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Integrative conceptual analysis and prospective evaluation protocol

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Abstract

School-linked publication can make student work visible while obscuring who performed the reasoning and whether learning transfers beyond a coached artifact. This article develops public contribution without prestige proxies as a proposed framework for Designership: a mentored inquiry pathway connecting consequential questions, bounded student authority, documented revision, contributor accountability and reciprocal public value. A selective integrative analysis of original inquiry, mentorship, feedback and transfer studies motivates the framework without treating it as validated. The article specifies a prospective, cohort-cluster randomized evaluation comparing a structured sixteen-week pathway with an attention- and resource-matched inquiry opportunity. The primary estimand is the intention-to-treat difference on an independently completed unfamiliar-task reasoning-and-revision assessment, rated without author, school or venue identities. Authentic project quality, belonging, contribution explanations, persistence, cost and burden remain secondary or descriptive outcomes. The protocol addresses allocation concealment, clustered precision, attrition, fidelity, mentor conflicts, accessible assessment, child assent, guardian permission and separate consent for public dissemination. No participants have been enrolled and no empirical effects, ethics approval, registration or independent human peer-review outcome are claimed. The contribution is a falsifiable educational and editorial architecture in which publication supports learning without becoming its proxy.

Keywords: Designership, K-12 research, mentorship, student agency, authentic assessment, transfer of learning, research integrity, equity

1. The educational problem: contribution before credential

A research pathway can produce a polished article while leaving the student's reasoning obscure. Adults can select the question, repair the analysis, supply the language and arrange the venue. The resulting object may be valuable, yet its existence does not establish what the learner can independently investigate. Conversely, an investigation that identifies a failed assumption, corrects a measurement or responsibly concludes that evidence is insufficient may demonstrate substantial learning without generating an impressive publication. A journal linked to schooling therefore needs two separate warrants: a warrant for the public claim and a warrant for the student's intellectual contribution. Neither can substitute for the other.

This article proposes Designership as a mentored inquiry pathway connecting consequential questions, disciplined investigation, documented revision and accountable public contribution. Within Cheteni's proposed SIDE architecture-Scholarship, Internship, Designership and Entrepreneurship-Designership names responsibility for making and improving a defensible contribution. Movement Thinking supplies a proposed orientation toward action, consequence and revision. These terms organize the present argument; their use does not establish a validated psychological construct, a proven intervention or a historical account of program effectiveness. The empirical contribution here is a prospective test specification, not a report of participant outcomes.

The central proposition is public contribution without prestige proxies. Students should be assessed on how they frame a question, justify a method, engage counterevidence and revise a warranted claim. Institutional branding, mentor seniority, publication count, downloads and entrepreneurial recognition can describe opportunities or dissemination, but they do not measure those capacities. Designership should earn educational significance by improving the learner's performance on a new inquiry problem under comparable support, while making the origins and limits of the public work inspectable. That claim can fail even when the programme attracts attention.

2. What existing evidence warrants-and what it leaves open

The argument draws selectively on original learning and mentorship studies and on conceptual and methodological sources. It is an integrative analysis, not an exhaustive or systematic review: no claim is made that a registered search, dual screening or complete study universe has been established. Reference metadata were checked against publisher, institutional or registration records on 16 October 2026. The sources motivate design decisions; their outcomes are not combined into a synthetic effect estimate.

Barron and colleagues examined problem- and project-based learning organized around principles including appropriate learning goals, scaffolds, revision opportunities and supportive social arrangements. Their work supports designing the conditions around a project rather than equating activity with understanding [R1]. Chinn and Malhotra's conceptual analysis distinguishes epistemologically substantial inquiry from simplified classroom procedures, directing attention to how questions, evidence and explanations are generated [R14]. Together these sources motivate a pathway in which methodological decisions remain visible, without establishing that every student-authored paper constitutes authentic inquiry.

A cluster-randomized study by Taylor and colleagues tested a high-school biology module combining student investigations and online scientist mentoring; its reported achievement and attitude effects concern that combined intervention, not mentoring isolated from curriculum [R2]. Puslednik and Brennan studied an Australian rural authentic-science programme, while Edry, Sasson and Dori examined secondary research apprenticeships and mentor-student interaction [R3] [R4]. Those settings make the pathway educationally plausible. They do not resolve selection into intensive programmes or establish benefits across subjects, ages and resource conditions. The present protocol therefore compares two supported pathways rather than an enriched experience against absence of opportunity.

Schwartz and Martin's statistics studies assessed preparation for subsequent learning; Kapur's productive-failure study examined how unsuccessful initial problem solving could contribute to later transfer [R5] [R6]. These findings motivate a new-task assessment with an opportunity to learn and revise, not a general prescription to withhold instruction. Cho and MacArthur studied revision with peer and expert feedback [R7]. Yeager and colleagues investigated how adolescents interpreted critical feedback across a racial divide, while Herrera and colleagues evaluated a school mentoring programme through random assignment [R8] [R9]. None validates Designership as a package. Each identifies a condition-feedback, relational trust, structured experience or transfer-that a defensible evaluation must distinguish from publication itself.

3. The public-contribution framework

The proposed framework separates four records that are often collapsed into a single portfolio. The inquiry record shows the question, alternatives, methods, observations and changes of interpretation. The contribution record identifies who performed substantive tasks and how assistance changed the work. The learning record contains independently assessed performances under documented conditions. The public record presents the claim, supporting material, limitations and version history at a level appropriate for its audience. A student may possess a strong learning record and elect not to make a public record. This is a legitimate completion pathway rather than a lesser educational outcome.

Five commitments connect these records. First, consequentiality requires identifying an affected audience and a decision or uncertainty that could benefit from investigation. It does not require a dramatic invention. Second, bounded authority gives students real decisions over an achievable question, method or design choice while adults retain responsibility for safety and evidential standards. Third, revision must preserve a meaningful change and its reason; counting saved files is insufficient. Fourth, contestability requires an opportunity for someone other than the project sponsor to question the claim. Fifth, reciprocity asks whether the work returns a useful explanation, artifact or finding to participants or communities without treating them as promotional material.

A Design Realization Garage is proposed here as an organizational arrangement for these commitments, not a costly room specification. Its minimum components are protected inquiry time, access to suitable materials or lawful data, a mentor compact, a revision ledger and an editorial route. A library table with accessible equipment may implement these functions more faithfully than an immersive facility optimized for spectacle. Physical and digital environments can both support the arrangement; technology is justified only when it expands investigation or access. Such functional specification makes it possible to compare implementations across schools without assuming that a branded space causes learning.

The framework also distinguishes an educational audience from a scholarly venue. A local environmental memo, an accessible software demonstration, a careful replication or a data-quality report can constitute public contribution. Journal publication is one route when methods, permissions and claims justify it. It should not be guaranteed as a course reward or purchased as a credential. A negative finding and a decision not to disseminate sensitive information can satisfy the framework when the reasoning is strong. This prevents the platform's growth objectives from defining what counts as worthwhile student work.

4. Mentoring as accountable scaffolding

Mentors require a compact describing permissible help and the decisions reserved for learners. They may model how to inspect a source, ask students to consider an alternative explanation, demonstrate a technical procedure and recommend a narrower question. They should distinguish such coaching from supplying an unacknowledged solution. The student records consequential assistance in plain language after each substantive interaction, and the mentor confirms or corrects the entry. A brief oral explanation can clarify whether the student understands a revision; it is formative evidence, not a disciplinary interrogation.

Adult status creates unequal opportunities to disagree. At project initiation the student and mentor therefore rehearse a disagreement protocol: state the contested interpretation, identify the evidence that would change it, agree on a bounded next

step and preserve the result. Feedback should specify the intellectual standard and make a credible offer of support. Yeager and colleagues' experiments make interpretation of critical feedback a relevant design concern, but their findings are not a license to apply an identical phrase or infer equal effects in every setting [R8]. Mentor training should use actual examples and student feedback rather than merely completing a checklist.

Contribution transparency should avoid both honorary student authorship and erasure of genuine student work. Brand and colleagues describe a contribution-oriented approach to scholarly credit [R12]. For this pathway, a role declaration records question development, investigation, analysis, software, visualization, interpretation and writing, with examples of work performed. It informs authorship discussions without mechanically determining eligibility. Funding, seniority, supervision or platform ownership alone does not entitle an adult to authorship of every learner's paper. Student authors must be able to explain and accept responsibility for their contributions, with age-appropriate support and a route to challenge the credit record.

AI assistance belongs in the same accountability architecture. Learners may use approved tools to brainstorm, translate, draft code or inspect an explanation when the assignment permits it. The record should identify consequential uses, source checks and human decisions. Private student information and restricted research material must not be entered into unapproved services. A model's fluency cannot establish a finding, and the model is not assigned authorship or responsibility. The final public claim remains accountable to named human contributors; the learning assessment separately records what tools and help were available.

5. An assessment architecture that resists performance theatre

The principal measurement problem is whether a learner can investigate beyond the polished artifact. The proposed assessment presents an unfamiliar but accessible problem, a small evidence packet and a deliberately contestable preliminary claim. Students first give an initial response, then receive additional information containing both useful evidence and a plausible distraction. They may inspect a short methodological explanation before submitting a revised response and a change rationale. The task tests learning from new evidence and revising a claim under bounded conditions, rather than reproducing the project rehearsed with a mentor.

The proposed primary rubric has five dimensions scored from zero to four: question and construct clarity; appropriateness of evidence and comparison; treatment of uncertainty and rival explanations; substantive revision in response to information; and a warranted, audience-appropriate conclusion. The total ranges from zero to twenty. Each dimension requires behaviorally anchored examples. A high revision

score requires a justified response to evidence, including retaining an initial conclusion when the new information does not warrant change. Verbosity, rhetorical confidence, graphic polish and citation quantity receive no independent credit. Rubric development and pilot calibration must occur before confirmatory recruitment.

Two assessors, masked to allocation and stripped of school, author, mentor and venue identities, independently rate each response. An independent calibration set precedes operational rating; disagreement triggers a documented adjudication procedure without allowing assessors to infer allocation from project materials. Reliability is estimated with uncertainty for total scores and individual dimensions. If agreement is weak, the measurement problem is reported and the instrument revised for a later study; an unreliable confirmatory result is not rescued by choosing the most favorable rubric dimension after analysis.

Accessible administration is part of construct validity. Students may use approved dictation, screen readers or equivalent oral responses when these preserve the reasoning demands and are documented consistently across arms. All students receive the same task resource and, where needed, the same translation support. Parallel forms should be piloted for age suitability and comparable challenge. The primary task permits a common fixed source packet and approved accessibility tools, but no live generative assistant or individual mentor. This restriction concerns the defined independent-transfer estimand; it does not prohibit supported inquiry in the programme. Authentic project quality and AI-supported performance are assessed separately.

The separation of learning from rank is also consistent with Butler's experimental comparison of task-involving and ego-involving evaluation [R10]. The present design does not assume identical motivational effects in adolescent research or abolish grades by inference. It uses that distinction to specify a testable assessment policy: project feedback addresses evidence and decisions, whereas public status and venue labels are withheld from outcome assessors. Whether this arrangement improves student experience remains an empirical question.

6. Prospective trial: population, allocation and contrast

The proposed trial recruits students in grades eight through eleven through participating schools rather than selecting only students who already possess a research portfolio. Schools should publicize the pathway through ordinary enrollment channels, provide equipment and scheduling support, and record the eligible, approached, enrolled and consenting populations. Research participation is voluntary and distinct from receiving the educational programme. No recruitment, allocation or data collection has occurred for this protocol. Institutional review, safeguarding arrangements, registered procedures and a feasible budget are prerequisites to implementation.

A planning configuration comprises forty-eight intact inquiry cohorts across twelve schools, with approximately twenty students per cohort. These numbers are a logistical scenario, not a completed power calculation or a justified final sample. Rosters and baseline measures would be fixed before allocation. Within school and subject blocks, an independent statistician would randomize cohorts equally to structured Designership or an attention- and resource-matched inquiry pathway. Mentor eligibility, experience and availability are recorded before allocation. Dedicated mentor teams are assigned to cohorts from a common eligible pool through a prespecified procedure within school/subject blocks before the arm draw, preventing selective assignment of preferred mentors to Designership. Teams receive common safeguarding preparation and subsequently equal-duration preparation for their allocated pathway; experience and relevant expertise are reported by arm. Each team serves only one trial arm. If shared facilitators or scheduling make that separation impossible, the allocation unit must expand before registration and the power analysis must be repeated. Allocation concealment applies until enrollment and baseline assessment are complete.

Both pathways receive sixteen weeks of protected time: ninety scheduled minutes weekly, including eight thirty-minute mentor meetings across the programme, identical materials allowances and access to the same technical and safety resources. Both undertake an achievable inquiry project and receive competent general feedback. The Designership arm additionally follows explicit question-and-decision charters, a structured revision ledger, contribution verification, reciprocal peer critique and an editorial response exercise. The comparison arm uses the school's ordinary project organization within the matched provision. It retains essential ethical safeguards and student support; the contrast does not withhold safety, consent protection or basic research integrity.

The intervention therefore estimates the incremental value of a structured inquiry-and-accountability package over a supported inquiry opportunity. It does not isolate the causal effect of each component or test whether mentoring is preferable to no mentoring. Both arms may seek an appropriate public outlet after the primary assessment under the same editorial rules. Publication acceptance is never determined by allocation. Protected time, mentor contact, material use, intervention deviations and cross-arm exposure are recorded so that the intended contrast can be assessed. A badly implemented contrast cannot establish that the underlying educational theory has failed, but it can establish that the tested delivery strategy was ineffective.

7. Estimands, hypotheses and analysis

The primary estimand is the intention-to-treat mean difference in the sixteen-week unfamiliar-task total score between assignment to structured Designership and assignment to the matched pathway, averaged over the consenting, baseline-enrolled student population in participating cohorts. Assignment, rather than project completion or publication, defines inclusion. The primary hypothesis is a positive difference; the confirmatory test is two-sided at a prespecified five-percent level with a ninety-five-percent confidence interval. A null or negative estimate is a legitimate result. Generalization to nonparticipating schools requires additional assumptions and evidence.

The primary model is an individual-level analysis of covariance with baseline transfer score, grade and blocking variables specified before allocation, accounting for the cohort assignment unit. Adjusted arm means are standardized over the pooled baseline-enrolled student covariate distribution with equal student weights, so larger cohorts contribute proportionately to the student-average estimand rather than receiving the equal weight of a small cohort. Follow-up attendance and project completion do not determine weights. An equally weighted cohort-average estimate is a separately labeled sensitivity analysis; enrollment-size associations and any informative cluster-size concerns are reported. The analysis plan should choose a defensible small-sample correction and state its degrees of freedom. A block-respecting randomization analysis provides a robustness check when the realized number of cohorts permits it. The report will present the adjusted raw-score difference and a standardized difference using a prespecified baseline scale, with uncertainty for both. Students contribute through their allocated cohort even if their mentor or course placement later changes.

Secondary outcomes are independently rated project reasoning quality, six-month transfer on a parallel form, student-reported belonging and agency, documented ability to explain contribution, and time burden. Publication, submission and public uptake are descriptive dissemination measures. Equity analyses examine prespecified interactions with baseline opportunity indicators, including prior research access, economic disadvantage, disability-related accommodations and language support. They will report estimates and uncertainty rather than interpreting a nonsignificant interaction as proof of equal benefit. Small cells will be suppressed in public reporting. Unless adequately powered and registered, subgroup and mediation analyses remain exploratory.

Mechanism analyses may ask whether consequential revisions and student ownership explain outcome differences, but post-allocation mediator associations are not randomized mechanisms. They require explicit assumptions about mediator-outcome confounding and cannot establish causality simply by fitting a path diagram. Per-protocol analyses based on fidelity are secondary and vulnerable to selection. The primary result should therefore remain visible even if an engaged subgroup performs

well. CONSORT's cluster-trial extension provides relevant requirements for describing cluster allocation, recruitment, flow and analysis; following a reporting checklist does not by itself repair design weaknesses [R11].

8. Precision, missingness and falsification

Before confirmatory recruitment, investigators should conduct an external pilot focused on feasibility and measurement, using participants who will not enter the confirmatory sample. The pilot estimates task reliability, plausible score dispersion, cohort correlation, recruitment variation and attrition without selecting a favorable intervention effect. A simulation-based power analysis should vary the number and sizes of cohorts, intraclass correlations, baseline prognostic strength, unequal enrollment and realistic missingness. The final sample is chosen to estimate a stakeholder-defined minimum educationally meaningful difference with adequate precision, not to manufacture significance for an arbitrary expected effect. Simulation code and assumptions should be public before outcomes are observed.

The enrollment roster supplies a denominator for follow-up. Investigators record reasons for missing assessments separately from reasons for leaving the programme, offer accessible assessment appointments and continue permitted follow-up after course withdrawal. The main missing-data strategy should use a prespecified multilevel model or compatible multiple imputation incorporating allocation, baseline performance, school or cohort structure and predictors of missingness. Complete-case estimates are reported as sensitivity analyses. Because missing-at-random is untestable from observed data alone, pattern-mixture or tipping-point analyses should show how conclusions change under plausible poorer unobserved outcomes, including arm-specific departures. Missing public portfolios are not automatically scored as missing learning outcomes.

The framework faces three substantive falsification tests. First, better project presentation without improvement on the unfamiliar-task outcome supports an artifact-production explanation rather than the proposed independent-transfer benefit. Second, higher apparent contribution accompanied by adult takeover in explanation checks undermines the ownership claim. Third, an average benefit accompanied by increased unpaid burden, exclusion or privacy harm requires redesign even when the primary estimate is positive. These tests must be interpreted with measurement uncertainty; they are not invitations to declare failure from every nonsignificant secondary result.

Progression decisions should be agreed with students, families, teachers and an independent oversight group before enrollment. They should include minimum measurement reliability, feasible delivery, unacceptable safeguarding events and a cap on additional out-of-class work. The thresholds need pilot evidence and local deliberation; none is presented as already agreed here. A staged decision can

recommend revision or a further adequately powered trial instead of immediate scale. Public registration should preserve the original plan, dated amendments, analysis code and a plain-language explanation of deviations.

9. Child privacy, consent and editorial independence

Education, research participation and public dissemination require distinct decisions. Families should be able to accept instruction without consenting to research use of records, and a student should be able to participate in the evaluation without creating a permanent public identity. Where applicable, an authorized ethics body determines the governing requirements and any permissible waivers before research begins. United States HHS rules distinguish child assent from parental permission and provide additional protections for covered research involving children [R13]. The protocol adopts meaningful student assent and appropriate guardian permission as design commitments without claiming that this manuscript constitutes legal or institutional approval.

The default research dataset uses pseudonymous identifiers, separate identity keys, role-limited access and a documented retention and deletion schedule. Public examples should use synthetic or independently consented material; removing names alone may not prevent recognition in a small school. Location, health, family circumstances, voices, faces and third-party observations require particular attention. Research datasets cannot become automatic retrieval material for public paper agents. Only a deliberately approved public artifact and its lawful sources may enter that reader-facing collection, and passage-level provenance should distinguish student claims from source claims.

Public authorship and an ORCID record are optional dissemination choices, not conditions for receiving educational credit. A minor who declines a searchable public profile should have an equivalent private completion route. Consent for a particular publication is requested after the artifact and its identifying content can be reviewed. Families and students need a plain explanation that downloaded material and external identifiers may persist even if a local page is removed. Private review, delayed release and appropriate de-identification are viable outcomes; an adult's enthusiasm for discoverability does not override the learner's interests.

When programme leaders own the publication platform or author scholarship evaluating it, those relationships must be disclosed. Reviewers and handling editors for that evaluation should be independent of the intervention's commercial or institutional success. AI-assisted critique can help identify weak arguments, but it does not constitute independent human peer review. The present manuscript contains no assertion that a trial has been ethically approved, registered, conducted or externally peer reviewed. Human editors must separately determine the publication category, review record and author responsibilities for the final edition.

10. Equity, resources and costs

Designership can reproduce advantage if access depends on family introductions to scientists, expensive devices, discretionary time or confidence in academic English. The pathway therefore requires an opportunity audit before recruitment: who receives an invitation, who can attend, which topics need specialist facilities, whose language practices are recognized and who must relinquish paid or caring work to participate? The audit concerns conditions schools can change. It should not turn demographic information into a ranking of presumed student potential.

The minimum viable model allocates meaningful work within the timetable, supplies necessary materials, offers accessible formats and compensates staff rather than relying invisibly on volunteer labor. Projects should be designed so that a learner with limited home broadband can complete core inquiry at school. Community knowledge may identify consequential questions without being extracted as free data. Where a project involves community partners, the agreement specifies the purpose, permissible uses, feedback route and whether the partner wishes to be named. Refusing publicity is not evidence of low engagement.

Costs should be reported from both school and family perspectives: mentor preparation, contact time, coordination, assessment, software, equipment, accessibility and students' out-of-class time. A cost-consequence analysis can place these alongside learning and burden outcomes without prematurely pricing a publication or assigning monetary value to a child's profile. If a structured pathway consumes more resources than its comparison, the matched contrast and realized spending must be reported. Institutional prestige and social-media impressions should never obscure who bore the work or whether an equally effective lower-cost arrangement was available.

11. Implications for schools and scholarly publishing

The proposed framework makes a journal a place for disciplined public contribution while keeping schooling responsible for learning that publication cannot certify. Its signature is an inspectable relationship among question, evidence, revision, contribution and judgment. A careful school-based inquiry can enter that relationship without pretending to be a definitive scientific discovery. An ambitious finding can be rejected or narrowed without treating the learner as unsuccessful. Editorial rigor and developmental encouragement are compatible when they concern the work rather than the status of the author.

For The Research University and Designership Press, the immediate infrastructure implication is separation of learning assessment, confidential editorial workflow and public publication metadata. The reader should see what was investigated, who did what, which sources support the claim and which version is being read. The student should see clear decisions, constructive revision requests and an accessible

explanation of publication choices. The institution should be able to audit consent, conflicts, source integrity and correction history without exposing private educational records. A paper agent can assist navigation through approved evidence; responsibility for interpretation and publication remains human.

The distinctive research question is consequently modest and demanding: does structured, mentored inquiry with accountable revision improve transferable reasoning beyond an equally supported inquiry opportunity, at acceptable cost and without narrowing access? The prospective design specifies how that question could be answered and what would count against the proposal. It offers no invented participants, effect sizes or approval record. Designership becomes a credible educational contribution when its claims survive such tests, its failures remain visible and its learners retain both intellectual responsibility and the freedom to choose how their work becomes public.

References and verification record

References retain their original authorship and publication identity. Verification dates below record source and metadata checking; they do not confer review or approval on this article.

[R1] Brigid J.S. Barron; Daniel L. Schwartz; Nancy J. Vye; Allison Moore; Anthony Petrosino; Linda Zech; John D. Bransford; The Cognition and Technology Group at Vanderbilt (1998). Doing With Understanding: Lessons From Research on Problem- and Project-Based Learning. Journal of the Learning Sciences.

DOI: https://doi.org/10.1080/10508406.1998.9672056

Source: https://doi.org/10.1080/10508406.1998.9672056

Verified 2026-10-16. Crossref title and individual author order checked; institutional author PDF and Stanford author bibliography additionally identify The Cognition and Technology Group at Vanderbilt, retained here although omitted from Crossref author list.

[R2] Joseph A. Taylor; Catrina T. Adams; Anne L. Westbrook; Jodi Creasap Gee; Jessaca K. Spybrook; Susan M. Kowalski; April L. Gardner; Mark Bloom (2022). The effect of a student-teacher-scientist partnership program on high school students' science achievement and attitudes about scientists. Journal of Research in Science Teaching.

DOI: https://doi.org/10.1002/tea.21733

Source: https://doi.org/10.1002/tea.21733

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata; claims restricted to original study or conceptual/methodological scope. Taylor et al. verified against publisher page; online-first 2021, issue 2022.

[R3] Louise Puslednik; Patrick C Brennan (2020). An Australian-based authentic science research programme transforms the 21st century learning of rural high school students. Australian Journal of Education.

DOI: https://doi.org/10.1177/0004944120919890

Source: https://doi.org/10.1177/0004944120919890

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R4] Mercedes Edry; Irit Sasson; Yehudit Judy Dori (2023). Secondary School Apprenticeship Research Experience: Scientific Dispositions and Mentor-Student Interaction. Education Sciences.

DOI: https://doi.org/10.3390/educsci13050441

Source: https://doi.org/10.3390/educsci13050441

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R5] Daniel L. Schwartz; Taylor Martin (2004). Inventing to Prepare for Future Learning: The Hidden Efficiency of Encouraging Original Student Production in Statistics Instruction. Cognition and Instruction.

DOI: https://doi.org/10.1207/s1532690xci2202_1

Source: https://doi.org/10.1207/s1532690xci2202_1

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R6] Manu Kapur (2008). Productive Failure. Cognition and Instruction.

DOI: https://doi.org/10.1080/07370000802212669

Source: https://doi.org/10.1080/07370000802212669

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R7] Kwangsu Cho; Charles MacArthur (2010). Student revision with peer and expert reviewing. Learning and Instruction.

DOI: https://doi.org/10.1016/j.learninstruc.2009.08.006

Source: https://doi.org/10.1016/j.learninstruc.2009.08.006

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R8] David Scott Yeager; Valerie Purdie-Vaughns; Julio Garcia; Nancy Apfel; Patti Brzustoski; Allison Master; William T. Hessert; Matthew E. Williams; Geoffrey L. Cohen (2014). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide.. Journal of Experimental Psychology: General.

DOI: https://doi.org/10.1037/a0033906

Source: https://doi.org/10.1037/a0033906

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R9] Carla Herrera; Jean Baldwin Grossman; Tina J Kauh; Jennifer McMaken (2011). Mentoring in Schools: An Impact Study of Big Brothers Big Sisters School-Based Mentoring. Child Development.

DOI: https://doi.org/10.1111/j.1467-8624.2010.01559.x

Source: https://doi.org/10.1111/j.1467-8624.2010.01559.x

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R10] Ruth Butler (1988). Enhancing and undermining intrinsic motivation: The effects of task-involving and ego-involving evaluation on interest and performance. British Journal of Educational Psychology.

DOI: https://doi.org/10.1111/j.2044-8279.1988.tb00874.x

Source: https://doi.org/10.1111/j.2044-8279.1988.tb00874.x

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R11] Marion K. Campbell; Gilda Piaggio; Diana R. Elbourne; Douglas G. Altman; CONSORT Group (2012). Consort 2010 statement: extension to cluster randomised trials. BMJ.

DOI: https://doi.org/10.1136/bmj.e5661

Source: https://doi.org/10.1136/bmj.e5661

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R12] Amy Brand; Liz Allen; Micah Altman; Marjorie Hlava; Jo Scott (2015). Beyond authorship: attribution, contribution, collaboration, and credit. Learned Publishing.

DOI: https://doi.org/10.1087/20150211

Source: https://doi.org/10.1087/20150211

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

[R13] U.S. Department of Health and Human Services, Office for Human Research Protections (n.d.). 45 CFR 46, Subpart D-Additional Protections for Children Involved as Subjects in Research. HHS Office for Human Research Protections.

Source: https://www.hhs.gov/ohrp/regulations-and-policy/regulations/45-cfr-46/common-rule-subpart-d/index.html

Verified 2026-10-16. Official current regulatory text, especially definitions in §46.402 and assent/parental-permission requirements in §46.408; no publication date asserted, accessed 16 October 2026.

[R14] Clark A. Chinn; Betina A. Malhotra (2002). Epistemologically authentic inquiry in schools: A theoretical framework for evaluating inquiry tasks. Science Education.

DOI: https://doi.org/10.1002/sce.10001

Source: https://doi.org/10.1002/sce.10001

Verified 2026-10-16. Title, author order and publication year checked against Crossref registration metadata and publisher/institutional source where accessible.

Source and authorship notes

The uploaded seed document is a commissioning brief, not independent evidence for historical, program-outcome or reputation claims. Movement Thinking, SIDE and Design Realization Garages are identified as proposed author frameworks.

This is original conceptual and protocol writing, not a republication or a systematic review. No trial data, invented results, named reviewers, ethics number, registration number or DOI is supplied.

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