should be used in the development of examples rather than references to special groups or populations.
- Examples should be culturally and linguistically appropriate and reflect the inclusion of children with disabilities or other special needs.
- The examples should reflect knowledge, skills, and behaviors that would be readily observable in early childhood settings.

Appendix 6: Panel Reviews and Cognitive Interviews

Panel reviews and cognitive interviews supported the acceptability of the DRDP (2015).

Panel Reviews

During the fall of 2012, a series of panel reviews were conducted and overseen jointly by both the ELCD and the SED. Panelists provided a critical review of instrument content and offered feedback about the layout and content of the DRDP (2015) within their respective areas of expertise. Three panels were held with a total of 14 panel members with expertise in the areas of assessment, higher education, dual language learning, and special education. In addition, a cross-discipline panel, with five experts who had participated in one of the three panels, was convened to review revisions to the instrument based on panelist input.

Cognitive Interviews

Cognitive interviews were conducted with 16 ELCD teachers and 16 SED special educators during spring 2014. The purposes of the cognitive interviews were to (1) investigate the extent to which the elements of the instrument (definitions, descriptors, and examples) influenced the process for determining ratings for DRDP measures, (2) identify trends in how ratings were determined, and (3) review trends across groups of assessors, child characteristics, and settings.

Specifically, the following aspects of the DRDP were studied:

- Instrument components: (1) developmental domains, (2) measures and definitions, (3) developmental levels and descriptors, (4) examples, (5) rating components, and (6) other supporting evidence

- Rating process: (1) layout and orientation, (2) clarity of content, (3) clarity of intention, (4) application and reflection, and (5) rating decision-making

Each cognitive interview consisted of four components: (1) a “rate aloud” segment, (2) an exercise to sort and order developmental levels within a given measure, (3) an exercise in which assessors made distinctions between two developmental levels on a given measure, and (4) a debriefing interview. For the “rate aloud” segment, assessors narrated to the researcher their thinking processes used in determining ratings for a sub-group of DRDP (2015) measures for one or two children. For the debriefing interview, assessors were asked to provide information about how they typically prepared to complete ratings for the DRDP, their overall impressions of the DRDP (2015), feedback they wanted to provide to instrument developers, and feedback for researchers about the cognitive interview process.

Each component of the cognitive interview was guided by the research protocol, which included a detailed script for the researcher and precise data-gathering tools for tracking and noting all assessor responses. Researchers involved in conducting the cognitive interviews completed a one-day training, including exercises to ensure interrater reliability. All cognitive interviews were recorded and transcribed. Transcriptions were reviewed to ensure consistent implementation of the protocol.

The methodology for analyzing the data from the cognitive interviews began with an overall analysis to identify general trends across measures (such as wording of descriptors and developmental levels) that were used to guide review and refinement of content by the DRDP Collaborative Development Group. This initial analysis was

followed by a deeper investigation into how assessors process ratings, which was used to guide the development of training and other resources to support instrument users.

Appendix 7: Alignment of the DRDP (2015) to the Office of Special Education Programs Child Outcomes

The Individuals with Disabilities Education Improvement Act of 2004 (IDEA 2004) included a heightened emphasis on accountability. Under IDEA 2004, states are directed to develop state performance plans (SPPs) and to submit annual performance reports (APRs) to OSEP related to a set of accountability indicators specified in the SPP. The SPP/APR contain baseline data and measurable and rigorous targets for each indicator. Two indicators on the SPP and APR are focused on improving educational results for children with disabilities. Indicator 7 of the IDEA Part B SPP/APR focuses on developmental and learning outcomes for preschool children with IEPs in three outcome areas. Indicator 3 of the Part C SPP/APR focuses on developmental and learning outcomes for infants and toddlers with IFSPs enrolled in early intervention programs in three outcome areas.

California's Special Education Local Plan Areas (SELPAS) report the child outcome data for children with IFSPs and IEPs to the SED, and the outcome data for the SPP and APR are compiled by using information from the DRDP (2015). The SED then reports Indicator 7 results for preschool children with IEPs as part of the Part B SPP and APR to OSEP. Given that the SED only serves a portion of the state's population of infants and toddlers with IFSPs, the Indicator 3 summary of the developmental progress of infants and toddlers with IFSPs served by the CDE is submitted to the Part C lead agency, the California Department of Developmental Services.

OSEP uses the Indicator 7 and Indicator 3 SPP and APR data to determine how well the state's programs have supported children enrolled in early childhood special

education or early intervention programs in making measurable progress and to determine whether the state is achieving its identified targets. The SED also uses the Indicator 7 and Indicator 3 information to determine how well local education agencies or early intervention programs have helped children with IEPs or IFSPs make measurable progress.

The three child outcomes measured in the SPP and APR are

1) Outcome 1: **Social relationships**, which includes getting along with other children and relating well with adults;
2) Outcome 2: **Use of knowledge and skills**, which refers to thinking, reasoning, problem-solving, language, early literacy, and other pre-academic skills; and
3) Outcome 3: **Taking action to meet needs**, which includes motor skills, dressing, self-care, and following rules related to health and safety.

The DRDP (2015) developmental domains are grouped to align to these three OSEP child outcomes. This alignment is shown in table A-19.

Table A-19. Alignment of the DRDP (2015) Domains to the OSEP Child Outcome Areas

DRDP (2015) Infant/Toddler View Domains	OSEP Child Outcome Areas
Approaches to Learning–Self-Regulation Social and Emotional Development	• Social relationships, which includes getting along with other children and relating well with adults
Language and Literacy Development Cognition, Including Math and Science	• Use of knowledge and skills, which refers to thinking, reasoning, problem-solving, language, early literacy, and other pre-academic skills
Physical Development–Health	• Taking action to meet needs, which includes motor skills, feeding,

DRDP (2015) Infant/Toddler View Domains	OSEP Child Outcome Areas
	dressing, self-care, and following rules related to health and safety

Table A-20 shows the alignment of the individual measures for the Infant/Toddler View and the Preschool View of the DRDP (2015) to the OSEP child outcomes. However, it is important to note that not all measures of the DRDP (2015) were determined to be required for OSEP child outcome reporting; only the set of measures used in the analysis and reporting to OSEP are shown in table A-20.

Table A-20: DRDP (2015) Measures Within Domains for the Infant/Toddler and Preschool Views Required for OSEP Child Outcome Reporting

	Required Measures for OSEP Reporting	
Domain / Measure	**IT Measures**	**PS Measures**
Approaches to Learning–Self-Regulation (ATL-REG)	5	7
1 Attention maintenance	✓	✓
2 Self-comforting	✓	✓
3 Imitation	✓	✓
4 Curiosity and initiative in learning	✓	✓
5 Self-control of feelings and behavior	✓	✓
6 Engagement and persistence		✓
7 Shared use of space and materials		✓
Social and Emotional Development (SED)	5	5
1 Identity of self in relation to others	✓	✓
2 Social and emotional understanding	✓	✓
3 Relationships and social interactions with familiar adults	✓	✓
4 Relationships and social interactions with peers	✓	✓
5 Symbolic and sociodramatic play	✓	✓

	Required Measures for OSEP Reporting	
Domain / Measure	**IT Measures**	**PS Measures**
Language and Literacy Development (LLD)	5	10
1 Understanding of language (receptive)	✓	✓
2 Responsiveness to language	✓	✓
3 Communication and use of language (expressive)	✓	✓
4 Reciprocal communication and conversations	✓	✓
5 Interest in literacy	✓	✓
6 Comprehension of age-appropriate text		✓
7 Concepts about print		✓
8 Phonological awareness		✓
9 Letter and word knowledge		✓
10 Emergent writing		✓
Cognition, Including Math and Science (COG)	6	7
1 Spatial relationships	✓	✓
2 Classification	✓	✓
3 Number sense of quantity	✓	✓
4 Number sense of math operations		✓
5 Measurement		✓
6 Patterning		✓
7 Shapes		✓
8 Cause and effect	✓	
9 Inquiry through observation and investigation	✓	
COG 10 is not included in the OSEP child outcome reporting.		
11 Knowledge of the natural world	✓	
Physical Development–Health (PD-HLTH)	8	10
1 Perceptual-motor skills and movement concepts	✓	✓
2 Gross locomotor movement skills	✓	✓
3 Gross motor manipulative skills	✓	✓
4 Fine motor manipulative skills	✓	✓
5 Safety	✓	✓
6 Personal care routines: hygiene	✓	✓

	Required Measures for OSEP Reporting	
Domain / Measure	**IT Measures**	**PS Measures**
7 Personal care routines: feeding	✓	✓
8 Personal care routines: dressing	✓	✓
9 Active physical play		✓
10 Nutrition		✓

IT = infant/toddler, PS = preschool

Appendix 8: Sensitivity Study (Fall 2013)

Introduction

The 2014–15 Sensitivity Study was conducted by the SED's contractor, the Desired Results Access Project, to examine whether scores on the DRDP (2015) demonstrated the capacity to measure progress for children with IEPs and IFSPs who were enrolled in early childhood special education or early intervention programs. Sensitivity to change is necessary to meet the federal reporting requirements of the CDE to OSEP. The following research questions were addressed as part of the Sensitivity Study:

1. Do children with IFSPs and IEPs demonstrate progress on DRDP assessments, completed six months apart, as measured by a positive change in developmental level on any measure within each of the dimensions?
2. On which DRDP (2015) measures, completed six months apart, are children making progress as measured by a positive change in their developmental level?
3. To what extent do children with different functional ability limitations differ on progress made across six months on the measures of the DRDP (2015)?

Six months was selected as the time window for evaluating sensitivity to change because it is the minimum amount of time a child must be receiving early intervention or early childhood special education services to be included in OSEP federal reporting.

Sample

A total of 1,171 children with IFSPs (*n* = 308) and IEPs (*n* = 863) were included in the Sensitivity Study sample. Each child was assessed in both fall 2014 and spring

2015. These assessment records were pulled from the larger fall 2014 and spring 2015 DRDP Calibration Study data sets. Between the fall 2014 and spring 2015 assessments, children were receiving either early childhood special education or early intervention services.

Sensitivity Analysis Procedures

For the 2014–15 Sensitivity Study, progress was evaluated using three procedures. The first procedure identified progress as a positive developmental level change on any measure within the group of domain measures that comprised each of the three OSEP child outcomes (dimensions). For example, a child's advancement of at least one level in any of the DRDP (2015) domains or sub-domains of LLD (Language and Literacy) and COG (Math and Science) would demonstrate sensitivity within OSEP child outcome 2: use of knowledge and skills. This method broadly mirrors a component of the analysis used by the SED to fulfill reporting on the OSEP child outcomes.

In the second procedure, the change in DRDP (2015) measure ratings was calculated across individual measures at the two points in time approximately six months apart for each child in the study. The proportion of children who advanced at least one developmental level on a measure from Time 1 to Time 2 was determined. Progress of at least one developmental level was considered evidence of sensitivity and reflected a qualitative change in development and learning from Time 1 to Time 2.

In the third procedure, the sample was split into three groups by functional ability levels. Special education teachers completed the ABILITIES Index (Simeonsson and Bailey 1991) to determine the severity of disability for the sample of their children included in the Sensitivity Study. The three groups were characterized as children with

(1) mild functional ability limitations, (2) moderate functional ability limitations, or (3) severe functional ability limitations. For the three groups, the change in DRDP (2015) measure ratings was calculated for each domain, and the percentages for each group were compared.

Results

OSEP results by dimension. For OSEP child outcome 1, 95 percent of children made progress (of at least one level) on at least one measure within the dimension. For OSEP child outcome 2, 96.6 percent of children made progress on at least one measure within the dimension. For OSEP child outcome 3, 92.7 percent of children made progress on at least one measure within the dimension. This data suggests that the DRDP (2015) can be used to determine progress with sufficient sensitivity for federal reporting purposes.

Measure-level results. Across all measures, there was strong evidence that children were rated as making progress from Time 1 to Time 2. The proportion of children whose measure ratings advanced at least one developmental level from Time 1 to Time 2 ranged from 39.3 percent to 59.8 percent across all DRDP (2015) measures.

In general, no measures were observed as being overly “difficult” (characterized by less than 10 percent of children advancing at least one level from Time 1 to Time 2) or “easy” (characterized by more than 90 percent of children advancing at least one level from Time 1 to Time 2) relative to other measures on the instrument.

Severity of functional ability limitations. The proportion of children who made progress on the measures of the DRDP differed based on whether children’s scores on the ABILITIES Index indicated mild, moderate, or severe functional ability limitations.

Across all three OSEP outcome areas, a higher proportion of children generally characterized as having more severe limitations received ratings indicating no progress on any of the measures within each OSEP child outcome than that of children with mild or moderate limitations.

For OSEP child outcome 1, 7.8 percent of children with severe limitations did not make progress, while 6.3 percent of children with moderate limitations and 3.2 percent of children with mild limitations did not make progress on any measure. For child outcome 2, 6 percent of children with severe limitations, 1.7 percent with moderate limitations, and 3 percent with mild limitations did not make progress, indicating the group of children with moderate limitations were more likely to make progress than the other two groups. For child outcome 3, 12.8 percent of children with severe limitations did not make progress on any of the measures, while 9.1 percent with moderate limitations and 3.8 percent with mild limitations did not make progress. This pattern is consistent with what would be expected given the nature of development and learning for children with more severe functional ability limitations.

Conclusion

The data from the Sensitivity Study provides initial support that the DRDP (2015) can be used to capture change in the learning and development of children with IEPs or IFSPs enrolled in early childhood special education or early intervention. The results indicate the majority of children made progress within six months at the OSEP child outcome level and the measure level. It is important to note that, for the small proportion of children who did not make progress, six months was the length of time used in this study. In general, children receive special education services for a much longer time

between program entry and exit, which are the two time points required by OSEP for measuring progress. The results, therefore, demonstrate that progress was measured on the DRDP with sufficient sensitivity for federal reporting purposes for children with IFSPs and IEPs.

Appendix 9: Universal Design

The concept of universal design originated from the field of architecture relative to making buildings and surrounding environments accessible to all people, including those with disabilities. It has been defined as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (Thompson, Johnstone, and Thurlow 2002, 1). The concept of universal design has also been applied to learning, referred to as universal design for learning, through the National Center on Universal Design for Learning (http://www.udlcenter.org) and to large-scale assessment through the work of the National Center on Education Outcomes (https://nceo.info/).

Applying universal design to an assessment requires consideration of the characteristics of the assessment as it is being developed. The National Center on Education Outcomes reviewed research relevant to assessment development and universal design and identified elements that must be considered (Thompson, Johnstone, and Thurlow 2002). While these elements relate primarily to school-age assessments, several concepts also relate to the application of universal design to the development of assessments for young children:

- The entire population who might be assessed with the instrument must be considered when the assessment is developed (AERA, APA, and NCME 2014). Field tests, calibration studies, norming studies, and validity or reliability studies should include children with disabilities and other characteristics that would be expected to be assessed with the instrument.

- Construct-irrelevant cognitive, sensory, emotional, and physical barriers in the assessment should be removed. Items on the assessment should be written in a way that does not preclude giving full credit to children who have physical, sensory, cognitive, communication, or social and emotional disabilities. At the same time, it is important that changes to remove construct-irrelevant variance do not invalidate the measure by changing it into a different construct.
- Items should be reviewed for bias. Bias in an instrument can be reviewed through a field test that can determine item difficulty for various groups of children (AERA, APA, and NCME 2014). Studies of DIF indicate “when students equated on relevant ability but representing different groups do not have the same probability of responding correctly to test items” (Thompson, Johnstone, and Thurlow 2002, 9).
- The assessment should have simple, clear instructions and procedures presented in a language or mode of communication that the child understands. Whether the assessment is adult-directed or computer-administered or involves the observation of a child in natural environments, the child must be able to understand and respond to communication that provides instructions or questions.
- The assessment must be amenable to accommodations. Even an assessment integrated with the principles of universal design may not appropriately assess all constructs without the use of accommodations or

adaptations. Therefore, it is important that accommodations can be applied to the assessment.

Elements of Universal Design

Universal design for learning is based on three principles, which have been derived from research in education, developmental psychology, cognitive science, and cognitive neuroscience (Rose and Gravel 2010). These three principles describe critical features of any learning environment.

1. Provide multiple means of representation.

Means of representation refers to the ways that information is represented in the environment. Some children will grasp information more quickly when it is visually represented, while others may understand information better through auditory means. No single means of representation will be best for all children. Rather, it will be important to provide information using multiple means of representation.

2. Provide multiple means of action and expression.

Means of action and expression refers to the ways that children can express what they know. Some children will express themselves best through actions while others will express themselves best through speech. Again, no single means of action and expression will be best for all children. It will be important to provide options so that all children can perform actions and express themselves.

3. Provide multiple means of engagement.

Means of engagement refers to affect and the ways children can be engaged or motivated to learn. Some children are engaged by novelty, while others prefer routine situations. Some children prefer to engage with peers, while others prefer to be by

themselves. Again, it will be important to provide options so that all children can engage in learning experiences.

Providing for multiple means of representation, action and expression, and engagement is important so that all children are able to understand, express themselves, and engage in routines and activities in their learning environments. The DRDP (2015) was developed in a way that facilitates the application of the principles of universal design for learning. Table A-21 below provides examples of the application of universal design for learning as expressed through the wording of descriptors and examples found in the DRDP.

Table A-21. Selected Universal Design Examples from the DRDP (2015)

Universal Design Elements	Measure	Example
1. Multiple means of representation. Information and content expressed in different ways.	LLD 5: Interest in Literacy	Descriptor for Exploring Later: "Looks at books … or chooses to join reading, singing, or rhyming activities …" This represents interest in literacy either through looking at books or joining reading, singing, or rhyming activities.
2. Multiple means of expression. Children can demonstrate what they know in different ways.	ATL-REG 1: Attention Maintenance	Responding Earlier: Descriptor begins with "Attends or responds." The three examples suggest a visual, auditory, or motor response is appropriate expression of attention maintenance.
2. Multiple means of expression. Children can demonstrate what they know in different ways.	LLD 3: Communication and Use of Language (Expressive)	Example for Building Later: "Communicates in sign language that the cat's feet are wet." The example illustrates communicating in sign language is an appropriate form of expression.

Universal Design Elements	Measure	Example
2. Multiple means of expression. Children can demonstrate what they know in different ways.	LLD 7: Concepts About Print	Example for Building Later is written in Vietnamese. The example illustrates communicating in another language is an appropriate form of expression of concepts about print.
2. Multiple means of expression. Children can demonstrate what they know in different ways.	LLD 8: Phonological Awareness	Footnote for LLD 8 illustrates multiple means of expression: "Children who are deaf and learning American Sign Language will attend to elements of language (hand shapes and movements) in the early levels of learning … For a child who is hard of hearing, has a cochlear implant, or is using cued speech, the sequence may or may not be similar to that of a hearing child."
2. Multiple means of expression. Children can demonstrate what they know in different ways.	COG 4: Number Sense of Math Operations	Example for Building Middle refers to *communicating*—"Communicates 'Now we have three …'"—rather than *saying (using the word "Says")*, so all forms of communication may be accepted.
3. Multiple means of engagement. Stimulate interest and motivation.	ATL-REG 6: Engagement and Persistence	Descriptor for Building Earlier includes multiple means of engagement: "Continues self-selected activities …"

DRDP (2015) System of Adaptations

According to Thompson et al. 2002, "Even though items on universally designed assessments will be accessible for most students, there will still be some students who continue to need accommodations" (12). Even an assessment that incorporates the principles of universal design may not appropriately assess all constructs for all children without the use of additional accommodations or adaptations for children who need

them. The DRDP (2015) has a system of adaptations developed specifically for use with children with disabilities. Information about adaptations or accommodations identified for each child should be included in the child's IEP or IFSP.

Adaptations are defined by the DRDP (2015) as changes in the environment or differences in observed behavior that allow children with IFSPs and IEPs to be accurately assessed in their typical settings (CDE 2015). Adaptations are used to ensure that the DRDP instruments measure *ability*, rather than disability. Adaptations used with the DRDP (2015) are identified by reviewing the adaptations included in the IFSP or IEP and by observing the child in his or her typical environment prior to observing for the purpose of determining ratings using the DRDP (2015). Additional information can be found on the Desired Results Access Project website (https://draccess.org/adaptations). Definitions are provided for each of the adaptations in table A-22. Examples of the relationship between universal design and adaptations are provided in table A-23.

Table A-22. Adaptations Available for Use with the DRDP (2015)

Adaptation	Definition
Augmentative or alternative communication system	Methods of communication other than speech that allow a child who is unable to use spoken language to communicate with others
Alternative mode for written language	Methods of reading or writing used by a child who cannot see well enough to read or write or cannot hold and manipulate a writing utensil (e.g., pencil, pen) well enough to produce written symbols
Visual support	Adjustments to the environment that provide additional information to a child who has limited or reduced visual input
Assistive equipment or device	Tools that make it possible or easier for a child to perform a task
Functional positioning	Strategic positioning and postural support that allow a child to have increased control of his or her body

Adaptation	Definition
Sensory support	Increasing or decreasing sensory input to facilitate a child's attention and interaction in the environment
Alternative response mode	Recognition that a child might demonstrate mastery of a skill in a unique way that differs from the child's typically developing peers

Table A-23. Examples of the Relationship Between Universal Design and Adaptations in the DRDP (2015)

Measure	Example	Universal Design Element	Adaptation for Individual Child
LLD 3: Communication and Use of Language (Expressive)	Building Middle example: "Communicates using a communication board, 'I need a tissue.'"	Multiple means of action and expression are possible, in this example, a communication board.	Augmentative or alternative communication system: Using a communication board has been identified as an effective way for a child with an IFSP or IEP to communicate.
LLD 6: Comprehension of Age-Appropriate Text	Exploring Middle example: "Touches Braille and image of sheep with textured wool in a book …"	Multiple means of representation are possible in this example through Braille and textured pictures.	Visual support: Braille and textured pictures have been identified as helpful for a child with an IFSP or IEP to obtain information from books and pictures.
LLD 7: Concepts About Print	Building Earlier example: "Turns pages of an adapted book, using ice pop stick handles."	Multiple means of engagement are possible: Books with ice pop stick handles are universally available in this environment.	Assistive equipment or device: The use of ice pop stick handles has been identified as helpful for enabling a child with an IFSP or IEP to turn pages.

Measure	Example	Universal Design Element	Adaptation for Individual Child
PD-HLTH 4: Fine Motor Manipulative Skills	Footnote: “Children who do not have use of one or both hands may still be rated as demonstrating mastery at a level if they can accomplish the functional intent of the descriptor using other body parts, or prosthetic devices.”	Multiple means of action and expression are possible: In this environment, it is possible for children to perform fine motor skills using alternative methods.	Alternative response mode: The child with an IFSP or IEP is able to use alternative ways to perform fine motor skills using body parts other than hands.
LLD 10: Emergent Writing	Building Earlier example: “Makes marks to represent the dog from a story by moving finger on screen of tablet or touch screen of computer.”	Multiple means of action and expression are possible: Using a finger to draw on a tablet is possible in this environment to represent a story.	Alternative mode for written language: A child with an IEP uses a tablet to practice writing a few simple words with his or her finger.
PD-HLTH 7: Personal Care Routines: Feeding	Building Earlier example: “Uses adaptive utensils to feed self a meal when positioned functionally.”	Multiple means of action and engagement are possible: In this example, different utensils and positioning are used.	Functional positioning: A child with an IFSP or IEP is given an adapted spoon appropriate for him or her and is positioned functionally to enable him or her to feed himself or herself.

Appendix 10: Special Education Division Calibration Sample by Disability Categories

Table A-24 provides the number of children with IFSPs and IEPs included in the SED portion of the final calibration sample (*n* = 1,481) by age and disability category. The bottom row of the table provides the percentage of the SED sample accounted for by each disability category.

Table A-24. DRDP (2015) SED Calibration Sample by Age and Disability Category

Age (in years)	Intellectual Disability (ID)	Hard of Hearing (HH)	Deaf (DEAF)	Speech or Language Impairment (SLI)	Visual Impairment (VI)	Emotional Disturbance (ED)	Orthopedic Impairment (OI)	Other Health Impairment (OHI)	Established Medical Disability (EMD)	Specific Learning Disability (SLD)	Deaf-Blindness (DB)	Multiple Disability (MD)	Autism (AUT)	Traumatic Brain Injury (TBI)	Total for all disability categories
0	2	17	6	0	1	0	5	2	0	0	0	4	0	0	37
1	12	38	17	10	8	0	16	15	2	0	0	12	0	0	130
2	21	41	9	52	14	0	28	26	1	0	1	15	8	5	221
3	18	5	17	85	2	1	9	15	15	7	2	4	146	0	326
4	43	8	25	155	4	1	22	26	7	12	1	8	212	1	525
5	21	3	7	78	3	1	8	19	2	10	0	8	82	0	242
Total for all ages (0–5)	117	112	81	380	32	3	88	103	27	29	4	51	448	6	1,481
Percent of total for all ages (0–5)	7.9	7.6	5.5	25.7	2.2	0.2	5.9	7.0	1.8	2.0	0.3	3.4	30.2	0.4	100.0

Appendix 11: DRDP (2015) Reports for Programs, Teachers, and Parents

DRDP (2015) reports provide psychometrically valid domain-scaled scores through two online reporting systems. DRDP Online™[39] provides data management and reporting for ELCD programs. DRAccessReports[40] provides data management and reports for early childhood special education teachers and service providers.

Child (Domain) Report

The Child (Domain) Report, used in ELCD and SED programs, provides domain-scaled ratings and standard errors for individual children, reflecting a child's knowledge, skills, and behaviors across all rated DRDP (2015) domains. Teachers may use the results to guide individual instruction and modify curriculum; they may also share them with families and other providers to better understand and plan support for each child's learning and development. The Child Progress Report, an extension of the Child (Domain) Report, provides a child's domain-scaled ratings and standard errors over two rating periods in the same year within a single age-group instrument.

Special Education Division Detailed Child Report

The Detailed Child Report, used in SED programs, provides the developmental level rated for each measure within a domain. Special educators may use the results to guide individual instruction and modify the general education curriculum for children with

[39] To access the login page of DRDP Online™ (formerly DRDPtech™), go to https://www.drdponline.org. For information about accessing DRDP Online,™ visit https://www.desiredresults.us/drdp-online.

[40] To access the login page of DRAccessReports, go to https://www.draccessreports.org.

IFSPs and IEPs. The report may also be shared with families and other providers so that everyone on the child's educational team has a complete profile of the child.

Group (Domain) Report

The Group (Domain) Report, used in ELCD and SED programs, provides average domain-scaled ratings and percentage of children rated at each developmental level for all rated DRDP (2015) domains. This report can be generated for an agency, group of children, or sub-group of children. Agency administrators may use the report for planning and reporting purposes. Teachers may use the group results to guide instruction, modify curriculum, and plan program improvement activities.

Early Learning and Care Division Detailed Group Report

The Detailed Group Report, used by the ELCD, provides the percentage of children rated at each developmental level for each DRDP (2015) measure. It is used for agency planning and reporting purposes and provides information about the ratings of a group of children across all of the measures of the instrument by domain. For ELCD teachers, a variation of this report, called the "Class Detail Report," provides the names of children rated at each developmental level for each measure and is used to support teacher planning.

Early Learning and Care Division Parent Report

The Parent Report, used in ELCD programs, provides information about a child's knowledge, skills, and behaviors across the DRDP (2015) school readiness domains, which are aligned with California's early learning and development foundations. The Parent Report is a summary report to support teachers in communicating with parents about children's progress over time. It includes graphics and descriptors to show the

child's domain rating across multiple rating periods, descriptions of the knowledge and skills that correspond to the child's most recent domain rating, and suggestions for parents and teachers to provide ongoing support for children's learning and development.

Special Education Division Peer Reference Report

The Peer Reference Report, used in SED programs, was designed to be used with children who have IFSPs or IEPs. It compares a child's domain ratings on the DRDP (2015) to a sample of same-age peers that uses the same comparison thresholds as are used for OSEP reporting. The Peer Reference Report provides special education teachers, service providers, and families with information about a child's development relative to these peers and indicates areas of strength and areas for further support. The report should always be used together with other DRDP reports and observations of the child in typical environments. Special educators may use the information from this report to guide written developmental updates, to support individualized instruction, and to make curricular modifications. They may also share this report with families and other providers to better understand and plan support for each child's learning and development.

Appendix 12: Estimates of the Reliability of the DRDP (2015)

EAP/PV reliability indices are estimates of how reliably the DRDP (2015) measures can be used to distinguish between different children's underlying abilities. Reliability coefficients of 0.75 or higher are considered good, although values of at least 0.55 are deemed satisfactory for group comparisons (Rost 2013). DRDP (2015) domains and sub-domains all had adequate score reliability, as evidenced by EAP/PV reliability indices ranging from 0.73 to 0.99 (refer to table A-25).

Table A-25. Separation Reliability Estimates

Analytical Dimension	Domain	Domain EAP/PV Reliability Estimate
Dimension 1	ATL-REG	0.999
Dimension 1	SED	0.999
Dimension 2	LANG	0.970
Dimension 2	LIT	0.733
Dimension 2	MATH	0.845
Dimension 2	SCI	0.850
Dimension 3	PD	0.999
Dimension 3	HLTH	0.999
Dimension 4	ELD	0.776
Dimension 5	HSS	0.860
Dimension 6	VPA	0.842

Appendix 13: Fit Statistics

Table A-26 presents *infit* statistics for each measure, represented as mean-square values (MNSQ). Fit statistics provided by the IRT analysis are a measure of how well the data fits the model. For this study, infit values greater than 1.33 indicate that the data for a measure is overly random, and infit values less than 0.75 indicate that the data for a measure is overly consistent. Based on these results, the lone misfitting item was COG-01. Only one measure that is overly random is not an indication of overall instrument misfit.

Table A-26. Birth-to-Five Calibration Measure Fit Statistics

Variables			Infit (Weighted) Fit
Run	Measure Number	Measure Label	MNSQ
OSEP1	1	ATLREG01	1.19
OSEP1	2	ATLREG02	1.13
OSEP1	3	ATLREG03	1.06
OSEP1	4	ATLREG04	0.86
OSEP1	5	ATLREG05	0.85
OSEP1	6	ATLREG06	0.85
OSEP1	7	ATLREG07	0.96
OSEP1	8	SED01	0.96
OSEP1	9	SED02	0.97
OSEP1	10	SED03	0.98
OSEP1	11	SED04	0.96
OSEP1	12	SED05	0.98
OSEP2	1	LLD01	0.99
OSEP2	2	LLD02	1.02
OSEP2	3	LLD03	0.96
OSEP2	4	LLD04	0.95
OSEP2	5	LLD05	1.12
OSEP2	6	LLD06	0.87

Variables			Infit (Weighted) Fit
Run	Measure Number	Measure Label	MNSQ
OSEP2	7	LLD07	0.82
OSEP2	8	LLD08	0.98
OSEP2	9	LLD09	1.22
OSEP2	10	LLD10	1.14
OSEP2	11	COG01	1.45
OSEP2	12	COG02	0.93
OSEP2	13	COG03	0.95
OSEP2	14	COG04	0.87
OSEP2	15	COG05	0.88
OSEP2	16	COG06	0.92
OSEP2	17	COG07	0.94
OSEP2	18	COG08	1.02
OSEP2	19	COG09	0.87
OSEP2	20	COG10	1.06
OSEP2	21	COG11	0.92
OSEP3	1	PD-HLTH01	1.06
OSEP3	2	PD-HLTH02	1.07
OSEP3	3	PD-HLTH03	0.94
OSEP3	4	PD-HLTH04	1.12
OSEP3	5	PD-HLTH05	0.98
OSEP3	6	PD-HLTH06	0.91
OSEP3	7	PD-HLTH07	0.94
OSEP3	8	PD-HLTH08	0.82
OSEP3	9	PD-HLTH09	1.03
OSEP3	10	PD-HLTH10	1.18
ELD	1	ELD01	0.94
ELD	2	ELD02	0.78
ELD	3	ELD03	0.8
ELD	4	ELD04	1.31
HSS	1	HSS1	0.93
HSS	2	HSS2	0.94

Variables			Infit (Weighted) Fit
Run	Measure Number	Measure Label	MNSQ
HSS	3	HSS3	1.03
HSS	4	HSS4	0.99
HSS	5	HSS5	1.19
VPA	1	VPA01	1.11
VPA	2	VPA02	0.89
VPA	3	VPA03	0.99
VPA	4	VPA04	0.99

Appendix 14: Wright Maps

A Wright Map is a graphical tool that provides a visual description of both children's scores and the difficulty of assessment items (measures), including steps, on a common measurement scale. Wright Maps are commonly used in IRT analyses for a variety of purposes, including (1) visualizing the score distribution, (2) checking whether the measures and rating scale categories (in the polytomous case) adequately cover the distribution of domain scores and thus provide reliable measurement across the score distribution, and (3) confirming the internal structure of the rating scale.

One Wright Map was produced for each dimension in the model, whereas the results are reported at the domain level. Note that each dimension (including persons and items) is on a separate measurement scale, and thus domains can only be directly compared with other domains in the same dimension and should not be directly compared with domains in other dimensions.

The Wright Maps presented in this appendix provide information about the technical adequacy of the DRDP (2015). First, the distributions of children are roughly normal, which argues against misspecification of the dimensional structure (that is, extra latent dimensions). Second, the steps of the measures have adequate coverage across the range of the score distribution—especially for the three OSEP dimensions. Third, the step difficulties are well ordered, suggesting the dimensions have adequate internal structure. The evidence from the Wright Maps supports the intended use of the DRDP.

Figure A-8. Wright Map of Dimension 1: OSEP Child Outcome 1

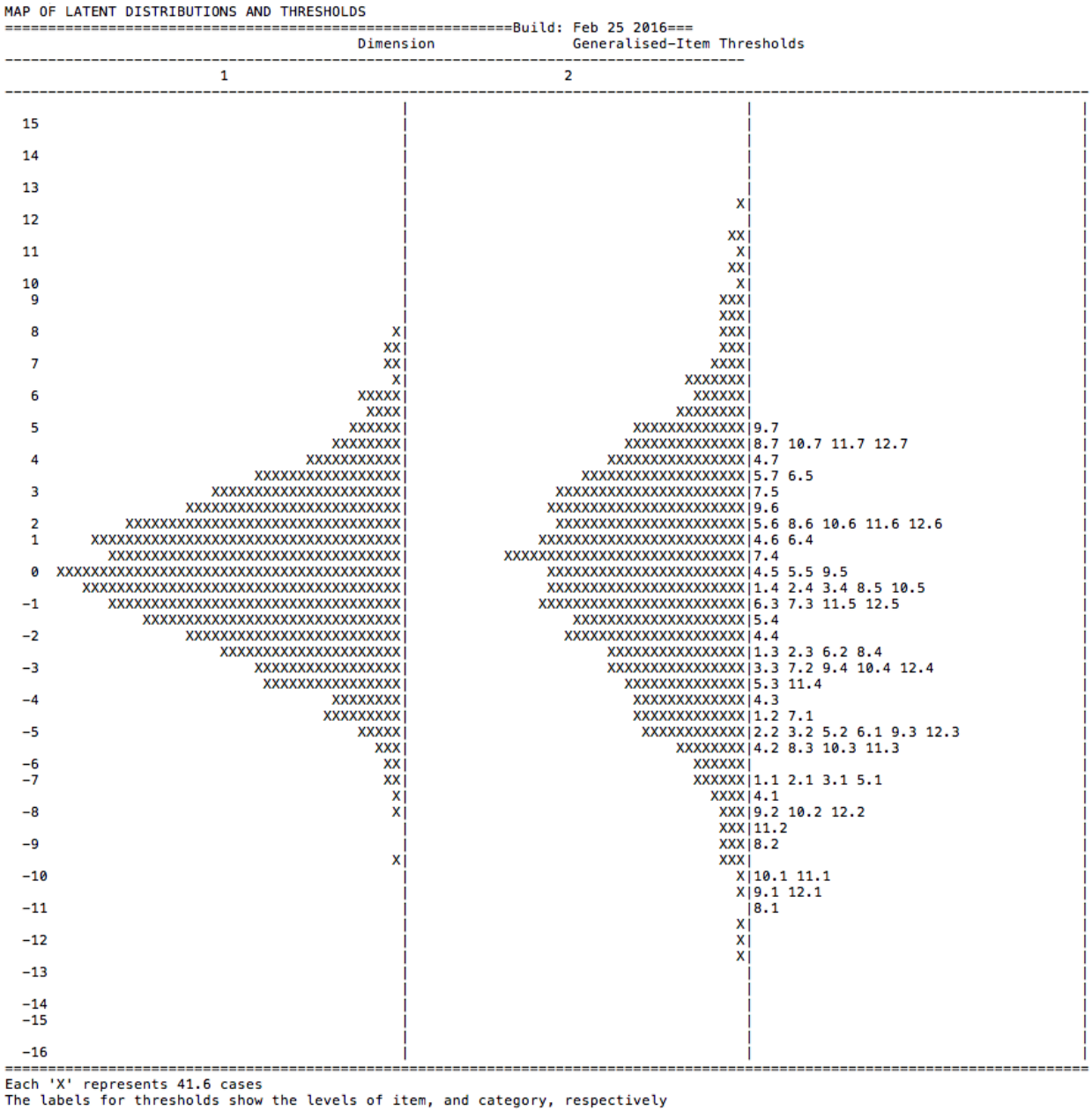


Figure A-9. Wright Map of Dimension 2: OSEP Child Outcome 2

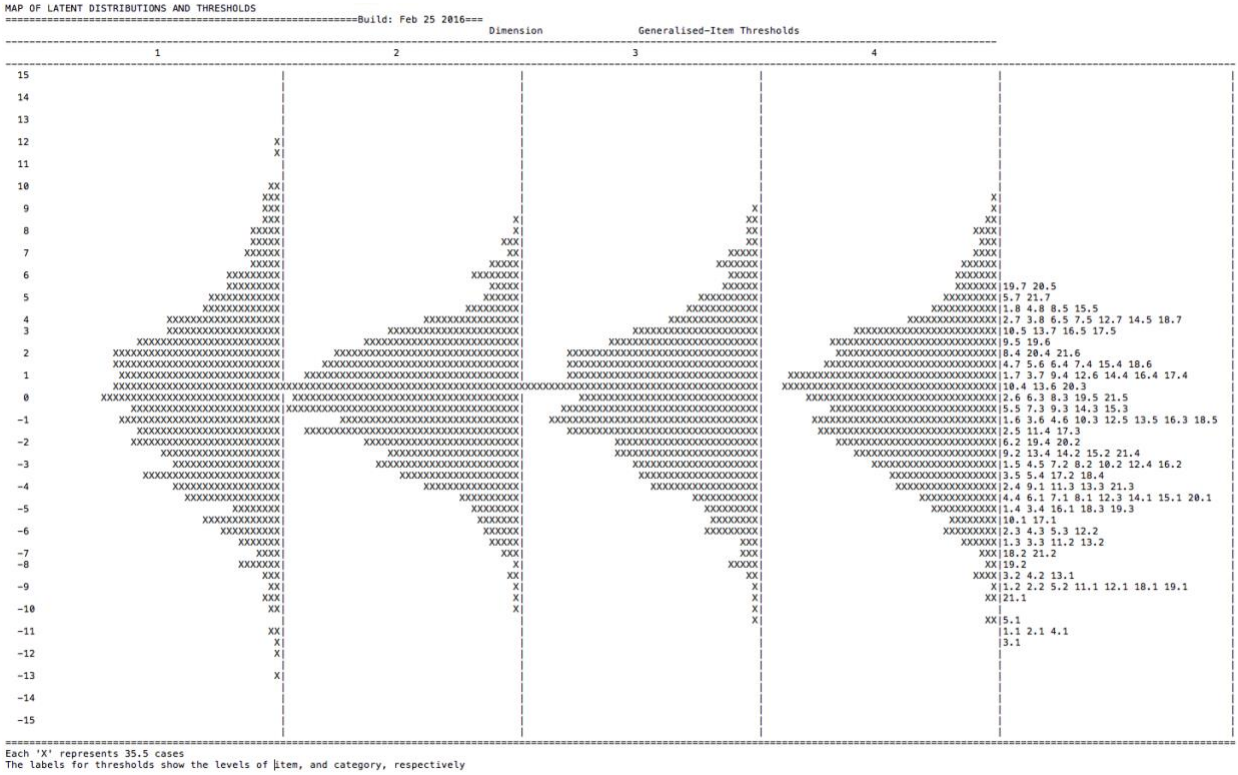


Figure A-10. Wright Map of Dimension 3: OSEP Child Outcome 3

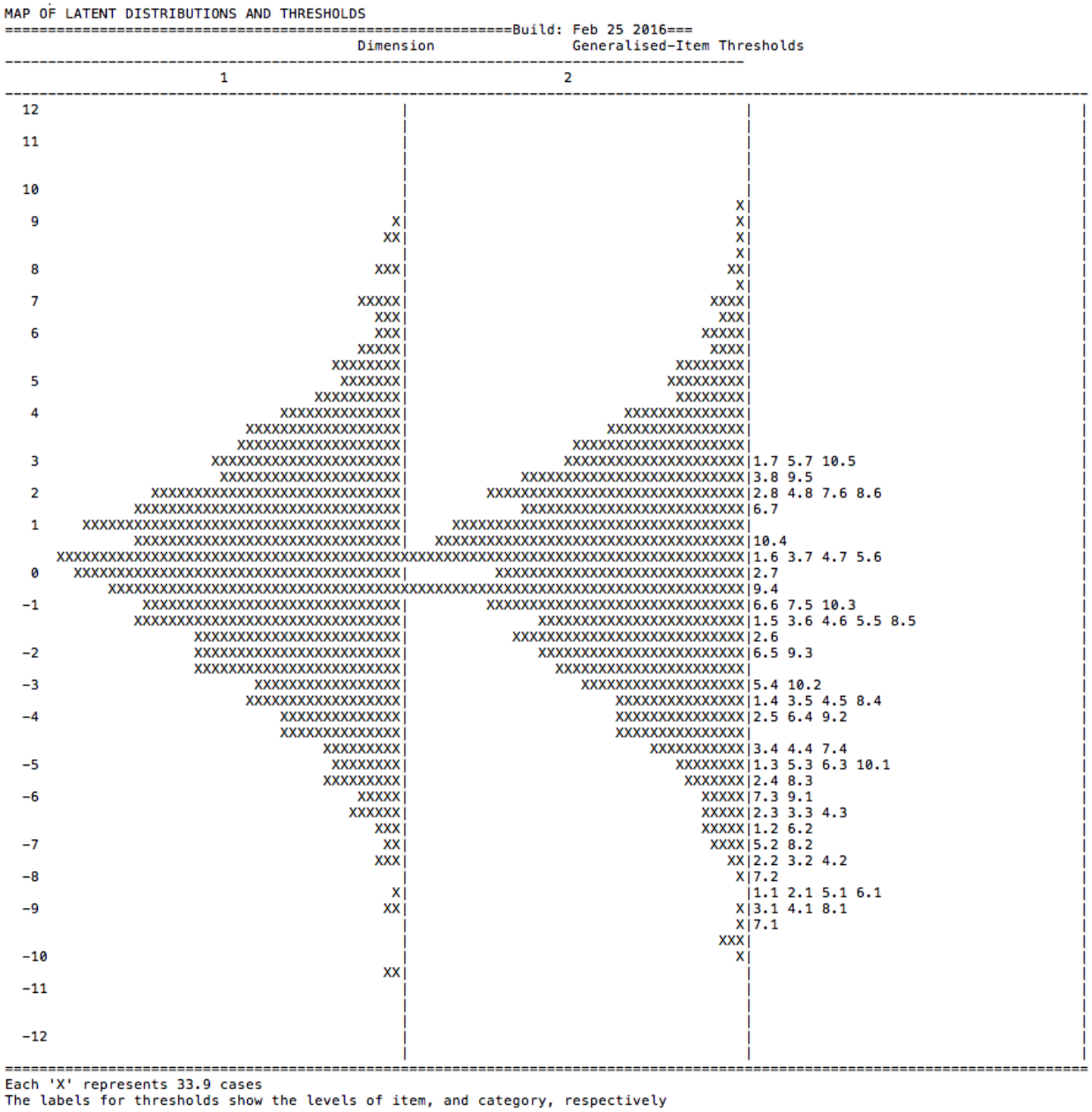


Figure A-11. Wright Map of Dimension 4: English-Language Development Domain

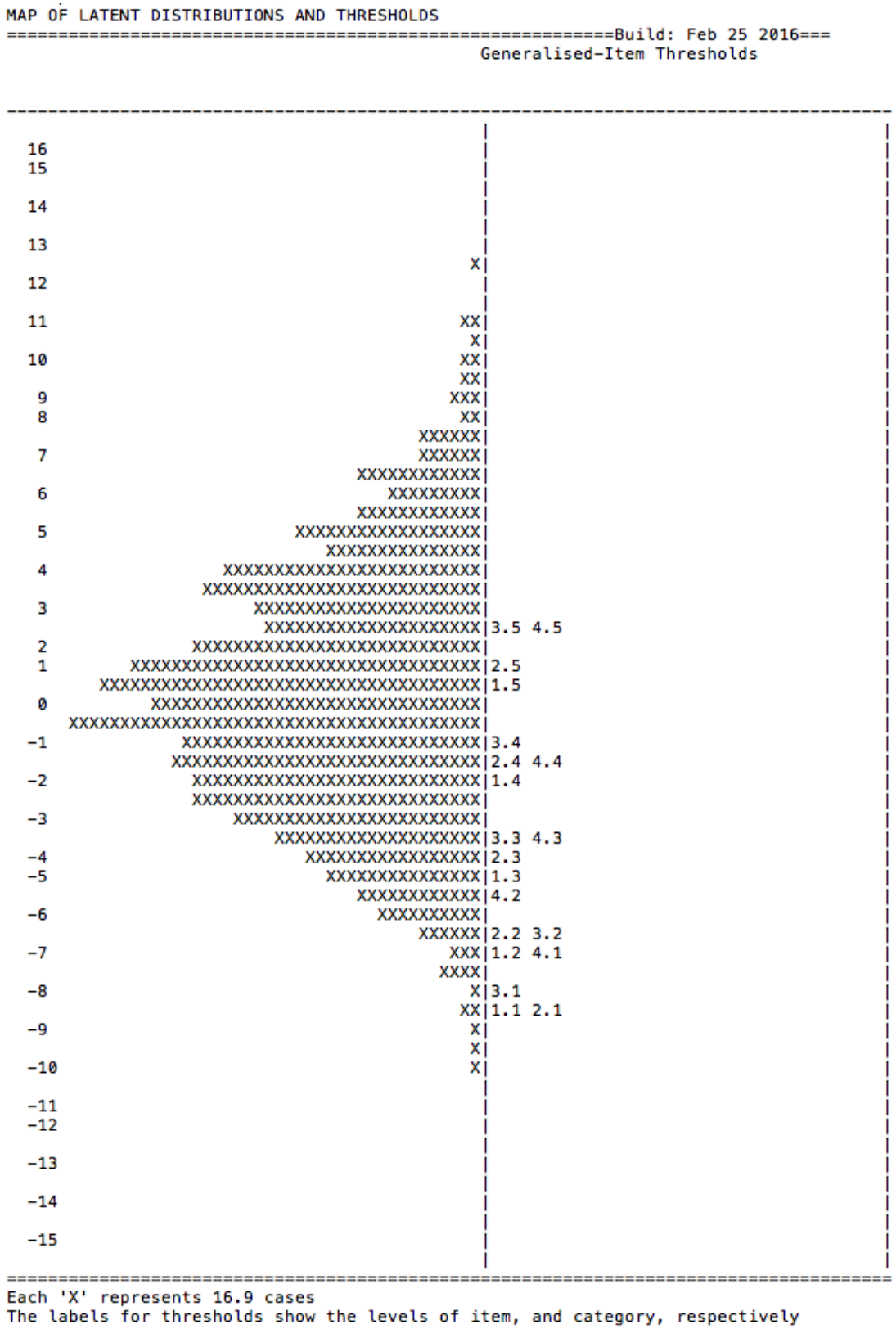


Figure A-12. Wright Map of Dimension 5: History–Social Science Domain

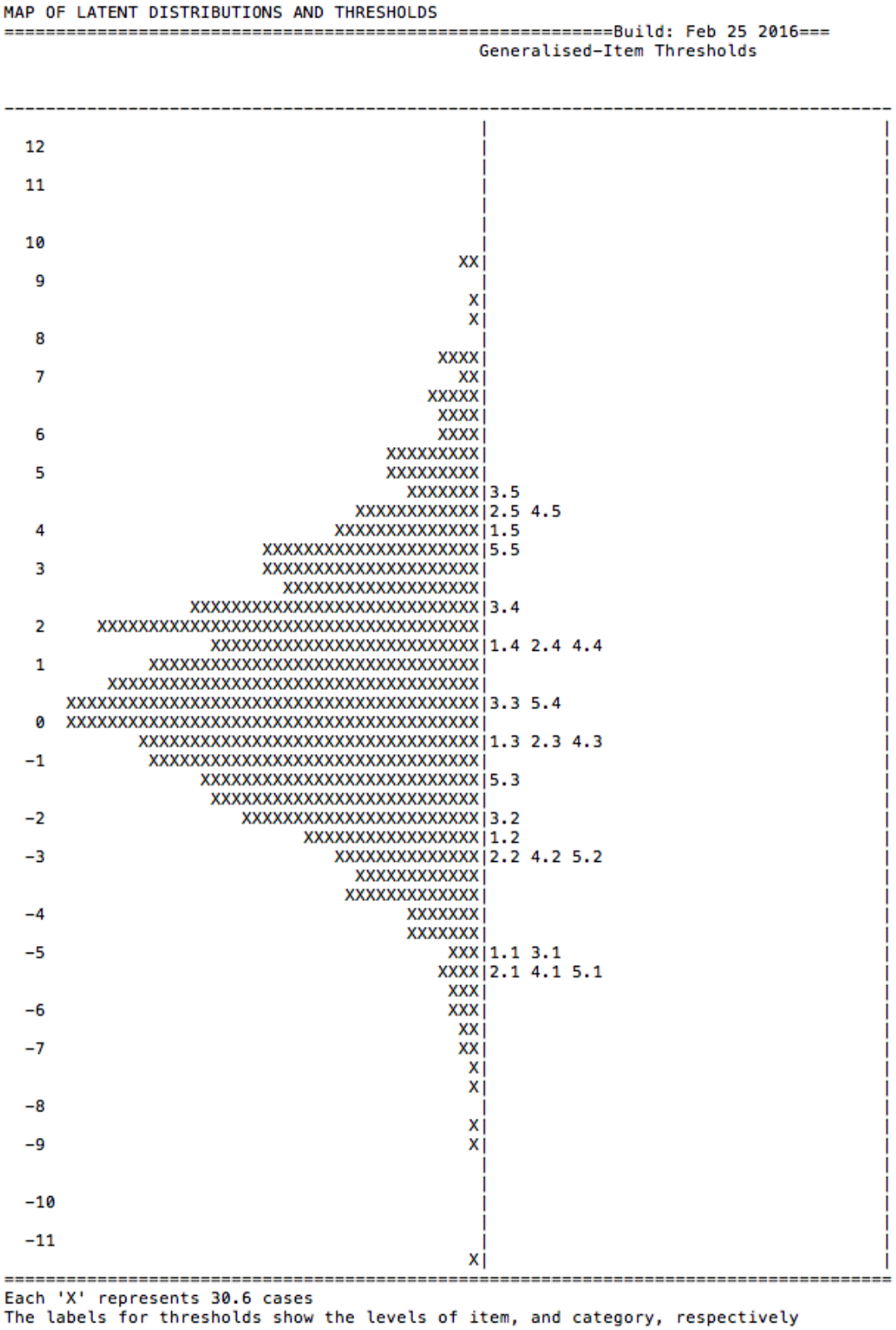
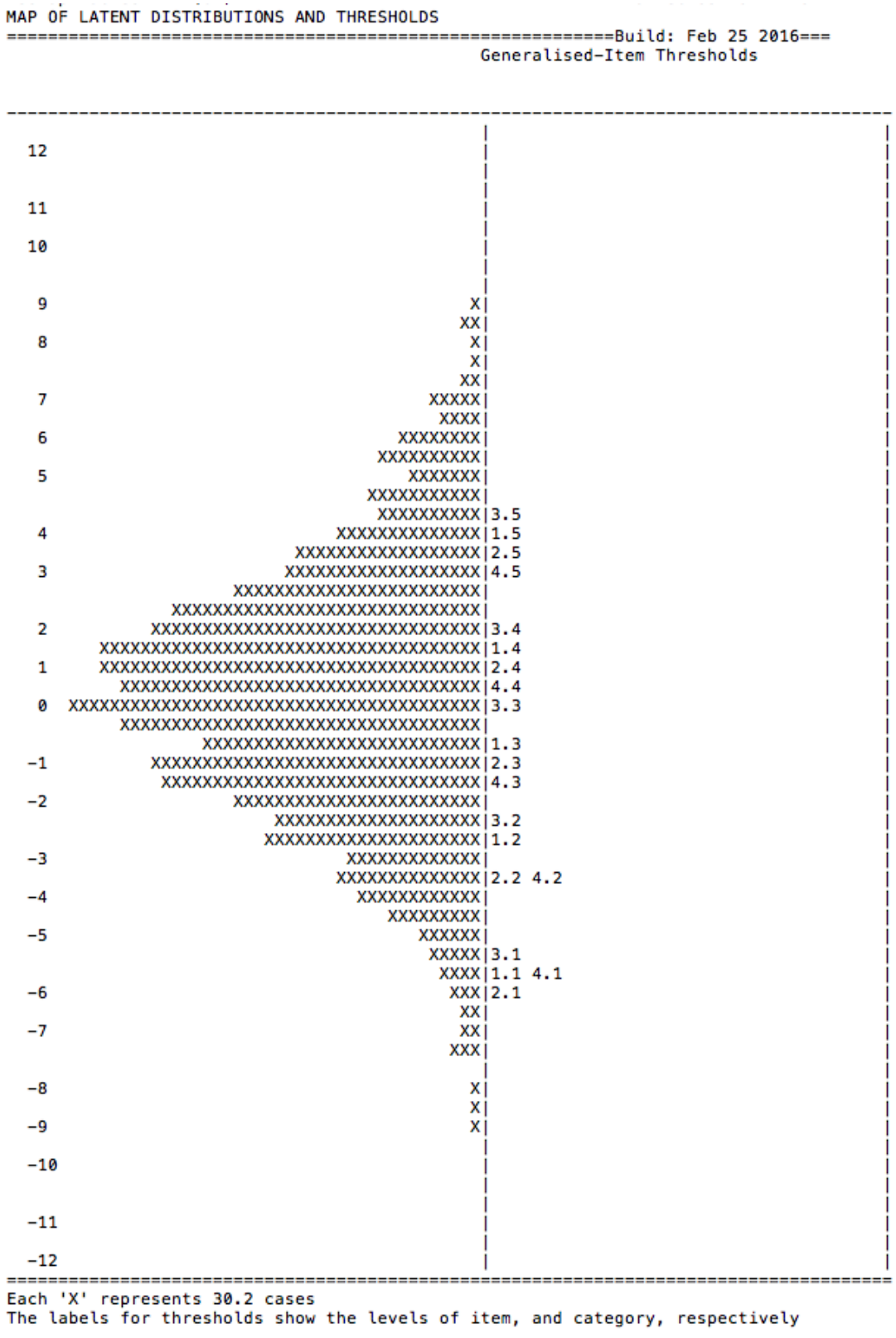


Figure A-13. Wright Map of Dimension 6: Visual and Performing Arts Domain



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