Library, Information & Services
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Perspective

Extending Needs Assessment Through Contextual Inquiry: User Research for Culturally Responsive Information Services

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How To Cite: Kong, E. Extending Needs Assessment Through Contextual Inquiry: User Research for Culturally Responsive Information Services. *Library, Information & Services* **2026**, *1*(1), 7.

Received: 7 Jun 2026
Revised: 12 Jul 2026
Accepted: 26 Jul 2026
Published: 28 Jul 2026

Abstract: This perspective argues that culturally responsive information services require user research approaches that extend beyond conventional needs assessment. Needs assessment remains valuable for identifying service gaps, user preferences, and broad patterns of demand. However, when used alone, it may miss how information needs emerge within everyday practices, social relationships, language environments, technologies, and institutional histories. Contextual inquiry offers a complementary approach by examining information practices as situated within the contexts where people seek, evaluate, share, avoid, and act on information. Drawing on LIS traditions in information behavior, information practices, and service design, this article positions contextual inquiry as a bridge between user research and culturally responsive information service development. It argues that contextual inquiry can reveal tacit barriers, informal workarounds, trust relationships, translation practices, and moments of uncertainty that are often invisible in decontextualized assessment methods. Using multilingual health information services as an illustrative example, the article shows how contextual inquiry can help libraries and information organizations move from identifying service gaps to understanding the lived conditions under which services become usable, trusted, and meaningful. The perspective concludes by outlining implications for service design, community partnerships, AI/search tool evaluation, and assessment practices that better reflect users' situated information worlds.

Keywords: contextual inquiry; needs assessment; culturally responsive information services; user research; information practices; service design

1. Introduction: From Access to Contextual Responsiveness

In library and information science (LIS), efforts to design equitable information services often begin with questions of access: whether collections are available, interfaces are usable, materials are translated, and services are reachable. These concerns remain essential. Yet access alone does not ensure meaningful engagement. Information services may be technically available while remaining misaligned with users' language practices, trust relationships, cultural expectations, institutional anxieties, and everyday technology use [1,2].

This perspective argues that culturally responsive information services require user research methods that attend to the contexts in which information needs are formed and acted upon. Conventional needs assessment is useful for identifying service gaps and broad user priorities, but it may be insufficient when used as the primary method for understanding culturally diverse communities. Contextual inquiry offers a complementary approach by examining how information practices unfold within lived settings, social relationships, technological environments, and institutional constraints [3,4]. By moving from decontextualized accounts of what users need

toward situated accounts of how needs emerge, LIS researchers and practitioners can design services that are not only accessible, but also usable, trusted, and culturally meaningful.

The contribution of this perspective is not to introduce contextual inquiry as a new method, nor to suggest that needs assessment is obsolete. Rather, the article contributes an integrative methodological argument for culturally responsive information service research. First, it clarifies why conventional needs assessment, while valuable for institutional planning, may be insufficient when service design depends on tacit, relational, linguistic, technological, and trust-based dimensions of information practice. Second, it reframes contextual inquiry as a practical bridge between LIS information behavior research and service redesign by showing how situated qualitative methods can produce actionable evidence for information organizations. Third, it proposes a staged workflow that connects needs assessment, contextual inquiry, participatory interpretation, service redesign, and evaluation. In doing so, the article translates established concepts from information behavior, service design, and situated knowledge into a usable methodological model for libraries, archives, health information providers, public agencies, and other organizations serving culturally diverse communities. The originality of this perspective lies not in treating contextual inquiry, needs assessment, or participatory design as new methods, but in integrating them into a staged workflow for culturally responsive information service research.

2. What Needs Assessment Captures and What It Can Miss

To propose an expansion toward contextual inquiry is not to dismiss conventional needs assessment. Methods such as surveys, focus groups, structured interviews, and usage analytics are indispensable tools for institutional planning. They provide baseline data for resource allocation, demographic tracking, service prioritization, and asset mapping across diverse service populations. Needs assessment and related assessment practices can also make unmet needs visible to administrators and funders, particularly when organizations must justify new programs, staffing, technologies, or outreach strategies [5,6].

The limitation appears when needs assessment becomes the sole mechanism for understanding culturally diverse communities. Many assessment instruments treat user needs as already-formed, discrete preferences waiting to be extracted by a questionnaire, interview protocol, or checklist. A survey question asking users to choose preferred languages, document types, or service hours may provide useful planning data, but it also asks users to translate their experiences into institutional categories. This can overlook how information needs emerge dynamically in practice as non-linear, shifting, and context-dependent responses to uncertainty, constraint, and everyday problem solving. Sense-making and berrypicking perspectives have long shown that information needs often develop through movement, comparison, interruption, and reinterpretation rather than through stable pre-existing preferences [7,8].

Traditional assessments may also under-detect the informal workarounds and tacit barriers that shape the information landscapes of underserved, marginalized, or immigrant communities. These landscapes often involve invisible labor, including family-mediated searching, rapid language switching between domestic and institutional spheres, and careful negotiation of institutional trust. Such work may not appear in service statistics or satisfaction surveys, yet it profoundly shapes whether information services become usable. Research on outsiders, information poverty, and fractured information landscapes suggests that low formal service use may reflect constrained trust, social risk, or structural exclusion rather than simple lack of awareness [9,10].

Because conventional assessments usually take place outside the user's natural information environment, they rarely capture moments when a user hesitates, avoids a system due to institutional discomfort, abandons a search because language feels too technical, or relies on a community proxy rather than an official channel. Needs assessment tells information organizations what users report needing; contextual inquiry helps explain how those needs emerge, why services fail or become trusted, and what forms of support are meaningful in a lived context. The issue is therefore not whether needs assessment is useful, but whether it is sufficient for culturally responsive service design.

3. Contextual Inquiry as an Extension of LIS User Research

Contextual inquiry provides a systematic framework for extending LIS user research by grounding data collection in the environments where information practices occur. Developed within human-computer interaction and socio-technical systems design, classic contextual inquiry adopts an apprenticeship model in which researchers learn from users while users perform real-world tasks [3,4]. This orientation is useful for LIS because information services are not experienced only through formal service points. They are encountered through devices, documents, interfaces, search engines, family members, community intermediaries, institutional rules, and moments of uncertainty.

Contextual inquiry also resonates with broader traditions of situated action and contextual analysis in technology studies. Suchman showed that human action cannot be fully understood as the execution of pre-specified plans because people continually adapt to situations as they unfold [11]. Dourish similarly argued that context is not merely a set of background variables surrounding action; it is produced and interpreted through activity [12]. For LIS user research, this means that context should not be reduced to demographic descriptors such as language, ethnicity, age, or location. Context includes the relationships, material conditions, platform arrangements, histories, and institutional encounters through which people decide what information is relevant, safe, credible, or actionable.

In LIS and health communication contexts, however, direct real-time observation may not always be ethical, feasible, or safe, especially when sensitive information behaviors or vulnerable populations are involved. Contextual inquiry in LIS should therefore be understood as a flexible, adaptive methodology rather than a single observational technique. It can include in-situ observation where appropriate, context-anchored interviews, retrospective walkthroughs of recent information-seeking episodes, artifact or platform elicitation, and collaborative mapping of social and technological information environments [3,4,13]. Recent adaptations of contextual inquiry also suggest that remote, anonymous, or technology-mediated formats may be useful when privacy, sensitivity, or access constraints make traditional observation difficult [13]. These adaptations preserve the central commitment of contextual inquiry: studying information practices in relation to the settings, actors, tools, and constraints through which they unfold.

By employing these contextual methods, user research can focus on dimensions of information behavior that are often missed by decontextualized assessment. These include real and recalled information practices; workflows and breakdowns; social actors and relationships; technologies and platforms; language and translation practices; invisible labor and institutional assumptions; and moments of hesitation, avoidance, or cross-checking. Together, these dimensions connect contextual inquiry to LIS traditions in everyday life information seeking, information practices, and sociotechnical approaches to information behavior [14–16].

The methodological value of these dimensions lies in their diagnostic capacity. A needs assessment may show that users want more translated resources. A contextual inquiry approach can show where those resources are likely to be encountered, who helps interpret them, which terminology creates confusion, whether users trust the institutional source, and what competing sources shape interpretation [3,4]. The resulting evidence is not merely richer description. It is actionable knowledge for service design.

4. Situated Knowledge and Culturally Responsive Service Design

The methodological value of contextual inquiry rests on an epistemological premise: users' needs are not simply preferences to be extracted, but situated practices shaped by relationships, institutions, technologies, and histories. This premise aligns with the concept of situated knowledges, which emphasizes that knowledge is produced from specific social, cultural, material, and historical positions [17]. In the context of information services, this means that what counts as a need, barrier, credible source, or successful service interaction may differ depending on users' lived circumstances and the institutional histories surrounding those services.

When user research decontextualizes information needs and treats them as isolated consumer inputs, culturally diverse populations are more likely to be misunderstood or deficit-framed. For example, lower engagement with a public library database, a digital archive, a government portal, or a clinical information system might be categorized as an information literacy deficit, technology resistance, or lack of motivation. Such interpretations may contain partial truth in some cases, but they can also obscure how services fail to match users' linguistic comfort, digital access patterns, community trust structures, or prior institutional experiences.

An analytical lens grounded in situated knowledge reframes these behaviors. Within a fractured structural landscape, avoiding an institutional system or relying on a closed community network may represent a rational practice of risk management rather than a lack of capability [10,18]. If a system does not account for users' language practices, device constraints, social obligations, or previous experiences of exclusion, low engagement should not be interpreted only as a user deficit. It may also signal a mismatch between service design and the conditions under which users actually seek, evaluate, and act on information.

Contextual inquiry operationalizes this epistemology by treating users as knowledgeable actors within their own socio-technical environments. Rather than asking only how users can be trained to use existing systems correctly, it asks how systems, services, and institutions may need to change in response to users' situated practices. This shift is central to culturally responsive service design. It moves the organizational goal from correcting deficient users toward reshaping misaligned services.

5. Illustrative Example: Multilingual Health Information Services

To clarify how these methodologies function as complementary rather than oppositional tools, Table 1 reframes the comparison around service research questions rather than method categories. Needs assessment can identify patterns of reported demand, service gaps, and underuse, while contextual inquiry can examine the situated practices, relationships, platforms, and constraints that explain why those patterns occur. This framing aligns with information behavior and information practices research, which has long emphasized that information needs and use develop through context, activity, and social relations [7,8,14–16].

Table 1. Comparing roles of needs assessment and contextual inquiry in culturally responsive service research.

Service Research Question	What Needs Assessment Can Show	What Contextual Inquiry Can Add	Design Implication
Do users need multilingual health resources?	Identifies language preferences and reported demand for translated materials.	Shows how users encounter, translate, share, and evaluate health information across family networks, messaging platforms, ethnic media, and institutional encounters.	Design resources that are not only translated, but also discoverable, trusted, shareable, and usable in family or community contexts.
Why are available services underused?	Shows low attendance, low portal use, limited database access, or weak engagement with existing services.	Reveals hesitation, distrust, technical discomfort, stigma, prior institutional experiences, or reliance on informal intermediaries.	Redesign outreach, interface language, referral pathways, and staff mediation around the reasons users avoid or abandon services.
Which information sources shape users' decisions?	Identifies preferred sources, channels, or formats through surveys or usage statistics.	Maps how users move among official sources, search engines, social media, family members, community organizations, and peer networks.	Build services that connect institutional information with the trusted social and digital channels users already use.
How should AI/search tools be evaluated?	Measures satisfaction, task completion, retrieval success, or reported trust in a tool.	Examines what users actually ask, which outputs they trust or cross-check, where rankings or summaries create confusion, and how vernacular or multilingual queries are handled.	Evaluate AI/search tools not only by technical accuracy, but by situated usability, interpretability, cultural responsiveness, and risk of bias.
Did the redesigned service improve user experience?	Tracks service uptake, satisfaction, attendance, page views, or help-desk requests.	Shows whether redesigned services reduce real-world friction, improve trust, support agency, and fit everyday information practices.	Use practice-based evaluation criteria that assess whether services become meaningful and usable in lived contexts.

As Table 1 illustrates, needs assessment and contextual inquiry can operate at different points in a service research cycle: needs assessment helps identify where service concerns appear, while contextual inquiry helps explain how those concerns are produced, experienced, and potentially redesigned in practice.

6. Distinguishing Contextual Inquiry from Adjacent Methods

Contextual inquiry should also be distinguished from, but connected to, adjacent approaches such as needs assessment, usability testing, ethnography, and participatory design. Needs assessment is often oriented toward identifying service gaps and priorities at the organizational level [5,6]. Usability testing focuses more narrowly on how users interact with a specific interface, workflow, or prototype. Ethnography provides deeper immersion in social and cultural life, often over longer periods. Contextual inquiry occupies a middle position: it is more situated than conventional assessment, broader than interface testing, and usually more focused and design-oriented than full ethnography [3,4].

This distinction matters because information organizations often need methods that are both rigorous and operationally feasible. A public library, archive, academic library, community organization, or health information center may not have the resources to conduct long-term ethnography before improving services. Contextual inquiry offers a practical compromise by using focused encounters, walkthroughs, artifact review, and situated interviews to generate design-relevant insight [3,4]. It does not replace participatory design, but it can provide the empirical grounding needed before co-design activities begin. Participatory design and design justice traditions further remind researchers that communities should not merely be observed; they should participate in interpreting findings and shaping service responses [19,20].

For this reason, contextual inquiry is best understood as part of a broader methodological ecology. Needs assessment can identify the scale of a service issue. Contextual inquiry can diagnose the situated practices and barriers behind that issue. Participatory design can help translate those insights into services, policies, interfaces, or outreach models. Evaluation can then examine whether the redesigned service actually changes users' experiences in practice. This sequence gives information organizations a realistic pathway from reported need to context-sensitive service improvement.

7. A Workflow for Contextually Responsive Service Research

To make the argument actionable for information organizations, contextual inquiry can be positioned within a staged workflow rather than treated as a stand-alone method. The purpose of this workflow is to connect institutional assessment with situated qualitative inquiry, participatory interpretation, service redesign, and evaluation.

Stage 1: Identify the service concern through needs assessment. Organizations can begin with surveys, usage data, focus groups, help-desk records, outreach reports, or community feedback to identify broad patterns of unmet need. At this stage, the goal is not to explain the full meaning of the problem, but to identify where service gaps, access barriers, or user concerns appear to be concentrated.

Stage 2: Select situated episodes for contextual inquiry. Once a service concern has been identified, researchers can select specific information practices, user groups, platforms, or service encounters for closer investigation. For example, rather than asking only whether users need translated health materials, an organization might examine how multilingual users search for, interpret, share, or avoid institutional health information.

Stage 3: Conduct contextual inquiry using flexible qualitative techniques. Depending on the setting and ethical constraints, methods may include in-situ observation, context-anchored interviews, retrospective walkthroughs, artifact or platform elicitation, information journey mapping, and collaborative mapping of social and technological information environments. These techniques help reveal how users move across formal services, informal networks, digital platforms, and interpersonal relationships.

Stage 4: Translate contextual findings into service requirements. Findings should be analyzed not only as themes, but as design-relevant evidence. For example, researchers can identify where users encounter friction, which actors mediate information access, which terms or interfaces create confusion, which sources are trusted or avoided, and what institutional assumptions make services difficult to use.

Stage 5: Interpret and redesign services with community partners. Contextual inquiry should not become extractive data collection. Where possible, organizations should return interpretations to users, community partners, or trusted intermediaries for validation and refinement. Participatory design or co-design activities can then translate contextual findings into revised services, outreach models, interface changes, instructional materials, or partnership strategies.

Stage 6: Evaluate service change in practice. Evaluation should examine whether redesigned services improve not only access or satisfaction, but also discoverability, trust, interpretability, usability, and user agency. This final stage returns the organization to assessment, but with more contextually grounded criteria for determining whether a service has become meaningful in users' lived environments.

8. Ethical and Practical Considerations

Contextual inquiry is not automatically equitable simply because it is qualitative or context-sensitive. Entering people's homes, community spaces, digital environments, or health information practices can create ethical risks. Researchers and practitioners must attend to consent, privacy, confidentiality, power asymmetries, and the possibility that observation or platform walkthroughs may expose sensitive relationships, health concerns, immigration anxieties, or stigmatized practices. In many cases, context-anchored interviews or participant-guided walkthroughs may be more appropriate than direct observation [21].

Reflexivity is also essential. Contextual inquiry requires researchers to ask how their institutional position, language ability, professional assumptions, and analytic categories shape what they notice and how they interpret what they see. Culturally responsive user research should not become extractive evidence gathering, where communities provide situated knowledge but institutions retain all decision-making power. Participatory design and design justice traditions are useful complements because they emphasize community involvement, shared interpretation, and accountability in the translation from research findings to service change [19,20].

For information organizations, this means contextual inquiry should be embedded within an ethical service cycle. Organizations can begin with needs assessment to identify broad service concerns, use contextual inquiry to understand situated practices and barriers, translate findings into service requirements, return interpretations to community partners for validation, and evaluate whether redesigned services actually reduce friction or improve trust. This cycle helps prevent context from becoming a decorative concept and turns it into a practical basis for service accountability.

9. Implications for Information Organizations

Integrating contextual inquiry into LIS user research reshapes the operational, design, and evaluative priorities of information organizations. Three implications are especially important for libraries, archives, health

information providers, educational institutions, public agencies, and other organizations that provide information services to culturally diverse communities.

First, contextual inquiry strengthens service design and community partnership. Organizations must move past designing services for communities in isolation and toward collaborative designs informed by context. Contextual inquiry allows libraries and information centers to identify community spaces, digital channels, and informal intermediaries that are already trusted. By partnering with trusted intermediaries, community liaisons, and informal information brokers, organizations can embed services into users' everyday workflows rather than requiring users to adapt to rigid institutional pathways.

Second, contextual inquiry supports multilingual and culturally responsive mediation. Culturally responsive support requires more than literal, text-for-text translation. Multilingual information processing is often collaborative and multi-platform. Family members, peers, community advocates, and digital platforms may all participate in interpretation. Service design must therefore support dual-language searching, family-centered information seeking, plain-language explanation, and materials structured around community concepts of trust and authority as well as institutional classification schemas [22]. As generative AI becomes part of search, reference, and instructional environments, information literacy programming may also need to address how users evaluate AI-generated explanations, rankings, summaries, and citations, rather than focusing only on traditional source evaluation [23].

Third, contextual inquiry offers a practical lens for evaluating AI and search tools in real-world settings. As platforms increasingly integrate algorithmic ranking, recommendation systems, and generative AI, information organizations need to know not only whether tools retrieve technically accurate information, but also how they handle vernacular language, cultural context, localized misinformation, and risks of exclusion or harmful interaction [24,25]. Recent LIS discussions of ChatGPT and generative AI suggest that libraries are no longer only mediators of access to information, but also sites where users learn to interpret, question, and evaluate AI-mediated outputs [26]. Critical work on search and algorithmic systems has shown that technologies can reproduce social inequities through classification, visibility, and ranking [27–29]. Contextual inquiry can help evaluate these systems from the standpoint of situated use: what users actually ask, what answers they trust, what they cross-check, and where systems create new forms of confusion or confidence [30]. Recent work on AI literacy and LLM-based library reference services further shows that questions of fairness, trust, interpretation, and user support are now emerging within library-specific AI service contexts [31,32]. Contextual inquiry can contribute to this agenda by examining how users and information professionals actually interact with AI-mediated systems in situated service encounters. This is especially important because AI-mediated information services do not only retrieve information; they shape what users see, how results are ranked or summarized, and which forms of knowledge appear credible. In multilingual or culturally diverse settings, algorithmic systems may handle vernacular language, code-switching, culturally specific concepts, or community-based knowledge unevenly. A technically accurate answer may still fail as an information service if users cannot interpret it, do not trust it, cannot connect it to their lived situation, or are not shown the uncertainty and limits of the system.

Contextual inquiry can therefore contribute to AI evaluation by shifting attention from system outputs alone to situated interaction. Rather than asking only whether an AI tool produces accurate, unbiased, or fluent responses, information organizations can ask: What questions do users actually pose to AI or search systems? Which outputs do they trust, ignore, or cross-check? How do users interpret uncertainty, citations, rankings, or warnings? When do AI-mediated tools increase confidence, confusion, or avoidance? These questions connect AI evaluation to information behavior and service design, making it possible to assess algorithmic systems not only as technical products, but as information services embedded in users' everyday practices.

Finally, contextual inquiry pushes assessment beyond shallow metrics. Circulation counts, page views, attendance numbers, and satisfaction surveys remain useful, but they cannot fully show whether a service reduces real-world barriers. Practice-based evaluation should ask whether redesigned services minimize bottlenecks, reduce institutional anxiety, support agency, improve discoverability, and help users make informed decisions within their everyday environments.

10. Conclusions: Context as a Condition of Service Excellence

Culturally responsive information services cannot be successfully engineered solely from generalized demographic profiles, static user feedback, or legacy institutional categories. True responsiveness requires an organizational commitment to understanding context not as an external variable, but as the landscape within which information behavior occurs.

By leveraging conventional needs assessment for macro-level planning and extending it through contextual inquiry, LIS researchers and practitioners can build a more contextually grounded understanding of user behavior. This approach moves the field beyond superficial inclusivity toward structural equity. It also gives information organizations a practical way to ask not only whether services are available, but whether they are discoverable, trusted, interpretable, and meaningful in the settings where decisions are made and barriers are lived

Funding

This research received no external funding.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

No new data were generated or analyzed in this perspective article.

Conflicts of Interest

The author declares no conflict of interest.

Use of AI and AI-Assisted Technologies

During the preparation of this work, the author used Grammarly to check grammar, spelling, and language clarity. After using this tool, the author reviewed and edited the content as needed and take full responsibility for the content of the published article.

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