IMPLEMENTATION DEVELOPMENT MAP (IDM) EVIDENCE REVIEW PROCESS

I. Overview

The seven essential Elements included in the Implementation Development Map (IDM) are based on the research of Jim Minervino's (2014) "Lessons from Research and the Classroom: Implementing High-Quality Pre-K that Makes a Difference for Young Children." After researching contemporary exemplar pre-K programs that produced *outcomes that stick* and interviewing several leading early learning experts, Minervino identified 15 essential Elements of high-quality pre-K. In the initial stages of IDM development, we were directed to include only seven of the 15 essential Elements based on the goals of the Partnership for Pre-K Improvement (PPI) strategy. Initial literature scans, experts' review, and feedback from early learning leaders in the field, including PPI anchor partners and the Bill & Melinda Gates Foundation, contributed to earlier drafts of the IDM. The seven Elements are made up of infrastructure and implementation indicators that provide measurable progressions of policies, practices, supports, and data collection efforts that pre-K state leaders can evaluate both at the state and program level. Indicators assess a state's pre-K improvement efforts along a continuum (or map) of scaled items ranging from 1=Emerging to 4 =Exemplary. Once an Element was supported by a number of indicators that early learning leaders agreed with, additional literature reviews were conducted to understand the research-based support for each indicator. In this document, we outline our process and approach to understand, illustrate, and summarize the literature basis for each indicator and each Element.

Our purpose for conducting a literature search for each indicator is threefold. First, we wanted to understand the existing literature support and identify the literature gaps and limitations for each of the IDM indicators. Second, we wanted to visually depict the literature scan so that users of the IDM can more readily see the types and the quantity of studies that support the individual indicators. We believe this information can help users prioritize and rationalize the practices they choose to improve. Third, we wanted to illustrate the overall scan of evidence that supports the Elements in the IDM. One distinct limitation and challenge in developing the IDM is that while each indicator is backed by literature or experts in the field, we were asked to construct the indicators from a set of predetermined essential Elements (Minervino, 2014), rather than literature-based indicators informing the development of the essential Elements.

II. Literature Review Process

The IDM literature review process consisted of gathering data from two main sources: expert recommendations and database searches.

Expert recommendations: This included experts from the three organizations leading the Bill and Melinda Gates Foundation's national early learning strategy—the Partnership for Pre-K Improvement (PPI), Cultivate Learning at the University of Washington, The Ounce of Prevention Fund, and Alliance for Early Learning. Written material from national organizations such as National Association for the Education of Young Children (NAEYC), the National Institute for Early Education Research (NIEER), and Head Start Performance Standards were also consulted and, where relevant, considered.

Literature reviews: this included a multi-level, iterative process for sourcing literature through database searches using relevant terms. This process is based on a literature review study by Stein et al. (2011) that focused on mathematics education. The database search approach included the following steps:

1. Identifying key words and phrases: Through discussions with subject matter experts, a list of key phrases was generated and rated as 1 (for the most relevant) to 3 (for the least relevant) based on relevance. Key phrases were searched in the order of relevance, with second- and third-tiered phrases prioritized last, depending on the results yielded by first-priority phrases. For example, for the Political Leadership Element, there were 11 key phrases (and similar terms) identified as most relevant, such as: political leadership; advocacy/advocacy coalition/advocacy groups/state advocacy; early learning lobbying/pre-K lobbying; pre-K office leadership/pre-K government leadership; pre-K state agency/department of education; governance/political structure; state funding; grasstops stakeholders/state-level engagement; early learning mandate/state mandate; early learning legislation/legislature; and early learning strategic plan. There were also eight key phrases, such as grassroots stakeholders, judiciary, governor, state accountability, state governance, politics, stakeholder collaboration, and education improvement that were searched after the first priority key phrase searches were completed. The list and number of key phrases varies by Element and is noted in each Element summary.

2. Performing a key phrase search and initial review of relevance using inclusion criteria: Using standard inclusion criteria listed below, which acted as filters in the database search process, the Element-specific key phrases were searched together, along with early childhood terms (e.g., preschool, pre-K, early childhood).

    a. Databases: ERIC, EBSCO eClassics Collection (EBSCOhost), APA PsycArticles, and APA PsycInfo
    b. Publication year: 2000–2020 in order to focus on more recent literature
    c. Participant age range was 2–5 years old: we wanted to focus on pre-K as one of the main tenets of the IDM
    d. Peer-reviewed journal articles
    e. Document language publication is in English: we wanted to focus on English-based research, as this is available for peer review by a larger audience

All articles that met the above criteria and seemed relevant were included into Zotero (2016) reference management software for further review.

3. Expert recommendations: As an alternative to Step 2 above, we also considered sources not obtained through a database search but recommended by experts in the field. The sources obtained from both Steps 2 and 3 then went on to be subject to the rest of the process outlined here in Steps 4–7. In this sense, both of these sources had to satisfy the exclusion criteria below and were included in the computation of the Literature Support Index (see below for a definition). The only difference between these sources is that the sources recommended by experts were not generated by the database search (and as such were not limited to peer-reviewed research journal articles).

4. Linking articles to specific indicators and exclusion criteria: While the application of the "inclusion criteria" is a simple filter in the database search, the application of what we term "exclusion criteria"—based on Stein et al (2011)—is a more subjective process. For all indicators, we applied additional exclusion criteria:

    a. *The study needs to be U.S.-based (participating children would reside in the U.S.):* Since there was no filter in the database search for the study being U.S.-based (study published in English does not guarantee that the study did not take place abroad), we have shifted this aspect into the later "exclusion criteria" process.

    b. *The study needs to be relevant for the particular IDM indicator:* Due to its complexity, we employed trained research assistants in the field of early childhood to apply the exclusion criteria. To ensure that there was minimal subjective bias imparted by the trained research assistants during this process, we formulated exclusion criteria for each indicator (see Appendix A/Exclusion Criteria document). We also had two trained research assistants independently provide their judgement regarding whether a particular study satisfies these exclusion criteria. In cases where the two independent experts disagree, exclusion criteria are further refined based on these two experts' feedback as part of an iterative process aimed at establishing the most actionable and objective criteria possible. When the two experts find themselves in agreement, the study is added to the body of evidence underlying a specific indicator. If the two experts find it hard to make a judgement, a more experienced third expert is asked to provide a professional judgement, and the exclusion criteria are refined accordingly.

5. Undergoing a final review of relevant articles by having another member read the full article and confirm that they agreed the article was relevant for the specific indicator and criterion. These articles were then added to the IDM Matrix.

6. Categorizing the articles on different types of information such as publication type, link to child outcomes, scalability, research design, and limitations as a way to determine the amount of literature support. In addition, we collect meta-data on the literature supporting the indicators that serve as additional potential measures of the strength of evidence underlying each indicator, such as the number of citations of a given source. Using Google Scholar data, we have saved with each source the number of times this study was cited by other studies and publications. We have then added these numbers for each indicator, and the resulting number is the total number of times the combined total number of sources underlying an indicator were cited by other studies. In science, citations are the ultimate measure of influence and relevance. Another similar measure we collect, the impact factor, is a measure of journal relevance—a journal that published the articles underpinning the indicators of each element.

7. Computing a Literature Support Index (LSI) for each element and indicator. Once all the literature is assembled (after passing both inclusion and exclusion criteria), for each indicator we review how much evidence there is and compute what we term a Literature Support Index. The LSI is based on the following:

    a. Availability of peer-reviewed sources (as opposed to books, foundation reports, etc., that are usually not peer-reviewed by fellow scientists from outside organizations)

    b. The existence of methodological limitations within the study (small sample size, missing data, subpar research design, improper data collection procedures, etc.)

    c. Scale at which study was done (preference for large-scale studies)

d. The quality of research design (preference for studies that can ascertain causality rather than mere correlation, i.e., experimental and quasi-experimental studies)

e. National research organization (such as the National Academies of Sciences, Engineering, and Medicine, NAEYC, DEC, NCCIC, NIEER, CEELO, ChildTrends, National Center for Early Development & Learning, Institute of Education Science, National Research Council, American Institutes for Research, The Rand Corporation, Mathematica) makes a recommendation aligned with the indicator

f. National policy organization (such as the Office of Head Start, National Governor's Council, CCSSO, Zero to Three) makes a recommendation aligned with the indicator

g. The use of representative sampling in study design

The computation of the LSI using the above criteria proceeds as follows. The LSI is an index with a range from 0 to 100%, based on how many of the following criteria are satisfied. The value of the LSI is the proportion (percentage) of the following criteria that are satisfied for a particular indicator:

- There are at least three peer-reviewed articles supporting it.
- There is at least one study with no more than two limitations[1].
- There is at least one study at national or state level (as opposed to pilot studies; this is important from an implementation science perspective).
- There is at least one study that uses experimental or quasi-experimental design (so that conclusions can be reliably interpreted as causal impacts rather than mere correlation with unknown direction or plagued by issues such as omitted-variable bias).
- There is support from a national research organization (listed above).
- There is support from a national policy organization (listed above).
- At least two studies use representative sampling (this important for generalizability of the results and also for equity purposes).

If we deem that an indicator (based on computing its strength above) is not sufficiently supported by evidence, it is back to the drawing board, which in our case is stage 1 in the 7-point process above. If we deem the indicator to be sufficiently supported by evidence or there is no more evidence to be found, our work is done.

The LSI is expressed as a percentage of the above seven criteria that are satisfied for a particular indicator. The reason for the selection of these specific criteria is that they affect generalizability of a given study (Hedges, 2018). Peer review is a scientific procedure whereby research is audited by other researchers who were not participating in the research that generated a given study and hence are impartial in its evaluation along methodological lines. Every study has limitations, and these limitations affect generalizability. A study using a sample from Washington may not generalize to New York. Hence, we include limitations in LSI so that state teams do not execute on knowledge that is based on weak foundations. As the implementation science argues, if the research is not ready for large-scale implementation, rushing forward could prove counterproductive.

1 Limitations are defined as the following: a) small sample size, b) improperly handled missing data (investigation is not performed with regards to whether data is missing at random or not and if it is not missing at random, multiple imputation methods are not used in the study), c) inter-rater reliability issues (improper way of measuring IRR, reliability below 80%), d) unvalidated measure for outcome or predictor, e) too many hypotheses being tested without adjusting for multiple comparisons (data mining), f) no adjustment for intra-class correlation (ordinary least squares regression used instead of HLM in situation where children are nested within classrooms).

Studies with many limitations are still useful in that they show the way for more rigorous studies; however, until those studies take place, we should not overlook the fact that some of our knowledge was gained through methods that cannot furnish us with great confidence in its conclusions (Fixsen, Blase, Naoom, & Wallace, 2009). Sampling procedures likewise affect generalizability in a very direct sense. Representative sampling is designed exactly for the express purpose of studying a certain sample and then being able to generalize the conclusions to the set of subjects from which the sample was taken (Lumley, 2011). Research design criterion in the LSI adds consideration of the issue of causality. Summarized by the adage that "correlation is not equal to causation," the issue of causality ensures that we understand the functioning of the phenomenon in question. Policy makers need to know that a certain variable could represent a "policy lever" they have control over and that if manipulated would result in a change in the outcome. Correlation does not provide this guarantee. Some research designs are better than others in eliciting causal relationships (Heckman, 2005). Small sample size does not allow the application of the law of large numbers and the central limit theorem, which means that there is no guarantee that the conclusions drawn from the data reflect a true relationship (Casella & Berger, 2021). Missing data is only an issue if not addressed in a way that would eliminate potential bias in the analysis. The correct way to handle missing data is multiple imputation if data is not missing at random (Rubin, 2004). Inter-rater reliability is an issue with studies using psychometric tools originating in psychological research. These tools represent an attempt to provide an objective process for eliciting qualitative human judgement (Rust & Golombok, 2014). The role of IRR in this process is to guard the objective nature of this process, to ensure that there is more signal than noise originating from the data collected via these tools (Silver, 2012). This is the case in ECE with CLASS, ECERS, TS Gold, etc. We also take into account whether psychometric analysis was conducted to validate a given tool used in the study in the first place. The judgement of the extent to which the studies have conformed to these criteria for high quality research is to some extent subjective (hence peer review as the main mechanism of quality control in academia).

III. References

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All seven of the literature summaries were completed by team members from Cultivate Learning, who followed the procedure described in this document. We list the Cultivate Learning team members who contributed to this collaborative effort below:

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V. Appendix A

Exclusion Criteria for 7 Elements

Instructional Leadership

1. **Indicator #1**: There is a policy in place that requires all publicly, state-funded pre-K programs to implement instructional leadership practices.
    a. *Criterion #1*: The paper focuses on defining instructional leadership practices.
    b. *Criterion #2*: The paper focuses on the link between instructional leadership practices and child outcomes.
    c. *Criterion #3*: The paper focuses on the impact of policies around instructional leadership practices on child outcomes.
    d. *Criterion #4*: The paper focuses on various ways to implement instructional leadership practices and their effect on child outcomes.
2. **Indicator #2**: Research-based competencies, credentials, and degrees address early childhood instructional leadership.
    a. *Criterion #1*: The paper focuses on defining instructional leadership.
    b. *Criterion #2*: The paper focuses on the relationship between instructional leadership and child outcomes.
    c. *Criterion #3*: The paper focuses on research-based competencies, credentials, and degrees and their relationship with child outcomes.

   d. *Criterion #4*: The paper focuses on various ways how research-based competencies, credentials, and degrees can address instructional leadership.

3. **Indicator #3**: State has requirements, clear guidelines and/or incentives for providers (e.g., program directors, site leaders) related to instructional leadership (e.g., coaching, training).

   a. *Criterion #1*: The paper focuses on the use of incentives versus requirements in the advancement of policy.

   b. *Criterion #2*: The paper focuses on the relationship between instructional leadership and child outcomes.

   c. Criterion #3: The paper focuses on the relationship between different requirements, guidelines, or incentives and child outcomes.

4. **Indicator #4**: State requires programs to collect and use data about instructional leadership practices for program quality improvement, and to plan state-level support to programs to implement instructional leadership.

   a. *Criterion #1*: The paper focuses on advantages and disadvantages of mandates and incentives in pursuing government policy goals.

   b. *Criterion #2*: The paper focuses on the role of instructional leadership in program quality improvement.

   c. *Criterion #3*: The paper focuses on the use of data at the state level.

   d. *Criterion #4*: The paper focuses on the use of data on leadership practices for program quality improvement.

5. **Indicator #5**: State provides resources (funding or training) that support the implementation of instructional leadership practices.

   a. *Criterion #1*: The paper focuses on the relationship between instructional leadership and child outcomes.

   b. *Criterion #2*: The paper focuses on funding and implementation of instructional leadership practices.

   c. *Criterion #3*: The paper focuses on defining what instructional leadership is.

   d. *Criterion #4*: The paper focuses on training to support implementation of instructional leadership practices.

6. **Indicator #6**: State provided resources to support the implementation of instructional leadership practices addressing a range of topics.

   a. *Criterion #1:* The paper focuses on what kind of resources are needed for the implementation of instructional leadership practices.

b. *Criterion #2*: The paper focuses on the relationship between data-informed CQI processes and child outcomes.

c. *Criterion #3*: The paper focuses on the relationship between creating systems that support family engagement practices and child outcomes.

d. *Criterion #4*: The paper focuses on the relationship between addressing and ensuring equity and child outcomes.

7. **Indicator #7:** State ensures that instructional leadership policies and practices promote access to high-quality instructional support to all individuals. The state's efforts to understand and address inequity with regard to instructional leadership includes ongoing data collection, disaggregation of data, active discussions, data-driven decision-making, action planning, implementing, assessing implementation, and refining as needed.

    a. *Criterion #1:* The paper discusses the need to disaggregate data along equity relevant group **(or provides example of equity issues that may be better understood with disaggregated data)** and may include recommendations such as have active discussions, base decisions on data and analysis, and assesses implementation to identify whether the needs of equity relevant groups are being met.

    b. *Criterion #2:* The paper describes antibias and culturally responsive teaching approaches IL can use to support educators in engaging in more equitable teaching practices.

    c. *Criterion #3:* The paper addresses skills and competencies IL needed to ensure more equitable access to quality preschool programs and equitable outcomes.

Political Leadership

1. **Indicator #1**: Pre-K Office (e.g., ELD or OEL) Leadership: The extent to which the state leaders of the office of early learning and the state pre-K program develop and advance a vision and strategic plan focused on continuous quality improvement and ensuring equitable outcomes for all children.

    a. *Criterion #1*: The paper focuses on competing visions of CQI and how they may affect child outcomes.

    b. *Criterion #2*: The paper focuses on the relationship between vision/strategic plan and policy success.

    c. *Criterion #3*: The paper focuses on what a good vision/strategic plan should look like, what is the methodology behind constructing one, etc.

2. **Indicator #2**: State Agency (e.g., Department of Education or Health and Family Services) Leadership: The extent to which early learning and pre-K education is recognized through agency planning and budgeting documents as a priority and critical to attainment of key state educational goals.

    a. *Criterion #1*: The paper focuses on the internal politics of state pre-K agencies.

    b. *Criterion #2*: The paper focuses on the internal dynamics in government bureaucracies in general.

c. *Criterion #3*: The paper focuses on tensions between DHS and DOE government departments.

d. *Criterion #4*: The paper focuses on the relationship between budgetary priorities and child outcomes.

3. **Indicator #3**: Inside-Outside Strategy: The extent to which the efforts and plans of ECE, grasstop, and other advocates and state and community leaders reinforce and complement each other.

   a. *Criterion #1*: The paper focuses on the coalition-building in community projects.

   b. *Criterion #2*: The paper focuses on the relationship between foundations, government, and communities in reform implementation.

   c. *Criterion #3:* The paper focuses on advocacy and the extent to which its efforts are to coordinate with other stakeholders.

   d. *Criterion #4*: The paper studies how stakeholders can best cooperate to achieve policy/reform implementation goals, especially for disadvantaged communities.

4. **Indicator #4**: ECE Advocacy Coalition: The extent to which major ECE advocacy organizations are unified around a pre-K improvement agenda and represent the interests of local stakeholder groups from diverse communities (e.g., children, families, educators).

   a. *Criterion #1*: The paper focuses on the extent to which advocacy organizations represent the interest of disadvantaged families, potentially going beyond ECE for general reform implementation.

   b. *Criterion #2*: The paper focuses on how various advocacy organizations advocating for the same community cooperate and compete with each other, with a focus on how this affects the goal of advancing the interests of the communities represented by those advocacy organizations.

   c. *Criterion #3*: The paper connects child outcomes and behavior/activity of advocacy organizations.

   d. *Criterion #4*: The paper focuses on advocacy activity and its impact on legislation.

5. **Indicator #5:** Grassroots Engagement: The extent to which the ECE advocacy organizations/coalition has authentic engagement with grassroots organizations and voice (e.g., families, educators, providers) to develop their goals and strategies.

   a. *Criterion #1:* The paper discusses engagement with grassroots organizations and community members.

   b. *Criterion #2:* The paper discusses the relationship between grassroots organizations and ECE advocacy organizations.

   c. *Criterion #3:* The paper discusses the role of stakeholder unity/coordination and policy adoption.

   d. *Criterion #4:* The paper discusses the role grassroots voices play in policy adoption.

6. **Indicator #6**: Grasstops Stakeholders (key non-governmental influencers of the political process [e.g., business, philanthropy, higher education community, unions]): The extent to which goals for pre-K quality are supported by diverse and strategic influencers of the state's political process. (While identifying specific organizations is not necessary, respondents should have several organizations in mind as exemplars when rating this item.)
    a. *Criterion #1*: The paper focuses on the role of "grasstops stakeholders" in the reform process, going beyond ECE
    b. *Criterion #2*: The paper focuses on the role of grasstops stakeholders on the quality of pre-K service provision.
    c. *Criterion #3*: The paper focuses on accountability of various grasstops organizations to the families they serve.
    d. *Criterion #4*: The paper focuses on transparency of operations of various grasstops organizations.
    e. *Criterion #5*: The paper focuses on the influence of grasstops stakeholders on the business community or other interest groups.
    f. *Criterion #6:* The paper focuses on the influence of grasstops stakeholders on public opinion at large.
7. **Indicator #7**: Legislative Leadership: The extent to which key elected legislators have a track record of supporting pre-K quality through policy and funding.
    a. *Criterion #1*: The paper focuses on the legislation process broadly.
    b. *Criterion #2*: The paper focuses on the legislation process in pre-K specifically.
    c. *Criterion #3*: The paper focuses on links between legislation and child outcomes.
    d. *Criterion #4*: The paper focuses on the characteristics that make it most likely for legislators to successfully advance legislation.
8. **Indicator #8**: Gubernatorial Leadership: The extent to which the current state governor has a track record of supporting pre-K quality.
    a. *Criterion #1*: The paper focuses on the role of governors in advancing policy.
    b. *Criterion #2*: The paper focuses on the role of governors in implementing policy.
    c. *Criterion #3*: The paper focuses on the relationship between governors and legislators in reforming legislation and implementation process.
    d. *Criterion #4*: The paper focuses on the role of governors in advancing pre-K.
9. **Indicator #9**: Equity is front and center in all discussions around pre-K policies and practices. The ways in which state teams conduct their work, and the activities they engage in, including data collection

efforts, are designed to ensure early learning programs, program staff, children, teachers, and families will succeed regardless of their race, income, and language differences.

a. *Criterion #1:* The paper discusses the need to disaggregate data along equity relevant group **(or provides example of equity issues that may be better understood with disaggregated data)** and may include recommendations such as have active discussions, base decisions on data and analysis, and assesses implementation to identify whether the needs of equity relevant groups are being met.

b. *Criterion #2:* The paper discusses the importance of adequate financial support to make high-quality ECE programs available to all children.

c. *Criterion #3:* The paper discusses how early learning policies and practices are equity-focused to meet the needs of all children and families and are associated with positive child outcomes.

Data-Driven Decision-Making

1. **Indicator #1:** State requires programs to conduct assessments for continuous quality improvement.

    a. *Criterion #1:* The paper focuses on the relationship between CQI systems such as QRIS and child outcomes.

    b. *Criterion #2:* The paper focuses on the advantages and disadvantages of requirements and incentives in support of government policy, in general.

    c. *Criterion #3:* The paper focuses on the comparative efficacy of various assessments used in CQI.

    d. *Criterion #4:* The paper focuses on the relationship between having a state-level requirement for programs to conduct assessments for CQI and child outcomes.

2. **Indicator #2:** State requires programs to set annual (or more frequent) goals and engage in interventions, including pilot studies, to teaching and learning, equitable access, and outcomes. State actively monitors progress towards those goals to inform continuous quality improvement.

    a. *Criterion #1:* The paper focuses on the effectiveness of having state-level requirements for programs to implement processes for using data to inform CQI as measured by their impact on child outcomes.

    b. *Criterion #2:* The paper focuses on using data to inform CQI.

    c. *Criterion #3:* The paper focuses on implementation of processes for analyzing and using data to inform CQI.

    d. *Criterion #4:* The paper focuses on the relationship between CQI and child outcomes.

3. **Indicator #3:** State has a standardized Quality Rating and Improvement System to rate program quality.

    a. *Criterion #1:* The paper focuses on the relationship between QRIS and child outcomes.

    b. *Criterion #2:* The paper focuses on implementation issues with regard to QRIS.

c. *Criterion #3:* The paper focuses on what type of measurements or data should be included in the QRIS in order for it to be effective.

d. *Criterion #4:* The paper focuses on how QRIS ratings or its components change over time and how often it is recommended to perform assessments.

4. **Indicator #4:** State funds and directs data collection or has access to various kinds of data on children's learning and development, children's attendance, the qualifications and diversity of the ECE workforce, fidelity of implementation data, PD for ECE providers, classroom/teaching data, and family engagement data.

    a. *Criterion #1:* The paper focuses on effective ways to collect data.

    b. *Criterion #2:* The paper focuses on the relationship between state data collection and child outcomes.

    c. *Criterion #3:* The paper focuses on different types of data and their comparative usefulness for CQI.

    d. *Criterion #4:* The paper focuses on data about the qualifications and diversity of the ECE and how it could be used for CQI efforts.

5. **Indicator #5:** The state collects, funds, or directs the collection of data, or has access to relevant and high-quality (i.e, reliable and valid) data. State uses the data for continuous quality improvement.

    a. *Criterion #1:* The paper focuses on data quality—for example, how to determine it, how to design processes for auditing, etc.

    b. *Criterion #2:* The paper focuses on what type of data is relevant for CQI and child outcomes.

    c. *Criterion #3:* The paper focuses on how data can be used at the state level to improve child outcomes.

    d. *Criterion #4:* The paper focuses on whether it is more efficient to collect data directly or to subcontract to a specialized organization (profit or non-profit).

6. **Indicator #6**: State links different types of data to capture a full picture of the pre-K system and make informed decisions.

    a. *Criterion #1:* The paper focuses on the importance of linking different types of data.

    b. *Criterion #2:* The paper focuses on the importance of analyses using linked data for CQI and/or child outcomes.

    c. *Criterion #3:* The paper demonstrates the usefulness of linking classroom-level and community level-data.

    d. *Criterion #4:* The paper focuses on analysis using linked “professional learning” data with teaching quality and child assessment data.

7. **Indicator #7:** "State has a centralized data aggregation, linking, and management system. State collects (or has access to) data for all appropriate levels and populations."
    a. *Criterion #1:* The paper focuses on the relationship between state "collecting data at all appropriate levels including, classroom, building, district, and state level" and child outcomes.
    b. *Criterion #2:* The paper focuses on the impact of "linking information across programs to account for all children served across various funding streams" and child outcomes (this indicator is very similar to the other indicator, so the criteria could be very similar; it's hard for me to discern qualitative difference between this indicator and indicators 4 and 5).
    c. *Criterion #3:* The paper focuses on the advantages of collecting longitudinal data and how causal relationships can be gained from such data.
    d. *Criterion #4:* The paper focuses on the advantage of linking pre-K and K-12 data.
8. **Indicator #8:** State-level use and analysis of statewide data.
    a. *Criterion #1:* The paper focuses on the heterogeneous impact of pre-K on different demographics.
    b. *Criterion #2:* The paper focuses on how "data is used by leaders to inform decision-making about policies, funding, and other supports" in pre-K.
    c. *Criterion #3:* The paper focuses on districts/programs/schools that have been successful in improvement efforts and key determinants of such success.
    d. *Criterion #4:* The paper focuses on possible insights that could be gained by analyzing trends in the data over time.
9. **Indicator #9**: The state's efforts to understand and address inequity include ongoing data collection, disaggregation, active discussions, action planning, implementing, assessing implementation, and refining as needed. State keeps track of equity (differences in quality and achievement across targeted groups) and takes steps to eliminate those differences.
    a. *Criterion #1:* The paper discusses the need to disaggregate data along equity relevant group **(or provides example of equity issues that may be better understood with disaggregated data)** and may include recommendations such as having active discussions, basing decisions on data and analysis, and assessing implementation to identify whether the needs of equity-relevant groups are being met.
    b. *Criterion #2:* The paper discusses ways in which states can implement efforts to understand and address inequity in their early childhood education systems.
    c. *Criterion #3:* The paper discusses the use of data to understand obstacles to building a unified, equitable early childhood system.
    d. *Criterion #4:* The paper showcases the use of disaggregated data to illuminate the nature of inequities in early childhood education systems.

High-Quality Teaching

1. **Indicator 1**: State has developed clear, research-based core competencies for pre-K teachers.
    a. *Criterion #1*: The paper focuses on the link between states having clear, research-based core competencies for pre-K teachers and child outcomes.
    b. *Criterion #2*: The paper focuses on defining core competencies for pre-K teachers.
    c. *Criterion #3*: The paper focuses on link between one or more research-based core competencies and child outcomes (the difference from Criterion #1 is that this doesn't look at the effect of having policy in place but rather the actual practice).
2. **Indicator 2:** The state has policies on the structural features of HQT; teacher child ratio, group size, number of hours for teaching dosage (children have access to high-quality teaching at least six hours per day, full year). The state monitors that these guidelines are met.
    a. *Criterion #1:* The paper focuses on structural features of HQT such as teacher child ratios, group size, and number of hours for teaching dosage.
    b. *Criterion #2:* The paper focuses state policies around structural features of HQT.
3. **Indicator 3**: State has comprehensive early learning development guidelines for pre-K.
    a. *Criterion #1*: The paper focuses on the relationship between having comprehensive learning and development standards and child outcomes.
    b. *Criterion #2*: The paper focuses on defining comprehensive learning and development standards for pre-K.
    c. *Criterion #3*: The paper focuses on one or more examples of comprehensive learning and development standards and its effect on child outcomes.
    d. *Criterion #4*: The paper focuses on efforts to institute comprehensive learning and development standards for pre-K.
4. **Indicator 4**: State ECE credit standards for early childhood teachers are aligned with core competencies and supervised early learning field experience, and require a competency-based assessment.
    a. *Criterion #1*: The paper focuses on the relationship between supervised early learning field experience and child outcomes.
    b. *Criterion #2*: The paper focuses on the relationship between competency-based assessments and child outcomes, either at the policy level or program level.
    c. *Criterion #3*: The paper focuses on defining what core competencies are.
    d. *Criterion #4*: The paper focuses on the effect of state licensure/credential standards and classroom quality or child outcomes.
    e. *Criterion #5*: The paper focuses on the effect of the alignment of state licensure/credential standards with core competencies and learning field experience and child outcomes.

5. **Indicator 5**: State collects high-quality teaching data. State uses data for continuous quality improvement.
    a. *Criterion #1*: The paper focuses on the relationship between a state QRIS and child outcomes.
    b. *Criterion #2*: The paper focuses on ways the state collects data to assess the quality of teaching, how to collect data with fidelity, and how to use valid and reliable classroom observation tools.
    c. *Criterion #3*: The paper focuses on using a state QRIS for improvement.
    d. *Criterion #4*: The paper focuses on using a state QRIS for accountability.
    e. *Criterion #5:* The paper focuses on ways to assess teachers' quality of teaching and how assessing teacher quality of teaching relates to child outcomes.
6. **Indicator 6**: "State provides resources to support lead and assistant teachers in the implementation of high-quality teaching."
    a. *Criterion #1*: The paper focuses on the impact on child outcomes of provision of resources to support teachers in the implementation of high-quality teaching.
    b. *Criterion #2*: The paper focuses on defining "high-quality teaching."
    c. *Criterion #3*: The paper focuses on the role of different kinds of resources on implementation of high-quality teaching.
7. **Indicator 7**: State provides resources that address a range of topics to support lead and assistant teachers in the implementation of high-quality teaching.
    a. *Criterion #1*: The paper focuses on what kind of resources are needed to support lead and assistant teachers in the implementation of high-quality teaching.
    b. *Criterion #2*: The paper focuses on strategies to implement high-quality teaching.
    c. *Criterion #3*: The paper focuses on defining what "high-quality teaching" should look like or how it can be measured.
    d. *Criterion #4*: The paper focuses on defining "high-quality teaching that 'addresses a range of topics.'"
8. **Indicator 8:** With regard to state policies and practices around high-quality teaching, such as adopting core research-based teaching competencies and providing resources and support to teachers to implement high-quality instruction, the state collects data and disaggregates available data to understand equity issues. The state's efforts to understand and address inequity with regard to high-quality teaching include ongoing data collection, disaggregation of data, active discussions, data-driven decision-making, action planning, implementing, assessing implementation, and refining as needed.
    a. *Criterion #1:* The paper discusses the need to disaggregate data along equity-relevant group **(or provides example of equity issues that may be better understood with disaggregated data)** and may include recommendations such as having active discussions, basing decisions

on data and analysis, and assessing implementation to identify whether the needs of equity-relevant groups are being met.

b. *Criterion #2:* The papers examine inequities related to access for high-quality teaching (i.e, process quality, teacher–child interaction, and instruction).

c. *Criterion #3:* The paper describes and discusses ways teachers can improve teaching practices so that they are more developmentally, culturally, and linguistically responsive in order to promote equity.

9. **Indicator 9**: State can reliably measure classroom quality and can link children identified by the state as part of the most vulnerable populations (e.g., low-income, special populations, DLLs) to the quality of programs. State uses data for improvement.

    a. *Criterion #1*: The paper focuses on measuring classroom quality.

    b. *Criterion #2*: The paper focuses on efforts to link child-level and classroom-level data.

    c. *Criterion #3*: The paper focuses on using classroom quality data for improvement (QRIS).

10. **Indicator 10:** Teachers incorporate children's culture and home language in instruction and classroom activities and collaborate with families to encourage children's use of their home language at school to support their multilingual and multicultural development.

    a. *Criterion #1:* The intervention involves teachers incorporating children's culture and home language into instruction and the classroom environment.

    b. *Criterion #2:* The intervention involves teachers collaborating with families to encourage children's use of their home language at school.

    c. *Criterion #3:* The intervention involves ways teachers can learn more about their students' home language and culture and incorporate it into instructional strategies and class activities by use of measures for family engagement, etc.

Formative Child Assessment

1. **Indicator #1**: State requires programs to use formative child assessment measures that are valid, reliable, and comprehensive across all domains of development, and aligned to state learning and development standards.

    a. *Criterion #1*: The paper focuses on comparative advantages of different formative assessments.

    b. *Criterion #2*: The paper demonstrates the value of using formative assessments.

    c. *Criterion #3*: The paper discusses strategies to ensure valid and reliable assessments and the advantages of having valid and reliable assessments.

    d. *Criterion #4*: The paper focuses on the value of assessments in different domains or stages of development.

e. *Criterion #6:* The paper explores the psychometrics (e.g., validity and reliability) and comprehensiveness of the formative child assessment measure.

2. **Indicator #2**: State requires programs to have a process in place so that formative child assessment data on children who are dual language learners (DLLs) and children with special needs is valid and not misinterpreted due to language and/or cultural barriers.

    a. *Criterion #1*: The paper focuses on the differences between DLLs and other target groups, motivating the need for different assessment procedures

    b. *Criterion #2*: The paper focuses on different DLL assessments and their benefits and disadvantages.

    c. *Criterion #3*: The paper focuses on how cultural barriers and language could lead to "misinterpretation" in the context of DLL children.

    d. *Criterion #4*: The paper focuses on the validity of various DLL assessments and whether the validity is harder to achieve than for more mainstream tools used to assess non-DLL children.

    e. *Criterion #5*: The paper focuses on the appropriate use of formative child assessments with populations such as DLLs and children with special needs.

3. **Indicator #3**: State provides resources to support teachers (e.g., funding, guidance, etc.) in the implementation of formative child assessments.

    a. *Criterion #1*: The paper focuses on addressing issues around teacher variability in formative child assessment ratings and how to address these challenges.

    b. *Criterion #2*: The paper provides insight into whether and how teachers use ongoing assessments to tailor their instruction.

    c. Criterion #3: The paper explores what sort of resources are required for the implementation of formative assessments.

    d. *Criterion #4*: The paper explores the effects of various training strategies in implementing formative assessments.

    e. *Criterion #5*: The paper explores the comparative usefulness of training, technical assistance, or coaching in formative assessment implementation.

4. **Indicator #4**: State verifies that programs collect formative child assessment data and use data to inform improvement plans and track progress, and that they communicate data with families. State uses the data to guide decisions for technical assistance and resource allocation to programs.

    a. *Criterion #1*: The paper studies whether "collecting and using data on formative assessments for accountability and improvement" improves child outcomes.

    b. *Criterion #2: The paper* explores how formative child assessment data could be used for accountability.

c. *Criterion #3*: The paper explores how FCA data could be used for improvement.

d. *Criterion #4*: The paper explores how state can encourage programs to use formative assessments.

5. **Indicator #5:** With regard to state policies and practices around formative child assessment, the state's efforts to understand and address inequity include ongoing data collection, disaggregation of data, active discussions, data-driven decision-making, action planning, implementing, assessing implementation, and refining as needed. Formative child assessments are conducted in authentic ways to increase the likelihood that the data collected are developmentally, culturally, and linguistically appropriate for all populations of children.

    a. *Criterion #1:* The paper discusses the need to disaggregate data along equity-relevant group **(or provides example of equity issues that may be better understood with disaggregated data)** and may include recommendations such as having active discussions, basing decisions on data and analysis, and assessing implementation to identify whether the needs of equity-relevant groups are being met.

    b. *Criterion #2:* The paper discusses considerations about how to make the development or implementation of formative child assessment practices more equitable.

    c. *Criterion #3:* The paper describes and discusses the advantages of authentic assessments related to supporting developmentally, culturally, and linguistically appropriate practices.

6. **Indicator #6**: Classrooms use formative child assessment measures that are valid and reliable, comprehensive across all domains and development, and aligned to state learning and development standards.

    a. *Criterion #1*: The paper explores issues around validity and reliability of assessments.

    b. *Criterion #2*: The paper focuses on comparative advantages of different formative assessments.

    c. *Criterion #3*: The paper demonstrates the value of using formative assessments.

    d. *Criterion #4*: The paper discusses the importance of using a representative sample in data collection procedures.

7. **Indicator #7**: Programs have a process in place so that formative child assessment data on children who are DLLs and children with special needs is valid and not misinterpreted due to language and/or cultural barriers.

    a. *Criterion #1*: The paper focuses on addressing the needs of DLLs and students with varying abilities by adapting assessment procedures and protocols to meet their needs.

    b. *Criterion #2*: The paper focuses on different DLL assessments and their advantages and disadvantages.

    c. *Criterion #3*: The paper discusses the importance of using a representative sample in data collection procedures around DLL formative assessments.

8. **Indicator #8:** Teachers use formative assessment data to inform instruction at the classroom level.
    a. *Criterion #1: The paper* studies various ways that formative assessment can be used to inform instruction.
    b. *Criterion #2: The paper* studies the impact of teachers using formative assessment data to inform instruction on child outcomes.
    c. *Criterion #3: The paper* studies the usefulness of formative assessments.
9. **Indicator #9**: Programs use formative child assessment data for professional development and continuous improvement planning.
    a. *Criterion #1*: The paper explores the usefulness of formative assessment for specific purposes.
    b. *Criterion #2:* The paper focuses on professional development interventions that use formative assessment as a key component.
10. **Indicator #10**: Teachers are trained and, when appropriate, certified in the formative child assessments they implement.
    a. *Criterion #1*: The paper focuses on addressing issues around teacher variability in formative child assessment ratings.
    b. *Criterion #2*: The paper explores how teachers use ongoing assessments to tailor their instruction.
    c. *Criterion #2: The paper* studies the effect of having teachers trained and certified in formative assessments on reliability, usefulness, and validity of such assessments.
    d. *Criterion #4:* The paper explores teachers' perspectives on the use of formative child assessments.
    e. *Criterion #5: The* paper examines variability in teachers assessments and recommends the need for training in formative child assessments.
11. **Indicator #11**: Programs have supports (e.g., written materials, in-person or online training, teacher collaboration groups) for formative child assessment implementation available to teachers.
    a. *Criterion #1*: The paper focuses on addressing issues around teacher variability in formative child assessment ratings.
    b. *Criterion #2:* The paper defines what "supports" are needed for formative assessment implementation.
    c. *Criterion #3*: The paper provides insight on how teachers use ongoing assessments to tailor their instruction.
    d. *Criterion #4:* The paper studies the effectiveness of different "supports" for formative assessment implementation.

e. *Criterion #5:* The paper argues why representative sampling is important and how sampling can be done.

f. *Criterion #6:* The paper studies the usefulness of formative assessments.

12. **Indicator #12:** Teachers regularly share children's progress with families in culturally and linguistically sensitive ways and in their preferred language.

    a. *Criterion #1:* The paper studies the effect of "teachers sharing children's progress with families" on child outcomes.

    b. *Criterion #2:* The paper explores how sharing children's progress with families could be done in a culturally sensitive way or explores the importance of sharing children's progress in a culturally sensitive way.

    c. *Criterion #4:* The paper explores the meaning of "linguistically sensitive ways" of communicating with parents.

    d. *Criterion #5:* The paper provides a way for measuring/conceptualizing how families can share progress about their children with teachers, in addition to teachers sharing progress with families.

    e. *Criterion #6*: The paper demonstrates the importance of culturally sensitive ways to engage families.

Research-Based Curriculum

1. **Indicator #1**: There is policy in place that requires all publicly, state-funded pre-K programs to implement a research-based curriculum that aligns with state early learning guidelines.

    a. *Criterion #1:* The paper focuses on what "state standards" should be for curricula.

    b. *Criterion #2:* The paper focuses on what makes a curriculum inclusive.

    c. *Criterion #3:* The paper focuses on why it's important for a curriculum to be inclusive.

    d. *Criterion #4:* The paper focuses on how to make curriculum valid and what it means for a curriculum to be valid.

    e. *Criterion #5:* The paper focuses on research studies on curriculum and their relation to child outcomes.

2. **Indicator #2**: State provides resources (funding, written guidance, training, and materials) to support teachers in research-based curriculum implementation. Resources are distributed equitably.

    a. *Criterion #1*: The paper outlines the importance of curriculum implementation training.

    b. *Criterion #2*: The paper explores the relationship between curriculum implementation training and child outcomes.

    c. *Criterion #3*: The paper explores what type of training, technical assistance, or coaching is required for successful curriculum implementation.

    d. *Criterion #4*: The paper explores what type of funding streams are available to support curriculum implementation.

3. **Indicator #3**: State requires teachers to be trained in the research-based curriculum they are implementing and for programs to provide ongoing supports (e.g., technical assistance and coaching) for implementation. Training also includes ways to modify the curriculum for children with special needs and for DLLs.
    a. *Criterion #1:* The paper explores how to 'train' teachers in the curriculum."
    b. *Criterion #2:* The paper explores what supports are needed for curriculum implementation.
    c. *Criterion #3:* The paper explores the impact of "practice-based support with modeling to staff" on child outcomes.
    d. *Criterion #4:* The paper explores the relationship between child outcomes and "ongoing coaching and mentoring in curriculum with opportunities for self- and peer-reflection."
4. **Indicator #4**: State requires programs to train their staff in a research-based curriculum implementation fidelity tool and use this tool to assure that curricula are being used as intended.
    a. *Criterion #1*: The paper defines fidelity and/or explores steps to achieve it.
    b. *Criterion #2*: The paper explores the relationship between curriculum implementation fidelity and child outcomes.
    c. *Criterion #3*: The paper explores why curriculum implementation fidelity is important.
    d. *Criterion #4*: The paper explores how teachers can be trained in the curriculum they are implementing.
5. **Indicator #5**: State monitors classroom-level data collection on the fidelity of research-based curriculum implementation and uses data to understand fidelity of implementation and for continuous quality improvement.
    a. *Criterion #1*: The paper explores how curriculum implementation data could be used for accountability.
    b. *Criterion #2*: The paper explores how curriculum implementation data could be used for improvement.
    c. *Criterion #3:* The paper explores potential fidelity tools to use to collect curriculum implementation data.
    d. *Criterion #4:* The paper explores how "multiple sources of data" could be used "to inform improvement plans" in connection with curriculum implementation.
6. **Indicator #6:** With regard to state policies and practices around pre-K curriculum, such as selection of a research-based curriculum, curriculum implementation training for teachers, and resource allocation, the state monitors implementation and outcomes through data collection and uses data to make equitable decisions that ensure all teachers are able to implement curriculum with fidelity and in ways that are linguistically and developmentally appropriate for all children. The state's efforts to understand and address inequity with regards to curriculum include ongoing data collection, disaggregation of data, active discussions, data-driven decision-making, action planning, implementing, assessing implementation, and refining as needed.

a. *Criterion #1:* The paper discusses the need to disaggregate data along equity-relevant group **(or provides example of equity issues that may be better understood with disaggregated data)** and may include recommendations such as having active discussions, basing decisions on data and analysis, and assessing implementation to identify whether the needs of equity-relevant groups are being met.

b. *Criterion #2:* The paper describes how educators can use anti-bias, social justice, and culturally responsive practices can be incorporated into the curriculum.

c. *Criterion #3:* The paper provides recommendations on how engaging families in decision-making around curriculum or other instructional practices so that it reflects the experiences of their family and community.

d. *Criterion #4:* The paper provides guidance on how to support dual language learners and children with special needs.

7. **Indicator #7**: Classrooms implement valid, evidence-based, and inclusive curricula that align with state standards.

    a. *Criterion #1:* The paper argues for the importance of representative sampling and how it could be done.

    b. *Criterion #2:* The paper explores what evidence-based means, which curricula are evidence-based, and whether there is a list of such curricula available.

    c. *Criterion #3:* The paper explores the importance of inclusive curricula.

    d. *Criterion #4:* The paper explores the importance of curriculum validity.

8. **Indicator #8**: Programs have trained lead teachers in the research-based curriculum they are implementing.

    a. *Criterion #1:* The paper argues for the importance of representative sampling and how it could be done (could be textbook; this is important because we're saying that to reach "exemplary," state needs 75% of classrooms from a representative sample to meet a certain standard).

    b. *Criterion #2:* The paper explores why it's important to have lead teachers certified in curriculum (and not assistant teachers).

    c. *Criterion #3:* The paper explores how curriculum certification can be done, outlines potential challenges, and makes recommendations.

    d. Criterion #4: The paper explores an example of a research-based curriculum where teachers are trained in the curriculum they are implementing.

9. **Indicator #9:** Programs train their staff on the use of a research-based curriculum fidelity tool."

a. *Criterion #1:* The paper argues for the importance of representative sampling and how it could be done (could be textbook; this is important because we're saying that to reach "exemplary," state needs 75% of classrooms from a representative sample to meet a certain standard).

b. *Criterion #2: The paper* argues for the importance of a curriculum fidelity tool.

c. *Criterion #3:* The paper explores possible ways to train staff on the use of curriculum fidelity tools.

d. *Criterion #4:* The paper explores characteristics of an effective curriculum fidelity tool.

e. *Criterion #5:* The paper explores the advantages of having staff trained in a research-based curriculum fidelity tool.

10. **Indicator #10:** Programs assess the research-based curriculum implementation fidelity.

    a. *Criterion #1*: The paper argues for the importance of representative sampling and how it could be done (could be textbook; this is important because we're saying that to reach "exemplary," state needs 75% of classrooms from a representative sample to meet a certain standard).

    b. *Criterion #2*: The paper argues for the importance of a curriculum fidelity tool.

    c. *Criterion #3*: The paper explores characteristics of a good curriculum fidelity tool.

    d. *Criterion #4*: The paper outlines why it's important to assess curriculum implementation fidelity at least once a year.

11. **Indicator #11:** Programs use the data obtained from the research-based curriculum fidelity tool for program improvement.

    a. *Criterion #1*: The paper argues for the importance of representative sampling.

    b. *Criterion #2*: The paper explores ways to measure curriculum fidelity.

    c. *Criterion #3*: The paper links the importance of curriculum fidelity with child outcomes.

    d. *Criterion #4*: The paper explores how curriculum fidelity data can be used for improvement.

12. **Indicator #12:** Families have the opportunity to learn about and provide feedback on selected curricula and instructional materials used in classrooms.

    a. *Criterion #1*: The paper argues for the importance of representative sampling.

    b. *Criterion #2*: The paper examines the impact of parent/family involvement activities on child outcomes.

    c. *Criterion #3*: The paper argues why it is important to give families the opportunity to learn about and provide feedback on curricula and other educational decisions.

    d. *Criterion #4:* The paper addresses the importance of involving families in making educational decisions.

e. *Criterion #5:* The paper describes curricula that promote parent and family engagement activities.

Professional Development

1. **Indicator #1**: The early childhood professional development system includes research-based core knowledge and competencies that are equitable and easily accessible. PD providers are monitored through a professional standards board, accreditation process, and/or other quality assurance mechanisms.
    a. *Criterion #1*: The paper defines what "early childhood core knowledge and competencies" are and how they are linked to child outcomes.
    b. *Criterion #2:* The paper explores how professional development systems should be aligned with core knowledge and competencies.
    c. *Criterion #3*: The paper explores how core knowledge and competencies are different between lead teachers and aides.
    d. *Criterion #4*: The paper explores what sort of credentials and degrees are aligned with core knowledge and competencies.
    e. *Criterion #5*: The paper explores what professional development should look like.
    f. *Criterion #6*: The paper explores how best to monitor PD providers.
    g. *Criterion #7*: The paper explores ways equity and diversity considerations enter into professional development.
    h. *Criterion #8*: The paper links having research-based PD standards to child outcomes.
2. **Indicator #2**: State has requirements related to ongoing professional development. The requirements are research based. There are clear guidelines and incentives to support teachers, aides, and instructional leaders to engage in ongoing PD pre- and post-degree attainment. Incentives are equitable and are customized to meet the needs of individuals, such as individual PD vs. group PD, frequency, PD hours, etc.
    a. *Criterion #1*: The paper explores the meaning of job-embedded professional development and why it's important or useful.
    b. *Criterion #2*: The paper explores the importance of PD in general.
    c. *Criterion #3*: The paper links state-level PD requirements to child outcomes.
    d. *Criterion #4*: The paper explores whether requirements or incentives are a better way to further government policy.
3. **Indicator #3**: State provides resources such as written guidance, funding, and training to support the implementation of job-embedded professional learning (JEPL) such as coaching, consultation, TA, and on-the-job trainings. Resources are distributed equitably to meet the needs and demands of those that are disadvantaged, and training materials are accessible (i.e., in languages that represent the field, 508 compliant for staff with disabilities, and delivered in various mediums).
    a. *Criterion #1*: The paper explores the funding of JEPL.

b. *Criterion #2*: The paper explores how best to support JEPL with resources, funding, or training.

c. *Criterion #3*: The paper explores potential challenges or best ways to implement JEPL.

d. *Criterion #4*: The paper explores the link between instructional leadership and JEPL.

4. **Indicator #4:** Degree requirements for teachers are appropriately rigorous and are integrated into a career lattice. There are supports for those of diverse backgrounds to attain further education credentials.

    a. *Criterion #1*: The paper explores the benefits of career lattices rather than career ladders.

    b. *Criterion #2*: The paper explores what is the appropriate rigor for "pre-education requirements" for teachers.

    c. *Criterion #3*: The paper explores how to best incorporate "pre-education requirements" into a career lattice.

    d. *Criterion #4*: The paper explores what sort of challenges those of diverse backgrounds face in attaining further education credentials.

5. **Indicator #5**: "State collects professional development data including data pertaining to job-embedded professional learning. State tracks data on the following: education level, ethnicity, language status, geography, and other factors, and uses data for accountability and improvement."

    a. *Criterion #1*: The paper explores the benefits of PD activities.

    b. *Criterion #2*: The paper explores the benefits of collecting data on PD.

    c. *Criterion #3*: The paper highlights the benefits of collecting PD data in relation to demographic information.

    d. *Criterion #4*: The paper highlights how PD data could be used for accountability or improvement.

6. **Indicator #6:** With regard to state policies and practices around early learning core knowledge and PD standards, ongoing PD requirements and incentives, job embedded PD standards and resources, and workforce development, the state collects data and disaggregates available data to understand equity issues. The state's efforts to understand and address inequity with regard to professional development includes ongoing data collection, disaggregation of data, active discussions, data-driven decision-making, action planning, implementing, assessing implementation, and refining as needed.

    a. *Criterion #1:* The paper discusses the need to disaggregate data along equity-relevant group **(or provides example of equity issues that may be better understood with disaggregated data)** and may include recommendations such as having active discussions, basing decisions on data and analysis, and assessing implementation to identify whether the needs of equity-relevant groups are being met.

    b. *Criterion #2:* The paper explores inequity with regard to professional development policies and practices.

c. *Criterion #3:* The paper provides recommendations for advancing equity goals in professional development policies and practices.

7. **Indicator #7**: Teachers receive job-embedded professional learning.
    a. *Criterion #1*: The paper argues for the importance of representative sampling and how it could be done.
    b. *Criterion #2*: The paper argues for the importance of JEPL.
    c. *Criterion #3*: The paper argues why approximately 75% or more of the staff should be provided JEPL.
8. **Indicator #8**: Regional and local instructional leaders receive training and ongoing support in instructional leadership.
    a. *Criterion #1:* The paper outlines what instructional leadership is.
    b. *Criterion #2:* The paper outlines reasons why regional and local leaders should receive training and ongoing support in instructional leadership.
    c. *Criterion #3:* The paper argues for the importance of representative sampling and how it could be done.
    d. *Criterion #4:* The paper argues why 75% of staff should receive such training or discusses what the proportion should be.
    e. *Criterion #5:* The paper explores the effect of providing training involving leading data-informed CQI processes for regional and local leaders on child outcomes.
    f. *Criterion #6:* The paper demonstrates how equity training for instructional leaders positively affects child outcomes.
    g. *Criterion #7:* The paper demonstrates how training for instructional leaders on building trust and a supportive environment among everyone in the program community positively affects child outcomes.
9. **Indicator #9**: Professional development opportunities are affordable and accessible.
    a. *Criterion #1*: The paper argues for the importance of representative sampling and how it could be done.
    b. *Criterion #2*: The paper defines affordability in the context of ECE workforce.
    c. *Criterion #3*: The paper demonstrates that accessibility and/or affordability is a critical aspect of PD for providers.
10. **Indicator #10**: Professional development opportunities are culturally and linguistically responsive.
    a. *Criterion #1*: The paper argues for the importance of representative sampling and how it could be done.
    b. *Criterion #2*: The paper defines cultural and linguistic responsiveness in the context of ECE PD.
    c. *Criterion #3*: The paper argues that cultural and linguistic responsiveness is an important aspect of PD.

11. **Indicator #11**: Professional development opportunities are in pursuit of degree attainment for those needing degrees, and are based on core competencies for both pre- and post-degree.
    a. *Criterion #1*: The paper argues for the importance of representative sampling and how it could be done.
    b. *Criterion #2*: The paper defines relevance and effectiveness in the context of ECE PD.
    c. *Criterion #3*: The paper demonstrates that relevance and effectiveness are prominent aspects of PD for providers.

VI. Acknowledgement

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