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Embedding Industry into Academia: A Reflective Case Study of a Faculty Industry Residency with Structure Tone Southwest

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Construction education programs continuously translate fast-changing industry practices into classroom experiences. The Associated General Contractors of America (AGC) Education and Research Foundation created the Robert L. Bowen Industry Residency Initiative to place faculty in short, immersive residencies within AGC member firms. This paper reflects on a ten-week 2025 residency with Structure Tone Southwest in San Antonio, Texas, and what the placement exposed about project work and curriculum alignment. The reflective case study draws on structured observation journals and field notes, de-identified memos from staff conversations, and post-residency curriculum artifacts, including assignment prompts and curriculum maps. Inductive coding separated observed organizational practices from reflective interpretation. Four themes were identified: (1) AI-assisted information triage paired with human validation; (2) communication functioning as a project-control mechanism; (3) mentorship shaping early-career professional identity; and (4) market context (data centers and civic megaprojects) shaping operational decisions. Themes were interpreted using experiential learning and translated into curriculum revisions aligned with American Council for Construction Education (ACCE) student learning outcomes. Student learning impacts were not assessed, so reported outcomes are implementation-focused. The paper closes with recommendations for documenting faculty residencies as scholarship and for collecting assessment evidence across future cohorts.

Keywords: AGC residency; faculty externship; construction education; work-integrated learning; experiential learning

Background and Scholarly Context

Construction programs depend on faculty keeping pace with how work is actually delivered. Project delivery methods, digital workflows, and workforce expectations can change faster than most curriculum revision cycles. One response is short faculty placements inside contractor organizations, often described as internships, externships, or residencies, intended to refresh instructional examples, calibrate classroom expectations to current practice, and strengthen industry–academia connections.

Recent scholarship has started to document faculty industry placements in construction and engineering education, including reflective case studies of faculty embedded within contractor organizations such as Sands (2025). Related work on student internships emphasizes work-integrated learning as an experiential learning process and highlights the role of structured reflection across placements (Fulk & Hasanzadeh, 2025). Together, this literature treats internships as learning

environments that can be intentionally designed, studied, and improved, rather than treated as time-in-industry alone.

The AGC Education and Research Foundation's Robert L. Bowen Industry Residency Initiative provides a structured model for faculty placements through partnerships among an educational institution, an AGC contractor, and the Foundation. As of 2025, 58 industry residents have been sponsored since 2011 (AGC Education and Research Foundation, 2025a). This paper adds a method-transparent case study of one residency so ASC readers can judge how the insights were derived and so future residents have a replicable way to document observations, reflections, and curriculum decisions.

Theoretical Framing

Interpretation was guided by Kolb's experiential learning theory, which conceptualizes learning as a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984). In this framing, the residency served as the concrete experience; the observation journal and field notes supported reflective observation; inductive coding supported abstraction; and redesigned assignments and assessments became the vehicle for classroom experimentation.

Curricular translation was anchored to the Student Learning Outcomes (SLOs) prescribed in American Council for Construction Education (ACCE)-accredited construction programs, such as writing, scheduling, electronic technology, legal implications, and MEP systems (California State University, Chico, n.d.). The intent was not to claim universal alignment, but to provide traceability by showing how residency-driven changes can be mapped to a widely used outcome framework.

Program Context: The Robert L. Bowen Industry Residency Initiative

The Robert L. Bowen Industry Residency Initiative places construction faculty within AGC member firms for a defined period so faculty can observe current practice and bring those observations back into courses. The program is structured as a three-party partnership among the faculty member's institution, the host AGC contractor, and the AGC Education and Research Foundation. Program guidance describes shared funding, traditionally up to a total of US$30,000 (US$10,000 per party), to cover salary and allowable residency costs (AGC Education and Research Foundation, 2019).

Foundation materials describe the residency as "hands on experience" that educators bring back to the classroom, and state that educators are supported by the Foundation, the host company, and their institution (AGC Education and Research Foundation, 2025b). A post-residency report is required to document learning outcomes and planned curricular integration (AGC Education and Research Foundation, 2019, 2025b).

Because the residency is structured like an internship, the scholarly contribution is not a list of activities. The contribution is a transparent account of what evidence was collected, how it was analyzed, what curriculum decisions followed, and what limits apply to the resulting claims.

Methods

Research design and questions

This study is structured as a reflective case study of a single faculty residency. The faculty resident served as the primary observer, and the bounded residency experience is the case. The purpose is to generate insights that may transfer to similar residency settings rather than to generalize statistically. The analysis distinguishes observed organizational practices from reflective interpretation by treating them as separate analytic categories throughout data reduction and reporting.

The case is bounded to one ten-week residency conducted in 2025 with Structure Tone Southwest in San Antonio, Texas. Three guiding questions framed data collection and analysis:

- RQ1: What organizational practices and learning opportunities were observed during the residency that are pedagogically relevant to construction education?
- RQ2: How were residency observations translated into curriculum changes, and how do those changes align to common outcome frameworks (e.g., ACCE SLOs)?
- RQ3: What challenges and constraints shaped the residency experience and limit the claims that can be made about outcomes?

Data sources and collection

Observations were captured using three primary sources intended to create an 'audit trail' of learning and translation (Table 1):

Table 1. Data sources used to document residency observations and curriculum translation.

Data source	Description (examples)	Purpose in analysis
Structured field journal	Daily entries capturing meetings, observed workflows, mentoring interactions, and notable decisions; de-identified immediately.	Primary record of observations; supports thematic coding.
Observation notes & artifacts log	Notes from recurring sessions (e.g., AI workflow discussions), non-proprietary templates (e.g., RFI formats), and process descriptions.	Triangulation; anchors themes in observable practices.
Curriculum translation artifacts	Post-residency memos, revised assignment prompts, rubric updates, and a course-outcome mapping matrix.	Evidence of 'active experimentation' (Kolb) through curriculum redesign.

Note. Project-specific and proprietary information was omitted to protect confidentiality.

Analysis procedure

Data were analyzed using an inductive thematic process. Observation journal entries, field notes, and de-identified memos were first coded using descriptive labels (e.g., "AI document triage," "forecast cadence," "RFI clarity," "intern mentoring"). Related codes were then grouped into broader pattern

codes and refined into themes through iterative memoing and repeated checks against the original notes to maintain traceability between data extracts and interpretive claims (Braun & Clarke, 2006). To distinguish personal reflection from observed organizational practices, each theme is reported using a consistent structure: (a) observed practice (what was done), (b) reflective interpretation (why it mattered and how it relates to theory), and (c) educational translation (how it was operationalized in course design).

Ethics and confidentiality

Because the residency occurred within an active contractor organization, confidentiality constraints shaped what could be documented. This paper therefore reports on practices and learning-related observations at the level of processes and pedagogical translations rather than at the level of project-specific data. Project-specific and proprietary information was omitted to protect confidentiality. The study was reviewed by the author's Institutional Review Board and determined to be exempt.

Residency structure

The residency lasted ten weeks. Approximately eight weeks were spent in the contractor's San Antonio office working alongside preconstruction and operations staff. One week was spent off-site for a pre-scheduled university obligation, and one week was scheduled leave used to complete the required residency report and organize documentation for curriculum updates. Figure 1 summarizes the phases and typical activities.

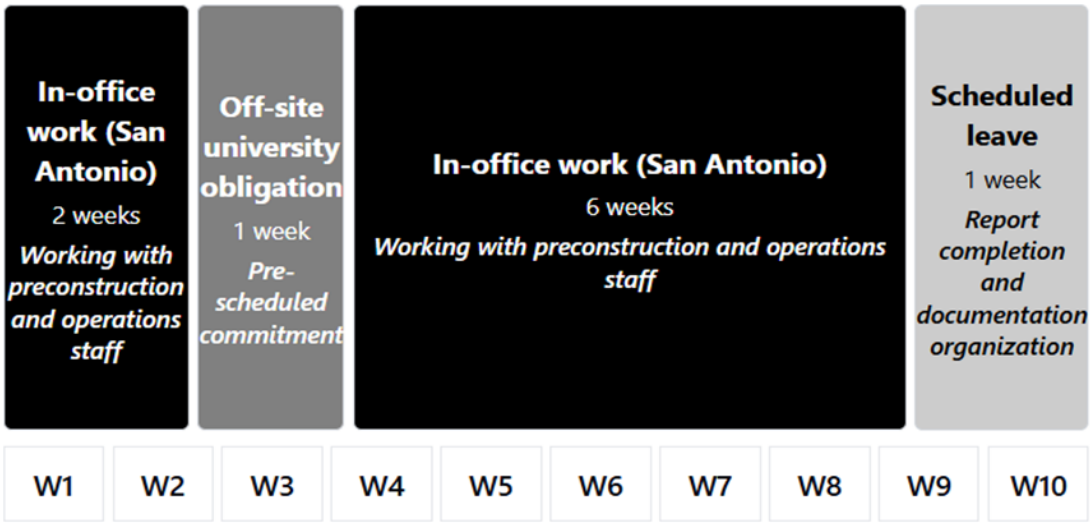

Figure 1. Residency phases and primary activities.

Findings

Theme 1: AI-assisted workflows require explicit verification norms

Observed practice. Weekly discussions with operations leadership focused on how AI tools were being used in preconstruction and project controls to sort and summarize information and to flag patterns in large document sets. In practice, AI output was treated as a first pass, not a decision. Staff consistently verified conclusions against source documents and known project constraints before acting, especially when the AI output affected cost, scope, or schedule.

Reflective interpretation. The central takeaway was not that AI replaced judgment, but that it shifted effort toward checking and documenting. This aligns with Kolb's experiential learning sequence. The residency provided repeated concrete encounters with imperfect AI outputs, which then required reflective observation and abstraction about failure modes and limits before any responsible "active experimentation" could occur in the classroom. If students are asked to use AI without being required to verify and document what they verified, the assignment teaches speed without accountability.

Educational translation. A module in Technology in Construction now requires students to work from an AI-generated summary paired with a short document packet, identify what was verified manually, and produce a short action recommendation written so a teammate could execute it. Grading emphasizes traceability to source documents, clarity of the written handoff, and whether the verification steps would catch common AI errors.

Theme 2: Communication functions as project control

Observed practice. Day-to-day coordination depended on brief meetings, rapid decisions, and written follow-up. Digital platforms disseminated information quickly, but the work still relied on documentation practices that made decisions easy to find later and easy for others to act on. Coaching with interns and early-career staff focused on repeatable basics such as consistent file naming, showing the relevant drawing/spec reference in the message, writing a decision-oriented summary, and closing the loop so issues did not recycle.

Reflective interpretation. What showed up in practice is that communication is not "soft skill" work but rather it is a control system. A well-written Request for Information (RFI) frames the question, cites the contract document reference, and states a needed-by date. That reduces back-and-forth, avoids scope confusion, and protects schedule. The residency made it clear that weak documentation does not just irritate people, it creates delay, rework, and missed handoffs. That's teachable, but only if students practice producing messages that another person can execute without a follow-up meeting.

Educational translation. Short, structured writing tasks are now embedded across courses. Students draft RFIs, write meeting summaries that capture decisions, responsible parties, and deadlines, and maintain documentation that allows a teammate to take the next step without additional clarification. Assessment emphasizes traceability to source documents, decision clarity, and whether the writing would reduce rework and schedule drift in a live project environment, aligning with ACCE expectations for written communication while keeping the focus on project outcomes.

Theme 3: Mentorship and early-career professional identity are shaped by communication habits

Observed practice. Interns and new hires often initiated coordination through text, email, or a message in Procore rather than picking up the phone or walking to the field to talk face-to-face. On context-heavy issues, that "quick message" routinely expanded into long back-and-forth threads before anyone had enough shared understanding to act. In several instances, the same issue was resolved faster by a short call or a brief jobsite conversation, with the decision then captured in writing afterward so it was documented and retrievable.

Reflective interpretation. The residency reinforced that how people communicate affects project performance. When an issue depended on field conditions, sequencing, or what had changed since the last coordination point, written-only threads tended to stretch out and create avoidable back-and-forth. The faster path was usually a short phone call or a quick face-to-face conversation to get the context straight, followed by a brief written recap so the decision was documented. Over time, that habit of talking when context matters and then documenting the decision becomes part of what early-career staff are judged on and how they develop professionally.

Educational translation. Students are now given short scenarios and required to choose a communication channel, justify that choice, and produce two deliverables (1) the "real-time" communication they would use to resolve the issue (phone or face-to-face plan) and (2) the written follow-up that documents the decision, responsible party, and deadline. A brief reflection prompt focuses on what information makes the message actionable for the field and how the follow-up protects schedule and rework risk.

Theme 4: Market context shapes operational choices and creates curriculum opportunities

Observed practice. Market conditions in San Antonio came up repeatedly in pursuit and preconstruction discussions. The data center pipeline influenced how teams talked about staffing plans, subcontractor relationships, and procurement planning for long-lead items. In contrast, civic work tied to Project Marvel brought up a different set of constraints, like public finance, transparency expectations, and stakeholder outreach, and how those factors affect planning and risk decisions early (Iszler, 2025).

Reflective interpretation. The residency reinforced a basic point that students often do not see until they are working full time. Project decisions are not made inside a clean project boundary. Staffing, procurement timing, delivery strategy, and even how risk is written into contracts are shaped by what the market is doing and, for public work, by governance and funding constraints. Those are teachable topics, but they usually show up late in a student's development because they are hard to recreate in a classroom without a real context. A residency helps convert that context into case-based instruction without overstating generalizability beyond this market and time period.

Educational translation. Two course changes were developed from these observations. In Scheduling, a data center case is used to connect long-lead equipment and utility tie-ins to critical path logic and to require a recovery narrative written in plain language for a non-specialist audience. In Construction Law, a public-finance scenario is used to discuss transparency requirements, stakeholder exposure, and risk allocation choices that differ from private work. Market context is supported with industry reporting on ongoing data center demand in North America (Jones Lang LaSalle, 2025).

Implications for Curriculum and Assessment

Table 2 summarizes the primary residency-informed curriculum changes and shows how each change was mapped to ACCE SLOs and to stages of Kolb's learning cycle. The table is included to make the translation step traceable: each residency observation links to a course activity, a student artifact, and the outcome target. It also provides a consistent structure that other residents can adapt for documenting changes and organizing assessment evidence.

Table 2. Residency-informed curriculum changes are mapped to ACCE student learning outcomes and stages of Kolb's learning cycle.

Course / intervention	Residency-informed activity (brief)	Primary student artifact	ACCE SLO alignment*	Kolb stage emphasized
Technology in Construction	AI output + document packet; verify and recommend action	Verification memo + recommendation	1, 7, 10	RO → AE
Scheduling	Data center schedule case; long-lead + utility constraints; recovery plan	CPM schedule + recovery narrative	5, 16	CE → AE
Construction Law	Public finance / transparency scenario (Project Marvel)	Issue brief on risk allocation	17, 12, 13	AC → AE
MEP Systems	Data center power and cooling tracing; constructability discussion	System narrative + constructability notes	20, 8	CE → AC
Cross-course communication micro-curriculum	RFI writing + meeting summary + decision log	RFI + meeting minutes + decision log	1, 2	RO → AE

Note. Kolb stages: CE = concrete experience; RO = reflective observation; AC = abstract conceptualization; AE = active experimentation. *ACCE SLO numbers are based on the commonly published undergraduate outcome set (California State University, Chico, n.d.).

Evidence of outcomes. At the time of writing, these modules have been designed and implemented, but outcome evidence has not yet been compiled in a form suitable for research reporting (e.g., rubric scores, student feedback, or industry partner feedback). Assessment will focus on collecting de-identified student work samples for each module, scoring samples with a shared rubric aligned to the targeted SLOs, gathering brief industry partner feedback on authenticity and usefulness, and using a short pre/post student survey of confidence in professional communication and technology judgment. The study received an exempt IRB determination; assessment data collection and reporting will follow that approved protocol.

Challenges, Limitations, and Lessons Learned

The residency surfaced constraints that matter for scholarly reporting. The pace of work in the office favored short meetings and quick written follow-up, which limited the time available to shadow every function deeply or to follow every issue end-to-end. That is not a criticism of the host; it is how the work gets done, and it shaped what could realistically be observed.

A second constraint was continuity. Balancing external academic commitments required deliberate scheduling and created breaks in immersion. Even short interruptions changed which meetings and decision points were visible during the residency window.

Confidentiality also shaped what could be used as evidence. Direct quotations, detailed project artifacts, and anything that could be traced back to a specific job were not appropriate to include. That protects proprietary information, but it also limits the degree of granularity of the supporting evidence in the paper. A practical way to reduce that limitation in future residencies is to plan de-identified artifacts early, generic RFI templates, anonymized decision logs, and nonproprietary workflow examples, and to request permission for limited excerpts in advance when appropriate.

Finally, this paper reports a single case. The observations reflect one contractor's culture, one regional market, and one time period. The intent is not to claim the themes apply everywhere; the contribution is the documentation method and the traceable link between residency observations, curriculum changes, and assessable student artifacts.

Conclusion

This reflective case study documents a 2025 AGC faculty residency and presents a method-transparent way to report similar experiences as scholarship. In this single case, effective practice depended on disciplined communication, documentation that preserves decisions, and deliberate use of digital tools, including AI workflows that required explicit verification before acting. The contribution is not the residency story by itself; it is the traceable path from observed practice to coded themes to curriculum changes mapped to learning outcomes, with clear limits on what can be claimed without formal assessment data.

As of 2025, the AGC Education and Research Foundation has sponsored 58 industry residents since 2011 (AGC Education and Research Foundation, 2025a). That scale makes a coordinated multi-case research agenda realistic. A practical next step for ASC scholarship is to align documentation and assessment across residents so residency impacts can be evaluated beyond implementation decisions and compared across firms, regions, and cohorts.

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