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Plans and Strategy Use in Higher Education: A Narrative Review of Measurement Alignment

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ABSTRACT

Students may intend to use effective learning strategies without subsequently adopting them, but studies differ in how they measure that discrepancy. This narrative review examines how higher-education research connects prospective plans or intentions with later strategy use. Targeted searches and citation tracing through 22 October 2026 informed a qualitative comparison of plan specificity, timing, behavioral indicators and evidence coverage. (Blasiman et al., 2017; Rowell et al., 2021) compare intentions or plans with later study reports; (David et al., 2026) add repeated experience sampling; and (Hazlett et al., 2025) incorporate courseware traces. Across these examples, prospective correspondence and intervention-related changes in average strategy use are distinct outcomes. Some retrieval-practice interventions increase use, whereas implementation intentions do not consistently increase distributed practice. Self-reports cover activity across settings but depend on recall; logs document recorded activity while omitting off-platform study. Four provisional dimensions organize these contrasts: content correspondence, temporal coupling, evidence source and coverage, and contextual opportunity. The framework requires independent coding and prospective validation. The review offers a focused interpretation of measurement choices, not exhaustive coverage or a pooled causal estimate.

1. INTRODUCTION

Effective learning strategies include retrieval practice, in which learners attempt to recall studied information, and distributed practice, in which learning opportunities are spread over time. These techniques have substantial evidence for supporting retention, but knowledge of their benefits does not ensure that students use them during self-study (Carpenter et al., 2022; Dunlosky et al., 2013). University students commonly report rereading, highlighting, or massed study, even when they can recognize that more effortful strategies may support durable learning (Blasiman et al., 2017; Rea et al., 2022; Seban et al., 2025). Self-regulated learning theory describes planning, performance, monitoring, and reflection as related phases of learning, rather than as interchangeable outcomes (Panadero, 2017; Zimmerman, 2002). A goal intention (for example, "I want to learn this material") differs from a specific prospective plan that identifies when, where, or how a strategy will be used. Both differ from later behavior and from achievement. A student can intend to use retrieval practice but not enact it; an intervention can raise average strategy use without showing that individuals carried out the actions they had planned; and an improved exam score does not by itself establish that a particular plan was followed. Prospective research already documents discrepancies between intended and reported studying. (Blasiman et al., 2017) compared beginning-of-semester intentions with later study reports; (Rowell et al., 2021) linked exam-specific plans to subsequent behavior reports; and (Rieder & Bosch, 2026) compared term-level intentions with later engagement in six activities. Thus, identifying a gap is not the contribution of this review.

The unresolved question addressed here is how the specificity, timing and coverage of these measures determine whether a study actually tests correspondence between a personal plan and its enactment. Previous syntheses address related questions at different levels. (Carpenter et al., 2022) organizes interventions promoting retrieval practice; (Carpenter et al., 2022) review the learning benefits of spacing and retrieval; (Krause A.-K., 2025) explain strategy use through habit; and (Roth et al., 2016) review self-report measures of self-regulated learning. Their focal outcomes are intervention effects, learning effectiveness, habitual use or measurement quality. The present review instead compares the link between the content of a prospective strategy plan and evidence of its subsequent enactment. This is a focused methodological distinction, not a claim that earlier reviews ignored planning. The review addresses two questions: (1) how do higher-education studies measure prospective plans or intentions and subsequent use of evidence-based study strategies? and (2) what inferences are supported or limited by plan specificity, timing, measurement source, and context? The review does not test a new theory, estimate a pooled effect, or assume that all strategy non-use results from an individual deficit. It treats contextual opportunities and costs as relevant conditions whose causal roles must be tested rather than presumed. Knowledge, intention and behavior are different evidentiary targets. (Wang et al., 2023) reported improvements in knowledge and intended retrieval-practice use without a corresponding intervention effect on reported use; perceived cost was associated with use. Read alongside (Rea et al., 2022), this suggests that recognizing an effective strategy does not resolve the conditions of choosing it. These findings identify an explanatory problem, but do not establish that perceived cost causes every failure to enact a plan. Accounts of time, effort, uncertainty and habits help interpret non-use, but their evidentiary roles differ. Qualitative accounts identify experienced barriers, surveys estimate associations, and intervention comparisons test the support provided under particular conditions (Biwer et al., 2020; Foerst et al., 2017; Rovers et al., 2018). Indonesian studies provide context on strategy training and use, rather than direct tests of prospective plan-action correspondence (Alsa et al., 2021; Laili & Andrianto, 2023; Simanjuntak, 2022). Accordingly, these sources contextualize the alignment question without serving as interchangeable evidence of its mechanism.

The prospective studies differ in the correspondence they can establish. (Blasiman et al., 2017) compare semester intentions and study reports, whereas (Rowell et al., 2021) narrow the comparison to an examination. (Rieder & Bosch, 2026) followed 675 preservice teachers across five cohorts, measuring intentions at term start and midpoint and self-reported engagement at term end. These are activity-level comparisons; the authors suggest ceiling effects as a possible explanation for the absence of a gap on the online-survey self-testing item. Temporal order does not eliminate recall bias or differences in item specificity. (David et al., 2026) provide denser observation: 87 students contributed 1,623 experience-sampling observations over four weeks. Implementation intentions did not increase distributed-practice use. (Hazlett et al., 2025) assessed intended strategy changes and later reports, while separately comparing reported self-testing with courseware completion records. Thus, their follow-through measure must not be equated with a trace-based check of every planned strategy. Repeated reports and traces address different weaknesses, but neither provides complete behavioral coverage. Multimethod work reinforces that a measurement source must fit the component and interval being studied (Dörrenbächer-Ulrich et al., 2021; Fan, Lim, et al., 2022; Fan, van der Graaf, et al., 2022; Ruhl et al., 2025). A survey and a log may disagree because one summarizes studying across settings while the other records a narrower activity. Such disagreement is not automatically evidence of inaccurate reporting. Conversely, agreement in group averages does not establish that each student enacted the same action they had planned. Strategy interventions show that behavior can change, but do not necessarily explain plan fulfillment. (Broeren et al., 2021) observed increased retrieval practice in an unprompted transfer session. In (Broeren et al., 2023), instruction plus metacognitive support increased retrieval practice relative to control; differences

between instruction alone and control, and between the two intervention groups, were not significant. No significant delayed-test benefit was detected. Study Smart research connects training and support with reported changes in studying and difficulties adapting strategies to course demands (Biwer et al., 2020, 2023). Strategy adoption, fulfillment of a personal plan and improved learning remain distinct outcomes. The comparison with (David et al., 2026) is particularly informative. A null effect of implementation intentions on distributed practice and positive effects of some retrieval-practice interventions do not estimate one common treatment effect. They differ in strategy, instructional support, behavioral indicator and observation window. The synthesis therefore asks which action changed under which conditions, rather than classifying all studies as confirming or rejecting the effectiveness of planning. Habit accounts suggest that established routines can compete with new strategy choices (David et al., 2024; Krause A.-K., 2025). Classroom studies of successive relearning identify time-management and adoption difficulties despite instruction (Maurer & Cabay, 2023; Maurer & Shipp, 2021). These findings motivate direct measurement of opportunity and routine. They do not justify explaining every mismatch retrospectively as a habit problem.

2. METHOD

Review design and search procedure

This narrative review used targeted searching and citation tracing through 17 October 2026, followed by a documented ERIC update on 22 October 2026. Discovery sources included ERIC, PubMed/PMC, Google Scholar, publisher and repository pages, and reference lists. DOAJ and GARUDA attempts encountered access errors. Open-access full texts were prioritized; restricted sources supported only claims explicit in accessible abstracts or records. Accessibility was not treated as study quality. The ERIC update used: ("retrieval practice" OR "distributed practice" OR "spaced practice" OR "self-testing" OR "study strategies") AND (intention OR intentions OR planning OR "study plan" OR "study plans" OR "follow-through") AND (university OR college OR "higher education" OR undergraduate). A sensitivity query replaced the final block with (graduate OR postgraduate). Both used the ERIC API with rows=200 and start=0, without retrieval filters for year, language, peer review or full-text availability. Titles and abstracts were assessed for higher-education relevance, prospective measurement and subsequent strategy use; adjacent measurement and contextual sources were considered separately. The original audit contains 39 search, verification and status entries and 57 mapped works (41 empirical and 16 other sources), rather than 57 formally included studies. Its 17 October ERIC entry records 107 displayed results and examination of the first 15; Google Scholar displayed approximately 22,500 estimated results, with only the first screen reviewed. Most other historical totals and complete exclusion records are unavailable. In the 22 October update, the two substantive ERIC queries returned 55 and four records. Removing three duplicate identifiers left 56 unique titles/abstracts: four were forwarded as potentially direct evidence, nine for further full-text or contextual assessment, and 43 excluded from the focused core at that stage. Targeted full-text checks supported adding (Zhang et al., 2023) and restoring (Kaye et al., 2025), already in the original matrix. These stage-specific counts are not cumulative systematic-review inclusion totals.

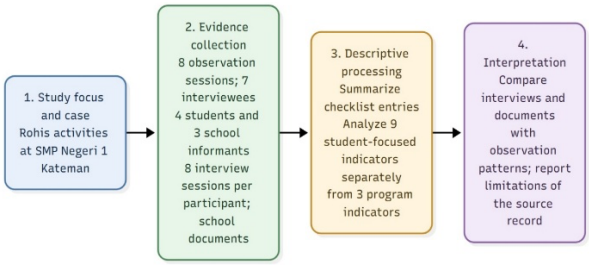


Figure 1. Picture of Caption Usage

Figure 1 separates the historical audit from the additional search. Forwarding was relevance triage, not final inclusion: selected full texts were checked rather than all 13 candidates undergoing a complete full-text screening process. Two diagnostic API tests of the old string were excluded from the 56-record set. This remains a non-exhaustive narrative synthesis.

Extraction and synthesis

Extraction recorded population, context, strategy, prospective intention or plan, observation interval, behavioral indicator, source and inferential limitation. Sources were compared as prospective plan–behavior studies, intervention studies or adjacent measurement/context studies; reviews positioned the contribution. Full texts informed detailed extraction, while public abstracts supported only explicit claims for restricted sources, including (Blasiman et al., 2017), (Rowell et al., 2021) and (Wang et al., 2023). The qualitative synthesis compared supported inferences without pooling effects or formal risk-of-bias scoring. Searching, preliminary screening, extraction and document preparation were AI-assisted; no duplicate independent human screening is claimed.

3. RESULTS AND DISCUSSION

3.1 Measurement architectures in the evidence

The literature contains at least three distinct measurement architectures. First, prospective self-report studies ask about intended strategy use and later ask about actual study behavior. They are directly relevant to alignment but may compare broad intentions with retrospective summaries. Second, intervention studies assign instruction, planning prompts, or other support and then compare subsequent strategy use. They can estimate intervention-related differences in behavior, but unless the plan content is recorded and linked to each participant's action, they do not measure exact plan fulfillment. Third, learning-platform studies observe time-stamped actions. These improve temporal and behavioral resolution within the platform but may miss paper notes, peer study, or activity in other systems. (Zhang et al., 2023) linked planned practice-exam use over five days with subsequent platform activity. Students planning more practice completed more questions. The authors converted planned exams into approximate question counts and described a shortfall in completed practice; this is not an exact episode-level fulfillment rate. (Kaye et al., 2025) compared beginning-of-semester intentions with end-of-semester reports among 64 occupational therapy graduate students. Their behavioral measure remains self-report. Both studies show why the unit of action and source of the later indicator must be specified. Existing reviews of self-regulated learning measurement already show that conclusions depend on the component and method assessed (Roth et al., 2016; Ruhl et al., 2025). The additional question here is whether the prospective statement and subsequent indicator identify the same action within a corresponding interval. This question can be asked of a self-report, an intervention outcome or a digital trace; no method answers it merely by being more technologically detailed. Table 1 illustrates these differences. It is a purposive set of representative studies, not a complete census. The central distinction is between (i) correspondence of a person's stated plan with their later action and (ii) a change in the average level of strategy use after an intervention. The two outcomes can move independently.

Table 1. Examples of plan, behavior measurement in higher-education

Study	Prospective measure	Later behavior measure	Main interpretive limit
(Blasiman et al., 2017)	Beginning of semester intentions about what, how much, and when to study	Student reports of study behavior during the semester	Temporal sequence is useful; both plan and behavior are self-reported and summarized broadly.

(Rowell et al., 2021)	Exam-specific study plan	Later report of study behaviors for the exam	Plan–behavior link is direct, but retrospective behavior and course-specific context constrain inference.
(Rieder & Bosch, 2026)	Intentions for six learning activities at term start and midpoint (N = 675; five cohorts)	Self-reported engagement in the same activities at term end	Broad activity-level self-report; possible ceiling effects on the online-survey self-testing item; not an objective trace of a detailed strategy plan.
(David et al., 2026)	Implementation-intention intervention for distributed practice	Daily experience-sampling reports over four weeks	High temporal density; intervention did not increase distributed practice in this context.
(Hazlett et al., 2025)	Planned strategy changes for the next quiz	Later reports of strategy use; separate courseware measure of self-testing	Follow-through uses repeated reports; logs cover optional practice questions rather than every planned strategy.
(Maurer & Cabay, 2023; Maurer & Shipp, 2021)	Prospective study reports and successive-relearning instruction	Reported adoption and barriers during exam preparation	Prospective and later self-reports; adoption and barriers are not objective verification of every planned episode.
(Wang et al., 2023)	Strategy knowledge and intended retrieval-practice use	Reported retrieval-practice use	Knowledge/intention shifts did not establish a corresponding intervention effect on reported use.
(Broeren et al., 2021, 2023)	Strategy instruction, with or without metacognitive support	Choices recorded in an online learning environment	Behavioral use is observed; these experiments do not test exact fulfillment of a previously specified personal plan.

3.2 A four-part framework for reading alignment

The four dimensions below are provisional questions for interpreting measurement alignment. They are derived from the contrasts in Table 1, not from an empirical validation study. They are neither a psychological scale nor a total quality score. Their present use is to make reporting differences explicit; reliable coding, predictive value and transfer to other research remain to be tested. Content correspondence. Does the outcome measure the same strategy, target material, and action as the plan? “Study more” cannot establish whether a student used retrieval practice; a plan to quiz oneself on specified material can be compared with a corresponding behavior item or trace. Studies should report how plans are coded when students combine or revise strategies. Temporal coupling**.** How soon and how often is behavior observed after the plan? End-of-course retrospective recall can blur sequence and adaptation. Repeated diaries or experience sampling can show within-person variation; analyses should account for the dependence among observations from the same student (David et al., 2026). Evidence source and coverage. Self-report can capture activity across settings and reasons for choice, yet depends on recall and interpretation. Logs provide timestamps for recorded events but may omit offline or cross-platform study. Combining sources is informative only when their strategy definitions and time windows correspond (Hazlett et al., 2025; Ye, 2025). Contextual opportunity. Contextual opportunity. Course schedules, exam proximity, workload,

access to practice questions, and established routines may affect students' opportunities and perceived costs when using a strategy. These conditions should be measured directly or tested as potential moderators; a reported mismatch alone cannot establish their causal role (Biwer et al., 2020; Krause A.-K., 2025; Maurer & Cabay, 2023).

3.3 What the evidence supports and what it does not

The evidence supports three cautious conclusions. First, a gap between intended and reported study behavior has been observed, but its size and meaning depend on what was planned and how behavior was assessed (Blasiman et al., 2017; Rieder & Bosch, 2026; Rowell et al., 2021). Second, instruction and support can increase some forms of strategy use in some settings, including logged retrieval practice, but effects vary across strategies, interventions, and outcomes (Broeren et al., 2021, 2023; Onan et al., 2024; Yüksel et al., 2025). Third, schedule, effort, perceived cost, habit, and assessment proximity are plausible correlates or contextual influences, but the reviewed studies do not establish one universal mechanism that explains non-use (David et al., 2026; Rea et al., 2022; Wang et al., 2023). The evidence does not support a simple causal claim that planning reliably produces strategy use, nor that failure to follow a plan reflects weak motivation or self-control. (David et al., 2026) found no increase in distributed-practice use from implementation intentions, while other classroom interventions reported increases in selected uses of retrieval practice (Broeren et al., 2021, 2023). These results are not contradictory estimates of the same effect: they differ in strategy, support, behavior measure, study context, and observation window. Similarly, spaced study can correlate with stronger performance in courses or digital environments without proving that a prospective plan caused either spacing or achievement (Carvalho et al., 2020; Walck-Shannon et al., 2021).

3.4 Relation to existing reviews and contribution

The comparison with prior work locates a narrow contribution. (Carpenter, 2023) classifies ways to encourage retrieval practice; (Krause A.-K., 2025) explain repeated strategy use through habit; (Roth et al., 2016) assess SRL self-report measurement; and (Rieder & Bosch, 2026) Rieder and Bosch (2026) directly document longitudinal intentions and engagement. This review connects these literatures by asking whether plan content, observation timing, source coverage and contextual opportunity permit an individual correspondence claim. It does not replace their broader syntheses or introduce the intention behavior gap as a new phenomenon. The S2D2 framework explains starting and persisting with desirable difficulties (de Bruin et al., 2023). The present framework has a different immediate task: describing what an alignment study has measured before interpreting why behavior occurred. For example, a null intervention effect is not evidence of individual plan failure when personal plans were never recorded; a logged quiz event is not evidence that a planned offline session occurred. These distinctions are methodological safeguards rather than an alternative causal theory. Table 1 provides illustrative application, not a test of the framework. (Rowell et al., 2021) offer a closer examination-specific plan–report link than a semester summary; (David et al., 2026) improve temporal density while retaining self-report; and (Hazlett et al., 2025) improve documentation within a platform while leaving off-platform activity uncertain. Independent coders could still disagree about these descriptions. The framework must therefore be operationalized and tested before its consistency or practical advantage can be asserted.

3.5 Implications for educational psychology and Indonesian research

For educational psychology, studies and teaching interventions should record the target strategy and planned action before the study period, observe behavior close to the intended opportunity, and report whether the behavior measure includes activity outside digital platforms. Research should also distinguish initial intention, implementation planning, strategy use, and

learning outcomes in its measures and analyses. Practical barriers can be assessed alongside behavior, but causal language should be reserved for designs that test those pathways. A feasible Indonesian pilot could recruit students from one undergraduate course over four weeks. Before each week, students would specify a strategy, target material, intended day and study opportunity: for example, a 20-minute closed-book recall session on course concepts on Tuesday evening. A brief report after each planned opportunity would record whether the action occurred, changed or was missed, together with the reason. Optional LMS records could document quizzes, while a short diary would capture paper-based or peer study. An Islamic education course could use the same procedure for recalling and explaining concepts, without treating religious content or learner identity as an explanation of adherence. To operationalize the framework, plan–action pairs would be coded as matched, revised, missed or unobserved; an unobserved action must not automatically count as a failure. The observation window and permitted plan revisions would be specified in advance. Work shifts, timetable changes, internet access and available practice materials would be recorded as possible constraints. A quiz score would remain a separate learning outcome. Participation and optional trace collection would require consent and would not affect course grades. Before using these categories, researchers should create a coding manual with examples and missing-data rules. Two independent coders could apply it to a separate sample of published studies and report dimension-specific agreement, appropriate chance-corrected coefficients and disagreements. Categories would be revised before a new pilot. A subsequent prospective study could compare diary and trace coverage, assess within-person correspondence and test incremental prediction beyond broad intentions, accounting for observations nested within students. No universal sample size or effectiveness claim is implied by this proposed sequence.

3.6 Limitations

The search is non-exhaustive and access-constrained. Historical screening is incompletely documented, and the ERIC update does not establish comprehensive coverage. Its 13 forwarded records were relevance candidates, not 13 final inclusions; full-text checks were selective. Restricted studies support only accessible claims. AI-assisted screening and extraction were not independently duplicated. Differences in strategy, population and follow-up preclude pooling. The framework lacks independent coding and prospective validation; Indonesian examples are proposals, and causal explanations of plan enactment remain untested.

4. CONCLUSION

The reviewed research distinguishes intended strategy use, specific plans, subsequent action and academic outcomes. Prospective reports, intervention comparisons and digital traces each address part of this sequence, but differ in content correspondence, timing and coverage. The contribution of this narrative synthesis is a provisional set of four questions for interpreting those differences, not a validated instrument or a comprehensive estimate of the intention–behavior gap. Development should proceed by specifying coding rules, testing independent coder agreement on a new set of studies, revising ambiguous categories and conducting a prospective multimethod pilot. A later preregistered study could then test whether more closely aligned measures improve correspondence estimates and predict subsequent behavior beyond broad intentions. Until those tests are completed, the framework should guide transparent description rather than scoring or causal explanation.

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