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Equity in Policy Evaluation: Applying Instructional Design Frameworks to Rethink Public Program Assessment

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Abstract: **This review explores the intersection of *equity-centered evaluation* and *instructional design frameworks* as a transformative approach to public program assessment. Traditional policy evaluations often emphasize quantitative performance metrics and cost-effectiveness while neglecting contextual and distributive justice considerations that determine whether programs truly serve all population groups equitably. By integrating instructional design principles such as learner-centered analysis, formative feedback loops, and adaptive alignment policy evaluation can evolve into a more inclusive, participatory, and learning-oriented process. The paper systematically examines models like ADDIE, SAM, and backward design as analogues for developing iterative, feedback-rich evaluation mechanisms in public administration. It argues that instructional design frameworks offer structured methodologies to enhance clarity in goal articulation, ensure multi-stakeholder engagement, and promote reflective redesign of programs based on continuous learning outcomes. Drawing on comparative case studies from education, health, and social policy domains, the review highlights how embedding instructional design logic into policy evaluation fosters responsiveness, transparency, and equity. Ultimately, this study proposes a conceptual synthesis that reframes policy evaluation as a *learning system* rather than a compliance mechanism emphasizing co-creation, contextual adaptation, and social accountability. This approach repositions policy evaluation as a dynamic process that not only measures effectiveness but also nurtures equitable transformation within public programs.**

Keywords: **Equity-centered evaluation; Instructional design frameworks; Public policy assessment; Participatory evaluation; Learning-oriented governance.**

1. INTRODUCTION

1.1 Background and Rationale

In contemporary public governance, the evaluation of policy and programmes has become an integral mechanism for accountability, learning and improvement. The increasing complexity of societal challenges such as climate change, health inequities and social inclusion demands that policy evaluation not only examine performance metrics (e.g., efficiency, outputs, outcomes) but also consider the deeper dynamics of implementation, access, and equity. For instance, Whitsel et al. (2024) emphasize how policy-implementation and outcome evaluation frameworks need to integrate "equity considerations" (e.g., differential reach, representativeness, burdens and benefits across subpopulations) to properly assess the impact of public policy interventions. The rationale for this shift is clear: without explicit attention to who benefits and who is left behind, evaluations risk perpetuating status-quo disparities under the guise of "effectiveness" (Fagbohungbe et al., 2020). Moreover, the field of public policy evaluation is confronting major methodological and practical challenges. Jacob (2024) describes how evaluators contend with issues of data disaggregation, contextual variation, and the interplay of power dynamics across stakeholders, all of which complicate standard evaluation designs. These challenges magnify when the goal is to ensure that evaluations themselves do not replicate inequitable assumptions for example, by treating populations as homogeneous or by ignoring differential capacities for programme uptake. Thus, the rationale for this paper rests on the premise that policy evaluation frameworks must evolve moving from monolithic, output-driven models toward

adaptive, equity-centred designs that recognise variation in context, capacity and outcomes. In doing so, evaluation becomes not just a judgment tool but a learning instrument: illuminating how programmes operate (or fail) in varied social settings and informing redesigns that enhance fairness and inclusion. This background sets the stage for rethinking program assessment through the lens of instructional-design frameworks and equity-oriented policy evaluation.

1.2 Problem Statement: Inequities in Traditional Policy Evaluation

Despite the growing sophistication of evaluation methodologies, traditional policy evaluations continue to embed often implicitly inequitable assumptions and practices. Firstly, many evaluation designs assume uniform beneficiary capacity and homogeneous contexts, which masks differences in access, uptake and outcomes across sub-populations. For instance, Avşar (2024) critiques how national healthcare economic evaluation guidelines often assume that the "value" of an improvement is identical regardless of who receives it, thereby ignoring the ethical imperative to weight benefits differently for historically disadvantaged groups. This indicates a systemic blind-spot: evaluations that treat all recipients as equal may inadvertently perpetuate inequities by failing to surface differential burdens or barriers. Additionally, evaluative practice is often shaped by ethical and methodological constraints that limit its responsiveness to issues of justice. Gates (2024) articulates that evaluation practitioners are seldom trained to probe deeper ethical questions such as: whose voice is missing in the evaluation design? Which sub-populations are excluded from data collection or interpretation? Whose benefits and harms are overlooked? When these questions remain unaddressed, evaluations risk validating policies that maintain unequal distributions of power, resources or outcomes. Furthermore, many evaluations emphasise the "average" effect size or aggregate outcomes, thereby diluting the experiences of marginalized groups and obscuring whether benefits are equitably distributed. Collectively, these characteristics demonstrate that conventional policy evaluation frameworks fail to centre equity both as a design criterion and an outcome metric thus limiting the capacity of public programmes to truly serve diverse and vulnerable populations. This problem underpins the need to reconceptualise policy evaluation by embedding equity and instructional-design concepts as foundational elements of assessment.

1.3 Research Objectives and Questions

The primary objective of this review is to examine how instructional design frameworks can be systematically applied to enhance equity in public policy evaluation. Specifically, the study seeks to identify the principles within models such as ADDIE, SAM, and backward design that can be adapted to create participatory, feedback-driven, and context-sensitive evaluation processes in public programs. It aims to explore how such integration can transform policy assessment from a compliance-oriented activity into a learning-oriented, equity-driven practice. The central research questions guiding this inquiry are: (1) How can instructional design principles be operationalized to address inequities in traditional policy evaluation frameworks? (2) In what ways can instructional design methodologies enhance stakeholder engagement and inclusivity in the evaluation process? and (3) What conceptual and methodological model can effectively align instructional design logic with equity-centered policy evaluation practices?

1.4 Scope and Significance of the Review

This review focuses on reimagining policy evaluation through the application of instructional design frameworks within the context of equity and social justice. The scope encompasses an analysis of both theoretical constructs and practical applications across sectors such as education, health, and social welfare. It emphasizes comparative insights from contemporary evaluation paradigms that advocate adaptive, participatory, and iterative learning approaches. The significance of this study lies in its potential to offer policymakers, evaluators, and practitioners a novel conceptual framework that bridges design thinking and public administration. By reframing policy evaluation as a dynamic learning system rather than a static measurement exercise, the review underscores the importance of embedding inclusivity, reflection, and adaptability into public program assessments, thereby advancing more equitable governance outcomes.

2. CONCEPTUAL FOUNDATIONS

2.1 Defining Policy Evaluation and Its Conventional Models

Policy evaluation is a systematic process for assessing the design, implementation, and impacts of public programmes to establish whether stated objectives have been achieved and whether resources have been used efficiently and effectively. Unlike basic monitoring, which tracks inputs and outputs, rigorous evaluation scrutinizes not only outcomes but the causal mechanisms and contextual contingencies that underpin them (Gordon 2022) as shown in table 1. Conventional models of

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policy evaluation typically follow stages such as needs assessment, process evaluation, outcome evaluation, and cost-effectiveness analysis. These linear or cyclical models emphasize metrics of performance and accountability. For instance, Gordon (2022) highlights that traditional evaluation schemes remain dominated by quantitative measurement of "what works" rather than by equity or justice-oriented questions. However, many of the underlying approaches stem from frameworks developed for technical or administrative systems e.g., in health, engineering or education rather than for complex social processes. The works of Atalor (2019) and Akinleye et al. (2022) illustrate how technological-system models foreground system performance and resource optimization rather than distributive justice or stakeholder voice. Likewise, Ajayi et al. (2019) emphasized treaty and normative compliance rather than participatory evaluation. Consequently, the conventional policy-evaluation paradigm privileges standardization, measurable targets and aggregated outcomes rather than nuanced insight into for whom and under what conditions programs work. This presents a critical limitation when applied to public programmes operating in diverse social settings: absence of adaptive, contextualized feedback loops and weak consideration of equity. Thus, a modern re-conceptualization is required one that retains the strengths of conventional evaluation (rigour, clarity of outcome metrics) but also incorporates adaptive, inclusive and equity-centred logic.

Table 1: Summary of Defining Policy Evaluation and Its Conventional Models

Focus Area	Core Concepts	Key Insights	Implications for Equity and Learning
Definition of Policy Evaluation	Policy evaluation is a systematic process for assessing the effectiveness, efficiency, and equity of public programs.	Conventional models follow a linear process—needs assessment, implementation review, outcome evaluation, and cost-effectiveness analysis.	Traditional evaluation emphasizes accountability but often neglects contextual variation and inclusivity.
Conventional Models	Linear and cyclical models (e.g., logic models, results-based management).	These frameworks prioritize measurable outputs and standardized metrics.	While effective for performance tracking, they overlook differential impacts among population groups.
Limitations	Over-reliance on quantitative indicators, minimal stakeholder involvement.	Evaluation processes rarely address structural inequities or diverse community needs.	Requires shift toward participatory, feedback-driven evaluation for inclusive learning.
Toward Transformation	Integration of adaptive and iterative mechanisms inspired by instructional design.	Embedding formative assessment within implementation enhances responsiveness.	Positions evaluation as a continuous learning and equity-oriented process.

2.2 Understanding Equity in Public Policy Contexts

Equity in public policy contexts refers to the fair and just distribution of benefits and burdens of policy interventions across different population groups, as well as ensuring procedural fairness, inclusion of marginalized voices and responsiveness to diverse contexts. In recent years, scholarship has emphasized that equity is not simply about equality of inputs or outcomes but about recognition of structural disadvantage, power asymmetries, and intersectional identities. Sell et al. (2024) underscore that policy evaluations must explicitly assess differential impacts across socio-economic, cultural and geographic strata rather than rely on average effect measures. In applied domains, such as the design of AI-powered e-learning platforms in remote regions (Ijiga et al., 2022) or inclusive instructional models addressing neurodiversity (Ogunlana & Peter-Anyebe, 2024), equity demands that programmes are designed, implemented and evaluated in ways that anticipate and respond to heterogeneous learner contexts. Even in seemingly technical systems such as edge-computing microservices for malware classification (Idika et al., 2021) or fraud detection in retail systems (Amebleh et al., 2021) the absence of equity lens can perpetuate bias and differential vulnerability. Translating to public policy, an equity-oriented evaluation asks: "Who is served? Who is left behind? And under what conditions?" Instead of treating beneficiaries as homogeneous, it acknowledges variations in access, agency and outcomes. As such, equity becomes a core criterion for evaluation not an add-on and requires disaggregated data, stakeholder participation, and an ethics of justice embedded in the evaluation design itself (Ogunlana & Omachi, 2024). Only by embedding equity from the outset can evaluations reveal not only whether programmes work, but for whom, under what conditions, and how they might be redesigned to be more inclusive and just.

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2.3 Overview of Instructional Design Frameworks (ADDIE, SAM, Backward Design)

Instructional design frameworks provide structured methodologies for designing, implementing and evaluating learning experiences. Among the most widely used are the ADDIE model (Analysis, Design, Development, Implementation, Evaluation), the Successive Approximation Model (SAM), and Backward Design (begin with desired outcomes and work backwards to design assessments and learning activities). In a meta-analysis, Adeoye et al. (2022) demonstrate how the ADDIE model offers flexibility across synchronous and asynchronous environments, emphasising multimedia, feedback loops and iterative review. Meanwhile, instructional practitioners highlight that Backward Design ensures alignment of objectives, evidence and learning activities a principle directly relevant to evaluation logic. The SAM model complements these by offering more rapid, iterative prototyping cycles than the more linear ADDIE. Though less documented in the sources above, these frameworks share common features: beginning with a clear definition of goals, structuring design and development around those goals, implementing with stakeholder feedback, and embedding evaluation throughout. In the context of public programme assessment, translating these frameworks means shifting evaluation from a terminal activity (after implementation) to an embedded, continuous, iterative learning cycle. For example, a fraud detection streaming system described by Amebleh & Omachi (2022) could adopt prototyping and feedback loops from SAM: launching minimum viable analytics, gathering stakeholder feedback, iterating. Similarly, an e-learning project for multilingual STEM learners (Ijiga et al., 2021) aligns well with instructional design by iteratively adjusting modules based on learner feedback and engagement data. Thus, instructional design frameworks provide a blueprint for how evaluations can be structured not only to judge outcomes but to design for learning and adaptation vital in equity-oriented policy settings.

2.4 Theoretical Links Between Learning Design and Evaluation Theory

There is a strong theoretical alignment between instructional learning design models and policy evaluation frameworks: both rely on articulating desired outcomes, designing interventions to achieve those outcomes, measuring and assessing performance, and then feeding results back to refine the system. Jensen, Bailey & Weber (2019) discuss how Backward Design in educational research requires starting with a clear research question, then aligning assessment and activities accordingly—a logic that mirrors robust evaluation theory. In policy evaluation, theory of change or logic-model frameworks similarly defines intended outcomes, map causal pathways and identify indicators for measurement. Instructional design frameworks like ADDIE embed evaluation as a phase and feedback loop; Atalor's (2022) work on blockchain-enabled pharmacovigilance illustrates how system architecture incorporates monitoring and adaptation analogous to instructional evaluation cycles. When educational platforms (Ijiga et al., 2021) adopt feedback from usage analytics to adapt content, this replicates the iterative loop of evaluation theory: implement, observe, reflect, redesign. In fraud detection streaming systems (Amebleh et al., 2021) and malware classification architectures (Idika et al., 2021), the design-evaluation nexus is visible through continuous anomaly detection and system refinement. Translating to public programmes, evaluation should not simply be a terminal measurement but a learning design process: define what equity-fair outcomes are, design programme mechanisms to deliver them, monitor differential access and outcomes, and then redesign policy components in light of results (Ogunlana et al., 2025). In this way, evaluation theory becomes embedded in the design of the policy itself, rather than an external audit, enabling adaptive governance and continuous improvement.

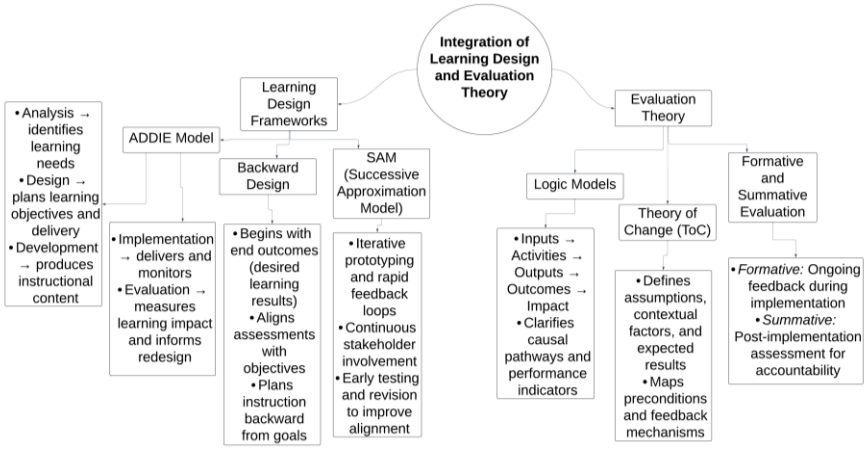

Figure 1: Diagram Illustration of Theoretical Integration of Learning Design and Evaluation Theory Demonstrating Feedback Loops and Outcome Alignment for Equity-Oriented Policy Assessment.

Figure 1 illustrates how instructional design frameworks and evaluation theories intersect to form an integrated, adaptive approach to public program assessment. The left branch represents *Learning Design Frameworks* including ADDIE, Backward Design, and SAM each emphasizing structured planning, iterative development, and continuous feedback. These models establish the foundation for setting clear objectives, aligning activities with desired outcomes, and embedding evaluation within each phase of implementation. The right branch portrays *Evaluation Theory*, encompassing Logic Models, Theory of Change, and Formative and Summative Evaluation approaches. These frameworks focus on mapping causal relationships, identifying performance indicators, and assessing both short- and long-term impacts. The central integration zone demonstrates how both domains converge: learning design provides the structure and process, while evaluation theory ensures accountability, measurement, and iterative refinement. The connecting feedback loops and alignment nodes highlight a cyclical process where insights from evaluation continuously inform design modifications, and design structures, in turn, define measurable outcomes for evaluation. Together, these linkages create a *learning-oriented and equity-driven evaluation ecosystem* one that transforms evaluation from a static end-stage activity into a continuous, participatory process that improves both program design and social impact.

3. INSTRUCTIONAL DESIGN FRAMEWORKS IN POLICY EVALUATION

3.1 Translating Instructional Design Principles into Evaluation Stages

In translating instructional-design principles into the stages of programme evaluation, one draws directly on the systematic progression embodied in models such as the ADDIE (Analysis→Design→Development→Implementation→Evaluation) (Spatioti, Kazanidis & Pange, 2022). The Evaluation phase within ADDIE is not simply a final checkpoint, but a loop of feedback guiding redesign and refinement. In public programme assessment, this means that the "Evaluation" stage must be reinterpreted as iterative and embedded across all stages rather than terminal. For example, work on maximizing renewable-energy asset performance (Oyekan et al., 2023) shows how analytics feed back into design of infrastructure, aligning performance measurement with design loops. Similarly, the risk-control system in digital health payments (Amebleh & Okoh, 2023) exemplifies how anomaly outputs from operational monitoring inform redesign of controls a practical analog to instructional-design feedback loops. Then, embedding these loops into policy evaluation means that traditional needs-assessment (Analysis) becomes an equity-sensitive stakeholder assessment; Design becomes participatory co-design of policy modalities; Development/Implementation become pilot-iterations; and Evaluation becomes formative and summative, continuously informing redesign. The work on resilient infrastructure (Oyekan et al., 2024) reinforces that static evaluation models fail under volatility while iterative design–evaluation loops enable adaptation. Thus, instructional-design principles, when mapped onto public programme assessment, transform evaluation into a design-informed developmental process, enhancing responsiveness, learning and equity.

3.2 The Role of Feedback and Formative Assessment in Public Program Learning

Embedding feedback and formative assessment into the architecture of public programmes treats evaluation as *learning* rather than solely measurement. In education research, formative assessment characterized by ongoing feedback loops and adjustment of activities in real time has been found to increase learner self-regulation, motivation and performance, whereas summative assessment alone often fails to trigger adaptive change (Ismail, 2022) as shown in figure 2. Translating this into policy evaluation means establishing mechanisms during programme implementation that feed real time data back into decision-making, enabling mid-course corrections and responsive redesign. For instance, the federated learning threat-detection project (Idika & Salami, 2024) leveraged continuous streaming feedback to refine models. The atmospheric CO_2 utilization case (Jinadu et al., 2023) employed iterative learn-and-adjust cycles rooted in field data to optimize extraction strategies. In real-time fraud systems (James et al., 2024), anomaly detection outputs feed back into program logic and control design. These serve as analogues for public-policy programmes: evaluation should operate while the programme is live, gathering "how are different groups responding?" and "what unanticipated barriers exist?" rather than waiting for the end of implementation. Feedback loops support inclusion of marginalized stakeholders by surfacing disparate experience early and adjusting design accordingly supporting equity. Thus, formative assessment and continuous feedback fundamentally shift the role of evaluation from retrospective audit to adaptive learning system aligned with instructional-design logic.

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Figure 2: Picture of feedback-rich classroom environment illustrating the principles of formative assessment and participatory learning within public program evaluation frameworks (Guests, 2025)

Figure 2 depicts a lively classroom scene where a group of students are attentively engaged with a teacher standing at the front of the room. The arrangement reflects an interactive learning environment where feedback and formative assessment are visibly at play, the teacher appears to be facilitating a discussion while students actively participate, some raising their hands, others leaning forward with curiosity. This scenario exemplifies *Section 3.2: The Role of Feedback and Formative Assessment in Public Program Learning,* which emphasizes ongoing dialogue and reflection rather than static evaluation. The teacher's posture suggests an open, inquiry-based approach that values student contributions, aligning with formative assessment principles that use real-time feedback to shape instruction and learning outcomes. The diverse group of learners symbolizes inclusivity and equity, key in public program evaluation, where multiple perspectives enrich the understanding of progress and impact. The classroom thus represents a microcosm of policy learning feedback-driven, participatory, and adaptive ensuring that learning is not only assessed but continuously improved through interaction and responsiveness.

3.3 Comparative Analysis of Frameworks: ADDIE vs. SAM vs. Contextual Design

A comparative analysis of major instructional-design frameworks ADDIE, SAM (Successive Approximation Model) and Contextual Design reveals distinct implications for public-policy evaluation. ADDIE's linear, phase-based structure (Analysis→Design→Development→Implementation→Evaluation) provides clarity and structure but may lack agility; Wintersberg (2025) identifies ADDIE's enduring dominance while noting its limitations in dynamic contexts as shown in table 2. SAM, by contrast, emphasizes fast prototyping, stakeholder feedback loops and iterative cycles, making it more suited to volatile or complex settings. Contextual Design prioritizes understanding the environment and user context deeply before designing interventions, which aligns well with equity-oriented policy work. The drilling technology case (Akinleye et al., 2023) exemplifies an engineering context where rapid iteration (akin to SAM) improved precision in implementation. The payments-data fusion study (Amebleh & Omachi, 2023) adopted agile data-feedback cycles reminiscent of SAM. In the UAV routing study (Idika et al., 2024), designers combined real-time edge feedback (SAM approaches) with rigorous analysis (ADDIE style) for disaster-response operations. The renewable-energy asset performance project (Oyekan et al., 2023) emphasized understanding stakeholder context and environmental volatility prior to design mirroring Contextual Design. For public-policy evaluation aiming at equity and adaptability, a hybrid approach may be optimal: use ADDIE's structure for clarity and accountability, SAM for responsiveness and iteration, and Contextual Design for deep stakeholder and environment understanding. Such hybridization supports evaluations that are structured, dynamic and context-sensitive—essential when aiming for inclusive, learning-oriented public programmes.

Table 2: Summary of Comparative Analysis of Frameworks: ADDIE vs. SAM vs. Contextual Design

Framework	Core Features	Strengths	Relevance to Policy Evaluation
ADDIE Model	Structured, sequential process: Analysis → Design → Development → Implementation → Evaluation.	Offers clarity, rigor, and standardization across projects.	Provides a logical foundation for policy design and evaluation alignment but may lack agility.
SAM (Successive Approximation Model)	Iterative and rapid prototyping with feedback loops.	Encourages adaptability, continuous learning, and user participation.	Enables dynamic policy adjustments and real-time evaluation feedback.

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Contextual Design	Focuses on stakeholder context, environmental analysis, and user experience mapping.	Captures local realities and diverse user needs, promoting inclusion.	Enhances participatory evaluation and ensures equity through context-sensitive analysis.
Hybrid Approach	Combines structure (ADDIE), iteration (SAM), and contextual sensitivity.	Balances methodological rigor with flexibility and inclusivity.	Supports adaptive, equity-centered public program evaluation frameworks.

3.4 Integration with Logic Models and Theory of Change

The integration of instructional-design logic with evaluation theory is most powerfully realized through tools such as the Logic Model and the Theory of Change (ToC). These tools map the causal pathways from inputs to outcomes and help ensure evaluation and design remain aligned. Craike, et al., (2023) emphasize that research and policy programmes must develop explicit theories of change to meaningfully influence policy. In instructional-design frameworks, evaluation is built into each phase; combining this with a logic model ensures stakeholders can trace how each design decision translates into intended and unintended outcomes. For example, in the renewable-infrastructure project (Oyekan et al., 2024) a logic-model adaptation was used to align variable market volatility with programme inputs, mechanisms and outcomes. The payments-data fusion study (Amebleh & Omachi, 2023) tracked cohort profitability through a designed model—mirroring the mapping of resources→activities→outcomes that logic models articulate. In drilling technology interventions (Akinleye et al., 2023) and drone routing systems (Idika et al., 2024), iterative feedback loops (instructional-design evaluation principle) map onto ToC pathways enabling rapid redesign of programme logic. Thus, public-programme evaluations that adopt logic models integrated with instructional-design evaluation phases become dynamic and transparent: they define desired outcomes, design interventions, implement with iterative feedback and evaluate continuously. This approach supports equity by enabling disaggregated pathways per stakeholder group, identifying differential access or uptake early, and adapting design accordingly. In sum, instructional-design frameworks and evaluation theory converge through logic-model and ToC integration, yielding responsive, equity-oriented programme assessment architectures.

4. APPLYING EQUITY-CENTERED APPROACHES

4.1 Dimensions of Equity: Procedural, Distributive, and Contextual Justice

In the evaluation of public programmes, applying equity demands that three inter-related justice dimensions are systematically addressed: distributive justice (fair distribution of benefits and burdens), procedural justice (fairness of decision-making processes), and contextual justice (recognition of pre-existing social conditions shaping outcomes) (Chandra et al., 2022). Distributive justice asks: who receives the benefits of a policy, and who bears the burdens? If a public programme offers resources equally but ignores that certain groups start from much deeper disadvantage, then equity is compromised. For example, in an autism-focused streaming platform deployment (Ononiwu et al., 2024), equal access to the platform may appear fair, but if children from low-income homes lack bandwidth or device access, the nominal distribution fails real equity. Procedural justice concerns the decision-making structures: are stakeholders included? Are voices of marginalized groups heard? In the predictive analytics e-commerce context (Ononiwu et al., 2023), algorithmic models were trained on behaviours of majority consumers, thereby bypassing smaller segments and undermining procedural fairness. Contextual justice acknowledges that prior conditions such as socioeconomic status, digital divide, or cultural marginalization shape programme uptake and outcomes. The remote engineering example (Ononiwu et al., 2023) shows that while the technology stack may be equalized, context (internet reliability, power supply, parental support) remains unequal. When evaluation frameworks ignore contextual justice, they risk validating programmes that widen rather than narrow inequities. Therefore, evaluations must integrate all three justice dimensions distributive (outcome fairness), procedural (process fairness), and contextual (starting-point fairness) to genuinely assess equity in public programmes.

4.2 Participatory Co-Design and Inclusive Data Collection

A meaningful equity-oriented evaluation of public programmes requires participatory co-design and inclusive data collection mechanisms. Participatory co-design ensures that end-users and marginalized stakeholders are engaged early in defining programme goals, metrics and monitoring processes: only then do evaluation frameworks reflect experiential realities rather than top-down assumptions (Reason & Bradbury, 2021) as shown in figure 3. In the context of quantum drug-screening research (Atalor et al., 2023), the absence of patient-community representation in design phases risked blind

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spots in outcome measures. For autism-focused streaming services (Ononiwu et al., 2024), lacking parental voice in interface design or data-collection assumptions may exclude children with hearing challenges or low-literacy caregivers. Inclusive data collection demands that datasets be intentionally disaggregated across dimensions such as gender, ethnicity, geography, disability and digital access. In large-scale fintech scaling evaluations (Azonuche & Enyejo, 2024), the focus on majority-user metrics excluded underserved segments, obscuring differential performance. In the women-entrepreneurs influencer study (Ononiwu et al., 2023), encrypted CRM models tracked behaviour of typical users but lacked design input from micro-enterprise owners who faced irregular connectivity. Without inclusive data, evaluation outcomes may misrepresent or ignore minority experiences, leading to false equity conclusions. Therefore, evaluation design must embed forms of co-design, stakeholder mapping, inclusive metric setting and disaggregated data collection to surface inequities, ensure relevance of measures and promote trust among marginalized populations.

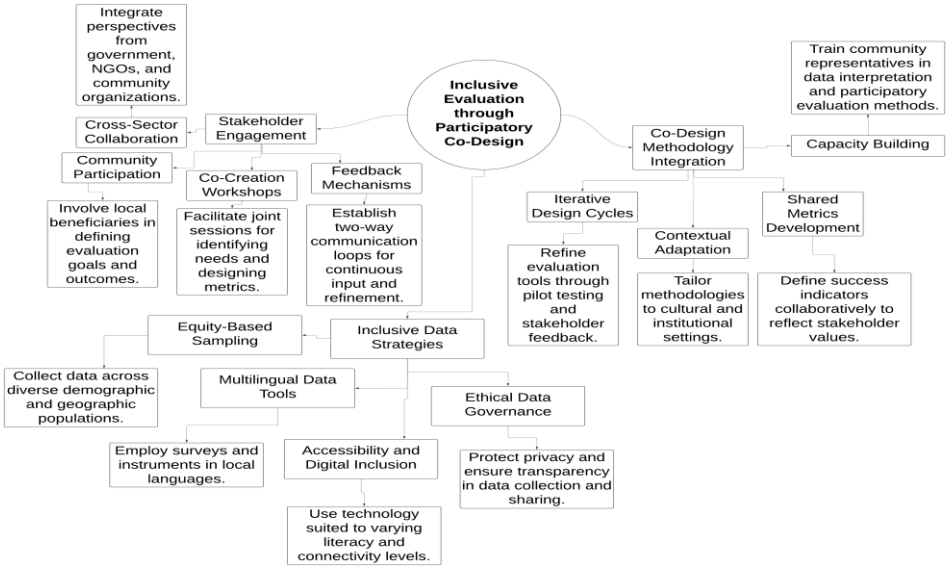

Figure 3: Diagram of Participatory Co-Design and Inclusive Data Collection Framework illustrating stakeholder engagement, equitable data strategies, and iterative methodology integration for inclusive policy evaluation.

Figure 3 illustrates how equitable and collaborative evaluation processes are achieved through three interconnected dimensions *Stakeholder Engagement, Inclusive Data Strategies, and Co-Design Methodology Integration*, all anchored around the central concept of *Inclusive Evaluation through Participatory Co-Design*. The first branch, *Stakeholder Engagement*, emphasizes shared ownership by incorporating community members, policymakers, and organizations into every stage of program assessment through participatory workshops, cross-sector collaboration, and open feedback loops. The second branch, *Inclusive Data Strategies*, focuses on the fairness and accessibility of data collection, ensuring representativeness through equity-based sampling, multilingual survey tools, ethical governance, and digital inclusion that accommodates marginalized groups. The third branch, *Co-Design Methodology Integration*, bridges design and evaluation by embedding iterative learning cycles, contextual adaptation, and capacity-building initiatives that empower local actors to interpret and use data effectively. Together, these branches demonstrate that participatory co-design transforms evaluation into a learning ecosystem—one where data collection is not only technically rigorous but socially inclusive, culturally sensitive, and dynamically responsive to evolving community needs. This integrative framework advances both equity and effectiveness in policy evaluation by aligning stakeholder insights, adaptive design processes, and ethical data practices.

4.3 Intersectionality and Culturally Responsive Evaluation Practices

Recognizing intersectionality and culturally responsive practices is essential for equitable policy evaluation: programmes seldom affect populations in homogeneous ways. Intersectionality demands evaluation frameworks that account for overlapping identities (e.g., disability + race + gender + rurality) and differential access, agency and outcomes (Ghasemi, et al., 2021) as shown in table 3. In microbiome-targeted therapies for autism (Imoh, 2023), failing to differentiate outcomes by gender, socioeconomic status or ethnicity limits insight into which sub-groups benefit or suffer unintended effects. For autism-focused streaming platforms (Ononiwu et al., 2024), culturally responsive evaluation would probe differences in

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content usage and accessibility across cultural-language groups, digital literacy levels and caregiving tribes. Precision-health analytics (Ijiga et al., 2024) highlight how algorithmic models trained on majority populations under-serve minority-language groups, requiring culturally adapted design and data-interpretation layers. Similarly, algorithmic trading risk studies (Ogbuonyalu et al., 2024) show broader systemic biases; for public programmes, evaluation must surface algorithmic or structural biases in resource targeting and programme implementation. Culturally responsive evaluation practices call for engagement of cultural brokers, contextualization of instruments, disaggregation of data by intersecting identities and reflexive interpretation of disparities (Gayawan, & Fagbohungbe, 2023). Only by integrating intersectionality into both design and evaluation can equity-centred assessments identify differential benefit/harm, avoid reinforcing structural exclusion and redesign public programmes to serve all segments of society.

Table 3: Summary of Intersectionality and Culturally Responsive Evaluation Practices

Dimension	Conceptual Focus	Key Findings	Practical Implications for Evaluation
Intersectionality	Examines overlapping identities such as gender, ethnicity, and disability.	Program outcomes vary across intersecting social factors.	Evaluation must disaggregate data and interpret outcomes by subgroup.
Cultural Responsiveness	Incorporates cultural values, languages, and practices into evaluation design.	Evaluation instruments must reflect participants' lived realities.	Enhances inclusion and builds trust with marginalized communities.
Methodological Approach	Mixed-methods emphasizing participatory and qualitative techniques.	Quantitative results alone mask inequities; context adds nuance.	Evaluators should employ culturally informed frameworks.
Impact on Equity	Promotes fairness by recognizing systemic and cultural barriers.	Strengthens the credibility and relevance of policy findings.	Leads to more accurate, equitable, and community-validated evaluation outcomes.

4.4 Ethical Considerations and Power Dynamics in Public Assessment

Ethical considerations and power dynamics are central to equitable public-programme evaluation. Evaluations inherently involve power: those who design metrics, collect data, interpret results and decide follow-up hold influence over which voices count and which do not. Patton, (2016) emphasized that evaluation integrity demands attentiveness to consent, representation, transparency and accountability. In the fintech scaling study (Azonuche & Enyejo, 2024) large-scale processes were justified as "market efficient", but excluded low-capital entrepreneurs whose input was omitted, highlighting power asymmetries in whose interests informed the evaluation. In the blockchain streaming work (Ononiwu et al., 2024), platform monetization decisions may privilege advertisers rather than caregivers of autistic children, raising ethical questions about whose outcomes are prioritized. In the influencer-marketing study (Ononiwu et al., 2023) women entrepreneurs were evaluated using encrypted CRM analytics developed by majority-male firms, raising questions of representational justice and researcher positionality. In the remote engineering CI/CD deployment (Ononiwu et al., 2023) disabled-engineer voices were under-represented in adoption decisions, demonstrating structural exclusion in evaluation design. Ethical evaluation demands that data-collection instruments avoid harm, ensure privacy, include marginalized voices and surface power dynamics explicitly: Who defines success? Whose knowledge counts? Whose risk is overlooked? Evaluation design must integrate participatory mechanisms, transparent governance of findings, and accountability back to affected communities (Fagbohungbe, et al., 2025). Only then can assessment move beyond externally imposed audits to become empowering, reflexive processes that challenge rather than reproduce inequity.

5. CASE STUDIES AND APPLIED PERSPECTIVES

5.1 Education Policy: Instructional Design for Curriculum Evaluation

In education policy evaluation, embedding instructional design principles such as goal-alignment, iterative feedback, and stakeholder involvement transforms curriculum evaluation from static compliance checks into dynamic, learning-oriented processes. For example, Kandiko Howson (2023) demonstrates how institution-wide curriculum change succeeds when evaluation acts not merely as endpoint measurement but as part of the design cycle where data from pilot phases feed into

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successive refinement. Translating this into public-policy education programmes means evaluators should treat the curriculum as a "learning system", where the policy objective (e.g., improved STEM outcomes) defines the endpoint, design phases embed learner-centred activities, implementation incorporates formative feedback loops, and evaluation informs redesign. The work by Jinadu et al. (2025) on scalable CO_2 systems though in a different domain, illustrates how design-evaluation loops maximize system performance; analogously, curriculum evaluation can tap data on student engagement and equity of access to refine pedagogical modules. Meanwhile, Babatuyi et al. (2025) highlight the importance of disaggregated data to capture equity gaps in policy outcomes—similarly, curriculum evaluation must monitor access, engagement, and outcomes across student sub-groups (e.g., by language, socio-economic status). Idika et al. (2025) show how anomaly detection in infrastructure highlights hidden performance issues; likewise, curriculum evaluation should flag "anomalous" groups of learners who are not progressing, enabling targeted remedial design. Amebleh & Igba (2024) emphasize treatment-effect modelling to understand heterogeneous impacts—useful for curriculum evaluation to identify for whom the intervention works. Thus, instructional-design frameworks provide a strong blueprint for curriculum evaluation within education policy: articulated goals → design of learner-centred modules → formative monitoring → summative evaluation → redesign. This learning-centred approach strengthens policy evaluation by focusing not just on whether students met benchmarks, but how and why they did, enabling adaptive, equity-oriented curricular reform.

5.2 Health Programs: Adaptive Learning Models for Equitable Outcomes

In health programmes aimed at equitable outcomes, adaptive learning models drawn from instructional design frameworks can significantly enhance responsiveness and fairness in implementation. For example, Babatuyi et al. (2025) illustrate how public health policy interventions during epidemics must consider how resources are distributed and engage feedback loops to identify underserved populations as shown in table 4. Translating this, a health programme might design patient-education modules that adapt in real time to patient literacy, language preference, and access levels. The federated-learning study by Idika & Salami (2024) shows how privacy-preserving, distributed monitoring systems can aggregate data across diverse households. Similarly, health programme evaluation must employ adaptive architectures that monitor diverse sub-populations without compromising privacy. Amebleh et al. (2025) underscore the value of synthetic data and real-time inference pipelines for high-throughput systems, analogous to health programmes needing real-time feedback for rapid redesign during an outbreak. The IoT-enabled monitoring case (Ussher-Eke et al., 2025) emphasizes continuous monitoring and adaptive interventions health programme evaluation should likewise include continuous patient-level feedback loops and iterative module redesign. Levy-Feldman (2025) focuses on culturally responsive assessment and equity in education, but his logic applies to health: assessments must adapt to cultural and linguistic diversity to ensure equitable interpretation of outcomes. Therefore, by applying instructional-design principles adaptive modules, formative feedback, iterative refinement health programmes can be evaluated not solely on end-outcomes (e.g., morbidity reduction) but on differential engagement, uptake and improvement across sub-groups, enabling more rigorous, equity-oriented assessment and redesign.

Table 4: Summary of Health Programs: Adaptive Learning Models for Equitable Outcomes

Focus Area	Adaptive Learning Element	Key Insights	Implications for Health Policy Evaluation
Equity in Health Programs	Continuous data-driven learning integrated into program delivery.	Iterative adaptation ensures marginalized populations are not excluded.	Improves access and responsiveness in low-resource settings.
Technology Integration	Use of federated learning, IoT tools, and real-time monitoring systems.	Promotes decentralized data collection while ensuring privacy.	Enables adaptive feedback loops for equitable outcome tracking.
Instructional Design Principles	Embedding formative assessment and cultural responsiveness.	Promotes learning-oriented program evaluation beyond end-point metrics.	Facilitates real-time redesign of interventions based on participant data.
Systemic Impact	Combines technical precision with ethical evaluation.	Shifts evaluation from compliance to continuous improvement.	Creates an inclusive, adaptive, and equity-driven framework for public health programs.

5.3 Social Welfare and Economic Empowerment Policies

Social welfare and economic empowerment policies can benefit significantly from applying instructional design-informed evaluation frameworks that emphasize clarity of objectives, stakeholder iteration, data-driven redesign, and equity-sensitive monitoring. Riché, (2012) proposed a theory-based evaluation framework for economic-empowerment programmes which

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emphasizes defining mechanisms of change, identifying diverse participant segments and adjusting design dynamically. In policy settings, this means an empowerment programme (e.g., micro-loan training) should be designed with iterative feedback loops and disaggregated monitoring (for example, women vs. men, urban vs. rural). The anomaly-detection case (Idika et al., 2025) illustrates how high-granularity monitoring can identify unexpected "drop-off" behaviour in participants—analogous to empowerment programmes where some participants may disengage, signaling need for redesign. The payment-scale study (Amebleh & Okoh, 2023) highlights the importance of automated tracking and real-time monitoring of liability and outcomes at scale; empowerment programmes need similar real-time dashboards to monitor participation, progress and outcomes across cohorts. The CO_2 conversion development (Jinadu et al., 2025) typifies how scaling a technical system demands iterative feedback and redesign policy programmes must similarly iterate. The IoT employee-engagement study (Ussher-Eke et al., 2025) shows how continuous sensing and adaptive interventions enhance engagement; empowerment policies may embed continuous evaluation of participant engagement and adapt training accordingly (Atalor, 2022). By applying instructional design logic to social welfare policy evaluation, policymakers can shift from measuring "number of participants served" to analyzing "learning progress, engagement feedback, iteration of programme modules" and eventually refined outcomes design (Fagbohungbe et al., 2020). This leads to more responsive, equitable empowerment initiatives.

5.4 Cross-Sectoral Lessons and Emerging Best Practices

Cross-sectoral lessons from education, health, workforce development and infrastructure show that certain best practices emerge when applying instructional-design frameworks to policy-evaluation contexts. Penuel & Siebert (2021) analyze how partnerships across sectors succeed when iterative feedback loops, stakeholder engagement, and contextual design are built into both implementation and evaluation as shown in figure 4. The payment-systems automation case (Amebleh et al., 2025) demonstrates how large-scale systems benefit from continuous monitoring and adaptive feedback applicable to public programmes across sectors. The blockchain-health exchange work (Idika & Ijiga, 2025) exemplifies how decentralized architectures demand evaluation frameworks that are embedded from the design phase rather than added afterward. The real-time policy orchestration study (James et al., 2025) shows how policy systems connected with technology infrastructures can build dynamic dashboards for adaptive evaluation public programmes in education or health can emulate these dynamic monitoring systems. The women-entrepreneurs influencer marketing study (Ononiwu et al., 2023) emphasizes how adaptive design and analytics can capture distinct subgroup behaviours, supporting equity-focused evaluation. Collectively, these cases indicate key emerging best practices: (1) embed evaluation at design stage, (2) employ real-time monitoring and adaptive loops, (3) disaggregate data by subgroup and context, (4) foster co-design across stakeholders, (5) ensure evaluation frameworks are cross-sector compatible and scalable. These practices highlight that instructional-design frameworks provide a transferable architecture for policy evaluation across sectors shifting assessment from end-point measurement to embedded learning systems that respond dynamically to context, variation and equity imperatives.

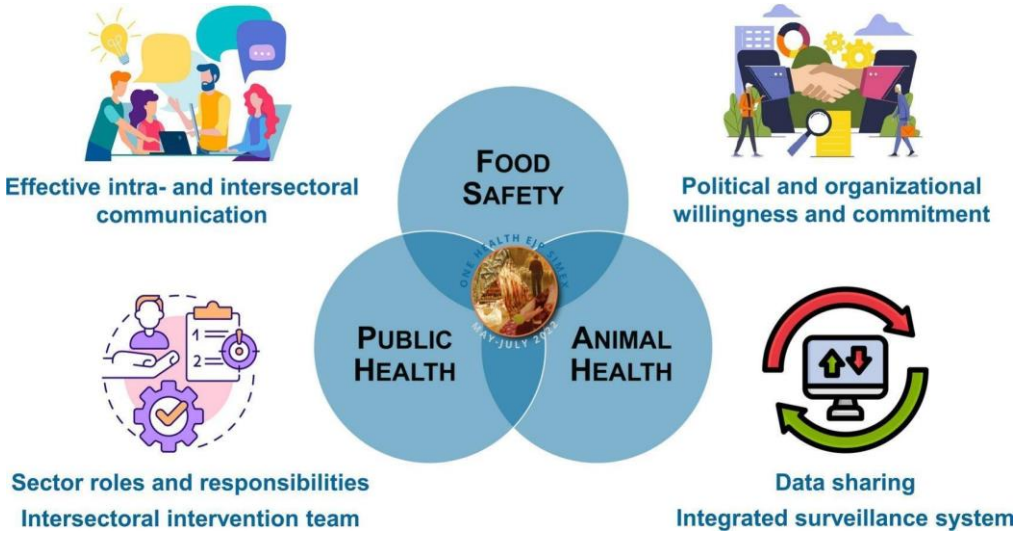

Figure 4: Picture of Cross-sectoral One Health model linking food safety, public health, and animal health through communication, leadership, clear roles, and shared data systems (Manageiro, 2023).

Figure 4 visually represents the interconnectedness of Food Safety, Public Health, and Animal Health, illustrating the essence of Section 5.4: Cross-Sectoral Lessons and Emerging Best Practices. At the center, the three sectors overlap to form an integrated nexus, symbolizing the "One Health" approach, an interdisciplinary model that acknowledges the mutual dependence of human, animal, and environmental systems. Surrounding the core are four key enablers of cross-sectoral collaboration: effective intra- and intersectoral communication, political and organizational commitment, defined sectoral roles and responsibilities, and data sharing through integrated surveillance systems. These components emphasize that effective policy evaluation and implementation depend on transparent information exchange, strong leadership, and coordinated institutional frameworks. For instance, data-sharing mechanisms ensure that insights from one domain (e.g., veterinary health) inform interventions in another (e.g., food safety), fostering collective accountability and real-time response. Similarly, political commitment ensures sustainability and resource alignment, while intersectoral communication bridges silos across agencies. This integrated visualization mirrors the cross-sectoral learning model discussed in the paper where continuous collaboration, shared data, and adaptive evaluation frameworks yield more resilient, equity-oriented public programs.

6. CONCLUSION

6.1 Summary of Key Insights

This review has established that integrating instructional design frameworks into policy evaluation enhances both methodological rigor and equity responsiveness. Conventional evaluation approaches often remain linear, emphasizing accountability and output measurement over learning and contextual fairness. The study highlighted that models such as ADDIE, SAM, and Contextual Design offer adaptable, iterative mechanisms that transform evaluation into a continuous learning process. By embedding formative feedback, participatory co-design, and culturally responsive assessment, evaluations become dynamic systems that reflect diverse stakeholder experiences. Across sectors such as education, health, and social welfare, the incorporation of instructional design principles fosters inclusivity, transparency, and adaptability. Moreover, aligning evaluation with equity-centered justice frameworks ensures that both procedural and distributive fairness are systematically addressed. The findings affirm that equitable evaluation is not achieved through standardized metrics but through iterative design processes that account for variation in context, capacity, and need. Ultimately, the integration of instructional design methodologies redefines policy evaluation as a developmental, learning-oriented practice rather than a static measure of success.

6.2 Toward a Learning-Oriented and Equity-Driven Evaluation Model

A learning-oriented and equity-driven evaluation model must position feedback, inclusivity, and adaptability at its core. Such a model transforms policy evaluation into a cyclical system of continuous improvement where learning informs design, implementation, and refinement. It emphasizes stakeholder participation throughout all stages from goal formulation to outcome measurement ensuring marginalized voices shape both process and metrics. Central to this model is the establishment of iterative learning loops that use real-time data and feedback to refine interventions and correct inequities as they arise. It also integrates contextual justice, recognizing that fairness in outcomes depends on responsiveness to local realities and capacities. Rather than viewing evaluation as an endpoint, the learning-oriented model conceptualizes it as an embedded system synthesizing insights across contexts to inform policy redesign. It bridges the technical precision of instructional design with the moral imperatives of social justice, allowing evaluators to operationalize fairness through adaptive, evidence-informed frameworks. Ultimately, this model empowers institutions to view evaluation as a collaborative and reflexive practice that not only measures performance but also transforms systems toward equity and shared learning.

6.3 Implications for Policymakers, Practitioners, and Researchers

For policymakers, the integration of instructional design into evaluation presents an opportunity to reframe governance as a process of adaptive learning rather than compliance. It suggests policies should be evaluated not only for efficiency but for inclusivity, adaptability, and social impact. Practitioners can use design-based evaluation tools such as formative assessments, co-design workshops, and stakeholder mapping to better capture diverse perspectives and ensure programmes remain contextually relevant. This approach encourages the use of real-time monitoring and iterative redesign, reducing the risk of policy failure due to static assumptions. For researchers, this model opens avenues for cross-disciplinary inquiry combining education, systems design, and public administration. It invites methodological innovation through the application of design-based research to evaluation contexts, bridging empirical rigor with participatory ethics. Collectively,

the implications emphasize that achieving equity in policy evaluation requires rethinking success indicators, privileging reflection and adaptation over rigid targets. When evaluation is treated as a dynamic system of learning, it not only enhances policy performance but strengthens institutional accountability and societal trust.

6.4 Recommendations and Future Research Directions

Future evaluations should institutionalize the principles of instructional design analysis, feedback, and iteration across all policy domains. Governments and agencies should invest in building evaluative capacity that emphasizes collaboration, participatory learning, and adaptive decision-making. Policies should embed evaluation frameworks at the design stage to ensure alignment between objectives, implementation, and outcomes, enabling continuous improvement rather than retrospective adjustment. Moreover, evaluation systems must integrate data disaggregation and context analysis to identify hidden inequities, ensuring that findings translate into equitable redesign. Researchers should explore hybrid models that merge artificial intelligence and human-centered design for adaptive evaluation, allowing faster detection of disparities in complex policy ecosystems. Cross-sectoral studies could examine how learning-oriented frameworks perform in real-world governance scenarios, providing evidence for scalability and sustainability. The future of equitable evaluation lies in systems that learn and evolve frameworks that are reflexive, participatory, and justice-driven. By combining technical precision with ethical consciousness, policymakers and scholars can build an evaluation culture that is both evidence-informed and humanity-centered, advancing the broader goal of inclusive and sustainable policy transformation.

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