Ensuring We Are Solving the Right Problem:

A Case for a Systematic Process to Identify and Frame Problems of Practice

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ABSTRACT

Educational organizations routinely encounter problems of practice that are so complex, pervasive, and ill-structured as to be called "wicked". Complexity may also obscure the true causes of a wicked problem, which can lead to misdirected and unsustainable improvement initiatives. In this article, we provide a process to help scholar practitioners systematically identify individual "wicked" problems of practice and frame the problem's root causes. Through an iterative process of deduction and induction, the Problem of Practice Identification and Framing Process results in a problem of practice that is grounded in evidence and more likely to result in effective and sustainable improvements as a result. We offer two examples of how the process could be used involving a pictorial analogy and simulation of a wicked problem.

KEYWORDS

problem of practice, root cause analysis, root causes, wicked problems, problem identification

Many organizations can relate to the pictorial analogy (Issing, 1990) depicted in Figure 1. The organizational "raft" is leaking air, and individuals are attempting to "patch" the "holes" they recognize as problems, without realizing that the "bird" is the root cause of the raft sinking. It is likely that the patches will keep the raft afloat for a while, but until the bird is dispatched, the raft will not be able to make way. Similarly, until root causes of complex organizational problems are identified and addressed, organizations are unlikely to move forward in an impactful way.

Figure 1. Illustration Representing Improvement Efforts That Are Misdirected Toward Symptoms of Problems Rather Than Root Causes

Note. Use of this illustration was granted by José Torre.

Educational organizations at all levels often face circumstances with unique, complex organizational problems impeding their abilities to achieve equitable outcomes for students. Institutions within the Carnegie Project on the Education Doctorate (CPED) consortium refer to these as problems of practice, defining them as "persistent, contextualized, and specific" issues found in the work of practitioners that are in need of improvement (CPED, n.d., para. 1). These problems of practice are often observed and "solutions" applied before the problem and its root causes are comprehensively understood. This "solutionitis" (Bryk et al., 2015, p. 197) can result in initiatives that potentially waste time and resources as they "solve" problems that, much like the patches in Figure 1, do not exist in the forms in which they were perceived. Although intentions may be laudable, rushing to solution may, in the end, exacerbate the initial problem of practice (PoP) or cause other problems when what was needed was a comprehensive understanding of the problem, to which a measured and informed response could be developed (Rohanna, 2017).

Identifying and Framing Problems of Practice

Organizational problems of practice are, by definition, complex and ill-structured (Archbald, 2014; Copland, 2000; Jonassen, 2000; Timperley & Robinson, 1998) which can make them more challenging to comprehensively identify and frame. Problematic issues – issues that are observed by practitioners or initiatives

guided by organizational goals – often serve as the initial markers of a PoP. Scholarly literature, taking the form of prior studies or theoretical works, often serves as evidence of the PoP in the broader context (Archbald, 2014; Belzer & Ryan, 2013; Mintrop, 2016). But problem definitions also require evidence of the PoP in the specific, local context which can be fulfilled through multiple modes such as primary, secondary, and/anecdotal data (Archbald, 2014; Leach et al., 2021).

Improvement science (IS) methodology also advances the idea that specific contextual factors, such as variations in implementation, are key pieces of information when identifying and improving upon problems in education (Bryk et al., 2015). To that end, IS proposes using a causal systems analysis to systematically identify the various systems that impact the PoP and are impacted by it. The systems analysis provides a thorough picture of the PoP that can be used to develop a solution system that precisely targets improvement initiatives toward a component(s) of the system (Cabrera & Cabrera, 2015; Meadows, 2008; Stroh, 2015). Solutions are then implemented in iterative plan-do-study-act (PDSA) cycles where the initiative is planned and carried out, outcomes are studied, the plan is revised, and the revised plan is carried out. Ideally, the cycle continues until the desired improvement is achieved.

Mintrop (2016) also advanced an iterative-based improvement process to identify and frame problems of practice guided by an empirical needs assessment of the organization. Needs assessments assist organizations in identifying the gaps between current and desired outcomes. These gaps can take the form of disparities over time (e.g., outcomes lowered from Year A to Year B), between groups (e.g., outcomes varied between group A and group B), or from an aspirational point (e.g., current outcome is lower than an aspirational outcome; Archbald, 2014). Organizations have used the needs assessment approach for decision-making and problem-solving for some time (Delamere, 1984; Garst & McCawley, 2015), and at least one CPED member institution has used the approach

within their doctoral dissertation in practice process (Pape et al., 2022).

Despite some usage, authors' calls (cf. Archbald, 2014; Mintrop, 2016) for using multiple modes of evidence to identify and frame problems of practice have often gone unheeded (Leach et al., 2021). In a document analysis of 53 published dissertations in practice from institutions affiliated with CPED, Leach et al. (2021) found that 77% (N = 53) relied on literature as evidence of the PoP, with fewer citing evidence with primary or secondary data (32% and 34% of N = 53, respectively) to identify the contextual factors unique to the local PoP. Even fewer – just 2 (4%) of the 53 dissertations – used a systematic approach to frame the PoP.

Purpose of the Current Article

The current article addresses this latter point—the need to use a systematic approach to identify and frame problems of practice within educational organizations. In this article, we present the Problem of Practice (PoP) Identification and Framing Process to aid in identifying and framing problems of practice. The process builds upon the work of Mintrop (2016), Bryk et al. (2015), Archbald (2014), and others to explicitly define steps of an iterative process that, when applied, can help individuals identify and frame problems of practice using multiple modes of evidence while incorporating the various systems that impact and are impacted by the PoP.

PoP Identification and Framing Process

The PoP Identification and Framing Process is a systematic and iterative cycle that can be used to define and understand complex issues (see Figure 2). The process comprises four phases to (a) study the problematic issue, (b) identify patterns, (c) make inferences, and (d) define or refine the hypothesis. The process is iteratively completed considering evidence from the various systems that impact or are impacted by the PoP until the accumulation of evidence confirms the hypothesis that explains the phenomena

Figure 2. PoP Identification and Framing Process
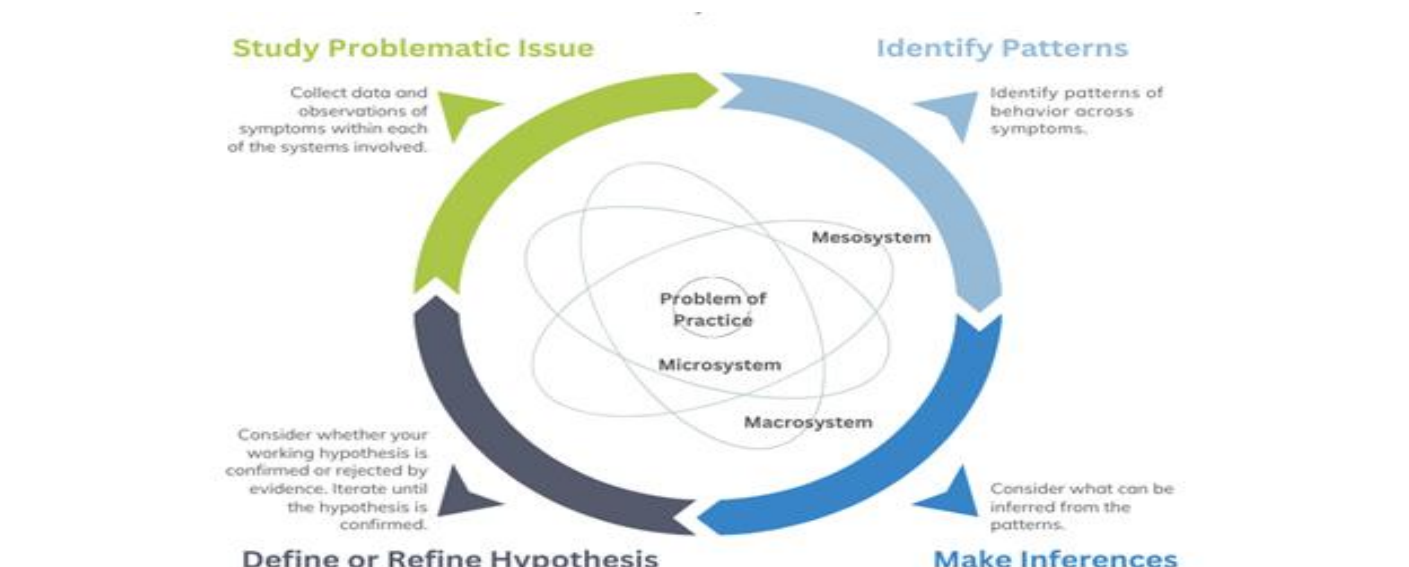
Note. The PoP Identification and Framing Process generally begins with studying the problematic issue and is then successively and iteratively implemented until a hypothesis is confirmed.

Note that the systems that impact or impacted by the PoP are nested in nature, appearing at various levels (e.g., individual, school, community, global) that encompass other systems and are encompassed by other systems. For the purposes of the PoP Identification and Framing Process, we have borrowed terminology from the three most immediate systems presented in Bronfenbrenner's (2000) Bioecological Systems Theory of an individual's development to represent the range of systems influencing a problem of practice. Using a nested model similar to Bronfenbrenner (2000), we use the term "micro-system" to represent the most immediate environment surrounding the problem of practice, the term "meso-system" to comprise those factors that are further removed than the micro-system but are still within the broader "macro-system" of factors at play. Due to the specific and varied contextual natures of problems of practice, the micro-, meso-, and macro-system levels, however, can be considered relative. For example, a PoP involving a local university would likely find state-level policy makers within its meso-system, and a PoP involving a state-level organization would likely find national-level policy making within its meso-system. Put simply, the systems that impact a PoP will vary in level by the particular level of the PoP.

Study Problematic Issue

Identification of the PoP typically begins with step one in the PoP Identification and Framing Process – to study the problematic issue. Using the term "problematic issue" is purposeful to differentiate it from "problem of practice". A problematic issue(s) is an observation that is determined to be problematic, but it may ultimately be discovered to be a symptom of the more complex PoP once the identification and framing process is complete.

Note the systems circling the PoP in Figure 2. These prompt the investigator to consider observations from the various systems (micro-, meso-, and macro-levels) involved with the problem. Thinking back to our graphic metaphor presented in Figure 1, one might consider the micro-level to be factors related to the raft itself, the meso-level to be the lake and factors that impact it, and the macro-level to be the atmosphere and the surrounding environment. The first problematic issues the sailor likely observed were some small leaks in the raft (micro-level) and the raft lowering a bit closer to the water's edge (meso-level). He may have observed that there was some debris in the water around the raft with birds flying overhead (macro-level). These issues would be concerning enough to continue in the process of identifying the problem and its root causes so that the leak could be fixed. Note that this example is relatively simple; investigators studying complex problems are encouraged to conduct meticulous and comprehensive observations, recording what they see, hear, or measure while simultaneously remaining objective. We use this pictorial analogy to initially explain the process and follow with a more complex example.

Identify Patterns

Identifying patterns from the study of the problematic issue(s) is the next step in the process. Investigators sort and categorize the information gained in the first step, looking for categories and themes that emerge from the data. From this exercise, investigators can begin to identify tentative patterns. For example, in thinking back to the metaphor in Figure 1, the similarity of two of the problematic issues identified in the first step—the leaking raft and the raft's lower placement in the water—may lead the sailor to conclude that the raft is losing air.

Make Inferences

The third stage in the process asks investigators to consider inferences that can be logically deduced from the pattern(s) identified in studying the problematic issue(s). An inference is a logical conclusion or deduction made based on evidence, observation, and reasoning, often used to try and predict future events or explain why something happened. In the example of the raft depicted in Figure 1, the sailor could likely infer from the problematic issues and patterns that something is causing the raft to lose air.

Define or Refine Hypothesis

The fourth step in the PoP Identification and Framing Process is to define a working hypothesis, considered to be a proposed explanation for the phenomenon that can be tested through experimentation or further explanation, that logically follows from the identified patterns and inferences. The steps of the PoP Identification and Framing Process are then repeated, refining the working hypothesis as suggested by the evidence, until the hypothesis is eventually confirmed.

In the case of the raft in Figure 1, the sailor might initially hypothesize that some of the debris he saw in the water caused several holes in the raft, which subsequently caused the leaks and raft to get closer to the water's edge. We would consider this to be the sailor's working hypothesis, one that he would then refine through additional iterations of the four-step process.

Subsequent Iterations of the PoP Identification and Framing Process

Subsequent iterations would be needed to refine the working hypothesis until it was confirmed, working through each of the four steps for each iteration. Related to the raft in Figure 1 and the working hypothesis that a piece of debris had punctured the raft, the sailor may conduct additional observations of the problematic situation, noting that there are multiple holes in the raft (from the micro-level system) that seem to be increasing in number quickly. He may also notice a bird that has landed directly onto the side of the raft (from the meso-level system). He may also notice that the raft had drifted away from any debris, but that the holes continued to increase in number (from the macro-level system). The sailor may then identify that the debris is likely not causing the holes, yet something else is. He may then infer that the bird resting on the raft is the likely culprit. In doing so, he has refined his working hypothesis to be that the bird is creating holes on the side of the raft that is causing it to slowly sink. The sailor would then likely consider all of the evidence collected to confirm that the bird is indeed the root cause of the problematic issue, possibly confirming that fact by shooing the bird away and observing if any additional holes are created.

Designing Improvements Based on Results of the Identification and Framing Process

Identifying the PoP and its root causes, similar to the sailor's process of identifying the causes of the raft sinking, provides a basis upon which improvements can be developed and implemented. For the sailor in the raft, shooing the bird away would likely prevent new holes in the raft, and the sailor could apply more patches to existing holes. Improvements developed to address more complex problems may not be quite as simple, but when directed at a well-defined PoP,

they stand a greater chance of success over the short- and long-term because they address the actual problem rather than a symptom or close derivation. How those improvements are developed is beyond the scope of this article, but investigators are encouraged to design improvements based on theory and prior studies, considering the unique characteristics of the local contexts in which the improvements will be implemented.

Example of Identifying and Framing a "Wicked" PoP

To further illustrate the process of identifying and framing a PoP, we will describe an example scenario derived for a simulation we use to teach PoP Identification and Framing with EdD students. This scenario is incorporated into an interactive simulation activity that guides students through the process of identifying a "wicked" PoP through examination of evidence at the micro-, meso-, and macro-levels in a sequential, scaffolded fashion. The individuals, organization, and PoP being described in the example are fictional and are for illustrative purposes only. Note that, unlike the previously described pictorial analogy that incorporated evidence from various levels simultaneously, in an effort to scaffold the process for students, our simulation was separated into three cycles in which we present evidence from each level (i.e., micro, meso, and macro) separately and sequentially.

Simulated PoP Identification and Framing Example

First Cycle Through the Framing Process: Examining Micro-Level Data. Denise, a member of the leadership team at Greenbriar Middle School, was having an informal conversation with several teachers and other members of the leadership team in the teachers' lounge. During this conversation, some teachers mentioned that several students had been either absent from class or were seemingly withdrawn and behaving oddly. Although the individuals in the conversation were uncertain as to whether the students' withdrawn behavior could be attributed to "typical kid stuff" or something more serious, they felt they should continue the conversation in the future. Based on this micro-level interaction with the teachers, Denise recognized patterns between the absences of several students, inferring that perhaps they were having similar issues. She formed a working hypothesis that some systemic problem may be impacting students at Greenbriar Middle School, potentially revolving around their mental health. She used this working hypothesis as a basis to examine the students and their potential issues more deeply.

Second Cycle Through the Framing Process: Examining Meso-Level Data. To better understand the potential problem students at Greenbriar Middle School may be experiencing, Denise next examined institutional data from a range of sources. As a member of the leadership team at the school, Denise had access to student attendance records and discipline reports; upon examining these records, Denise discovered several students had been either chronically absent from their classes, were exhibiting disruptive behaviors both inside and outside the classroom, or both. These records indicated these students received multiple referrals to the school counselor and/or the assistant principal's office. Furthermore, in some cases, the assistant principal had been in contact with the students' parents regarding their children's behavior.

Based on her discoveries regarding students' absenteeism, disruptive behaviors, and counselor referrals, Denise obtained counselor records and email correspondences among faculty, the school principal, and students' parents, in hopes this would shed further light on what students were experiencing. Counselor logs indicated several students had been repeatedly referred to the counselor and had attended counseling sessions; these students were experiencing a range of mental health issues, such as social withdrawal, depression, and threatened self-harm. Many of these mental health issues appear to stem from events happening outside of school such as students' parents getting divorced, as well as in-school experiences such as being bullied.

However, upon examining the email communications among the school's teachers, counselor, and principal, Denise started to notice a pattern of communications breaking down between the various school staff members. Throughout the communications, teachers would inquire about the status of their students with the principal or assistant principal, feeling like they were being "kept in the dark" regarding their students. In other instances, school personnel were unable to contact parents about their students' behaviors in school, so parents could not adequately assist in the situation. There appeared to be little follow-up among staff to ensure students' needs were being met and that they were receiving the help they needed with their mental health issues.

At this point, Denise inferred from the noted patterns that there could be systemic issues at play. She refined her working hypothesis regarding her PoP to revolve more around the school's institutional practices, considering that they perhaps did not have sufficient infrastructure and communications protocols in place to allow institutional stakeholders to enable those stakeholders to collaborate and effectively address students' mental health issues. However, Denise still felt she needed more information to fully understand the phenomenon at Greenbriar Middle School, so she directed her attention to information sources outside the school.

Third Cycle Through the Framing Process: Examining Macro-Level Data. Following Denise's examination of Greenbriar's institutional data, she sought to further refine her working hypothesis and identify the PoP at her school using information from the professional knowledge base, such as professional publications, academic publications, or other broader societal-level sources. Therefore, with the help of the school's librarian, Denise obtained several scholarly research articles relevant to student mental health in hopes they would provide further insight into her PoP. An examination of these articles helped Denise to better understand not only the issue of student mental health, but how schools may respond to mental health issues. Notably, Denise identified relevant findings such as:

- A lack of referrals for student mental health issues may stem from poor communication among school staff members (Crane et al., 2021),
- Mental health treatment programs often involve teachers as well as mental health professionals (Franklin et al., 2012), and
- Although interventions can be effective for mitigating mental health issues, lack of collaboration among clinicians and educators can be a barrier to their success (Goldenthal et al., 2021).

These research findings, among others, helped Denise detect patterns and draw inferences that further informed her working hypothesis regarding the PoP occurring at Greenbriar Middle School. The results Denise were reading about in the scholarly literature

aligned with what she was observing in her school based on the meso-level documentation. Based on school counseling and communications documents, Denise had observed students were experiencing a range of behavioral and mental health issues, and although students were being referred for counseling services, there was little inter-staff communications and supports to help students with their issues. The importance of school infrastructure and communications in helping to treat students' mental health issues was supported by the literature. Therefore, Denise further refined her working hypothesis regarding the PoP into a finalized problem statement, which was:

In the last year, Greenbriar Middle School experienced a high prevalence of mental health issues among middle school students, some of which resulted in major health crises. District procedures and protocols were ineffective at mitigating these issues before they escalated to the point of crisis. Greenbriar Middle School lacks appropriate infrastructure and protocols to address and support students who are experiencing mental health issues.

In summary, following Denise's examination of the data surrounding her potential PoP at the micro-, meso-, and macro-levels, she was able to identify the problem that was impacting her school. Starting with a casual observation that precipitated an initial concern and working hypothesis (i.e., a micro-level observation), Denise examined both data from her organization (i.e., the meso level) as well as data from the professional knowledge base (i.e., the macro level) to inform her PoP and refine her working hypothesis into a usable problem statement. An iterative, data-driven approach such as this is useful for scholar-practitioners seeking to better understand the problems their organizations may be facing (Mintrop, 2016). Next, now that Denise has identified the PoP at her school, she can use her problem statement to either further explore the PoP in her local context to better understand it and its impacts or to aid in the development of a future improvement initiative, thus improving staff practices and student mental health outcomes at Greenbriar Middle School.

Caveats to the Simulation Scenario

Although the previously described scenario of the PoP identification and framing process covers a range of topics salient to iteratively developing and refining a working hypothesis into a usable problem statement, and it has seen success in teaching this process pedagogically (Leach et al., 2023), it has a few limitations worth noting. First, the simulated example is presented in sequence, cleanly working from the micro-level, to the meso-level, and ending at the macro-level. In reality, the examination of micro-, meso-, and macro-level data may occur out of this sequence or even simultaneously; furthermore, researchers may move back and forth between levels several times to thoroughly understand the data at each level (see Figure 2), much as was depicted in the raft pictorial analogy presented in Figure 1. The process is flexible in its iterations to handle both approaches—sequential examination of the system-level evidence and simultaneous examination of the evidence within all levels of the system—or a combination thereof.

Second, in the example, Denise's micro-level data constituted a casual observation, and the meso- and macro-level data comprised of school counseling/communication records and scholarly literature, respectively. In practice, data at these levels may come from a wider range of sources such as school-level academic achievement reports, the findings of equity audits, national-level practitioner-oriented publications, etc. Scholar-practitioners should be open to using high-quality data and results from a range of sources that may be appropriate to their given context and PoP under examination.

Third, in the example, most of Denise's "progress" in identifying her PoP occurred at the meso-level, with the institutional data. Users of the PoP identification and framing process may find that their PoPs may "come into focus" more when examining micro- or macro-level data. Nevertheless, scholar-practitioners should make use of data from all levels to ensure they are developing a thorough understanding of the PoPs that may be impacting their educational institutions.

CONCLUSION

Use of the PoP Identification and Framing Process may assist students and others with identifying wicked problems and their systems of root causes. Investigators are encouraged to keep objectivity at the heart of the process, moving between inductive and deductive reasoning to explain the phenomena and emerge with reasoned conclusions. Evidence at various levels strengthens the meaning-making, whether considered in sequence or in simultaneously. Such efforts are likely to have a positive effect on the efficacy and sustainability of improvements that are developed to address the wicked problems, which could have profound effects on the students, families, and communities impacted by these complex educational problems of practice.

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