



NOTICING AND RETENTION: APPLYING SCHMIDT'S NOTICING HYPOTHESIS TO MOBILE-MEDIATED VOCABULARY INPUT

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Abstract: Schmidt's Noticing Hypothesis holds that conscious registration of a linguistic form in the input — noticing — is the necessary condition for that form to become intake available for learning. Mobile applications, with their capacity to visually highlight, color-code, or otherwise foreground target vocabulary within input, offer a natural testing ground for this claim at the level of everyday classroom practice. This study examined whether visually enhanced mobile vocabulary input produces higher rates of noticing and stronger delayed retention than unenhanced mobile input among 9th grade EFL students. A quasi-experimental, nonequivalent control-group design was used with two groups of 15 ninth-grade students at Ixlos International School in Tashkent. One group received target vocabulary through a mobile application that visually enhanced target words (bold, color, on-screen highlighting); the other received the same vocabulary items through the same application with enhancement features disabled. Noticing was measured through an immediate post-exposure self-report checklist, and retention was measured through a delayed vocabulary test administered two weeks after the final input session. Results indicated higher noticing rates and stronger delayed retention in the enhanced-input group. Findings are discussed in relation to Schmidt's (1990, 2001) noticing theory and Sharwood Smith's (1991, 1993) input enhancement framework, with implications for the design of mobile vocabulary applications used in secondary EFL contexts.



Keywords: *noticing hypothesis, input enhancement, mobile-assisted language learning (MALL), vocabulary retention, attention, EFL*

1. Introduction

One of the most persistent questions in second language acquisition research is why learners are exposed to so much input yet retain comparatively little of it. Schmidt's (1990) answer to this question — the Noticing Hypothesis — proposes that exposure alone is not enough: a linguistic form must be consciously registered, however briefly, before it can be converted from mere input into intake usable for learning. In Schmidt's own later elaboration of the construct, attention is treated as the necessary condition underlying essentially every dimension of second language development, from the emergence of interlanguage forms to the effects of instruction itself (Schmidt, 2001). Schmidt (1994, 1995) further distinguished noticing from the deeper, more effortful process of understanding, arguing that noticing alone — a minimal level of conscious registration — is what determines whether a form even enters the learner's processing system, regardless of whether its full significance is grasped at that moment.

This raises a practical question for materials design: can input be structured so that target forms are more likely to be noticed in the first place? Sharwood Smith's (1991, 1993) concept of input enhancement addresses exactly this. Enhancement refers to techniques — visual, textual, or otherwise — that increase the perceptual salience of a target form within input, on the assumption that heightened salience increases the likelihood of noticing, even though Sharwood Smith was careful to stress that enhancement only makes noticing more probable; it does not guarantee that input becomes intake. Subsequent research on input enhancement in vocabulary and grammar learning has generally supported the idea that salience-boosting techniques — bolding, coloring, glossing, capitalization — measurably increase learners' noticing and, in many cases, their subsequent retention of the enhanced forms.



Mobile applications are a particularly convenient vehicle for testing this relationship in an everyday teaching context. Kukulska-Hulme and Shield (2008) noted that mobile-mediated learning extends language contact into moments and settings a conventional lesson cannot reach, and Godwin-Jones (2011) observed that the visual and interactive affordances of mobile applications — highlighting, color-coding, spaced pop-up review — go well beyond what a printed vocabulary list can offer. Combined with Nation's (2001) point that vocabulary retention depends on repeated, varied engagement with lexical items, and Schmitt's (2008) argument that learners' cognitive engagement with a word is what ultimately drives retention, mobile applications seem well positioned to operationalize input enhancement at scale: a target word can be rendered visually salient every time it appears, across dozens of daily micro-exposures, in a way that would be impractical for a teacher to replicate on paper.

Yet relatively little classroom-based research has directly tested whether this kind of built-in visual enhancement within a mobile vocabulary application actually increases noticing and retention among adolescent learners, as opposed to simply assuming that "more interactive" mobile input is automatically better. This study addresses that gap directly, isolating enhancement as the sole manipulated variable between two otherwise identical mobile-learning conditions.

Research objective. This study examined whether visually enhanced mobile vocabulary input increases (a) learners' rate of noticing target vocabulary and (b) their delayed retention of that vocabulary, relative to unenhanced mobile input covering the same items.

Research hypotheses.

- H1: Students exposed to visually enhanced mobile vocabulary input will report noticing target words at significantly higher rates than students exposed to unenhanced input.
- H2: Students in the enhanced-input group will show significantly stronger delayed vocabulary retention than students in the unenhanced-input group.



2. Method

2.1 Research Design

A quasi-experimental, nonequivalent control-group design was used, comparing an enhanced-input group with an unenhanced-input group. As in classroom-based SLA research generally, random assignment to condition at the individual level was not possible given the school's existing class structure, so two intact groups were used and this constraint is treated as a limitation rather than concealed.

2.2 Participants

Participants were 30 ninth-grade EFL students (ages 14–15) at Ixlos International School in Tashkent, assigned by existing class grouping to an enhanced-input group ($n = 15$) and an unenhanced-input group ($n = 15$). Both groups were at a comparable pre-intermediate to intermediate proficiency level and received instruction from the same teacher.

2.3 Materials and Intervention

Both groups used the same mobile vocabulary application and were exposed to the same 40 target vocabulary items, delivered in short reading passages over a four-week period (three sessions per week). The two conditions differed only in input presentation:

- **Enhanced-input group:** target words appeared in bold, colored text, visually distinct from the surrounding passage.
- **Unenhanced-input group:** the same passages and target words appeared in plain, unformatted text, visually indistinguishable from the rest of the input.

No other feature of the application (session length, item frequency, glossing, translation availability) differed between groups.

2.4 Instruments

Three instruments were used:



1. **Noticing checklist:** immediately after each session, students marked which of the session's target words they recalled having specifically noticed (as opposed to simply having read past), following the logic of self-report noticing measures used in SLA research on input enhancement.

2. **Immediate recognition test:** a short receptive vocabulary check administered directly after each session, tracking short-term registration of the target items.

3. **Delayed vocabulary retention test:** a 40-item test of the target vocabulary, administered two weeks after the final input session, to assess whether noticing translated into longer-term retention rather than momentary recognition.

2.5 Procedure

Both groups completed twelve input sessions over four weeks, reading the same passages through the mobile application under their assigned condition. The noticing checklist and immediate recognition test were administered after each session; the delayed retention test was administered two weeks after the twelfth session, allowing time for any short-term recognition effects to fade and isolating longer-term retention.

2.6 Data Analysis

Noticing checklist scores (proportion of target words marked as noticed per session, averaged across the study period) were compared between groups using an independent-samples t-test. Delayed retention test scores were likewise compared between groups using an independent-samples t-test.

3. Results

(Illustrative placeholders — replace with your scored data; the reporting structure can stay as is.)

Table 1. Mean Noticing Rate (proportion of target words marked as noticed, averaged across 12 sessions)

Group	M	SD
Enhanced input (n=15)	.74	.11



Group	M	SD
Unenhanced input (n=15)	.49	.13

An independent-samples t-test indicated the enhanced-input group's noticing rate was significantly higher, $t(28) = [\text{value}]$, $p < .05$, supporting H1.

Table 2. Delayed Vocabulary Retention Test Scores (out of 40, administered two weeks post-intervention)

Group	M	SD
Enhanced input (n=15)	29.6	4.3
Unenhanced input (n=15)	22.1	5.0

An independent-samples t-test indicated significantly stronger delayed retention in the enhanced-input group, $t(28) = [\text{value}]$, $p < .05$, supporting H2.

4. Discussion

The pattern observed here is consistent with what Schmidt's (1990, 2001) noticing account and Sharwood Smith's (1991, 1993) input enhancement framework would predict: increasing the perceptual salience of target words appears to have raised the rate at which students consciously registered those words during reading, and this in turn corresponded to stronger retention two weeks later. This is broadly in line with Sharwood Smith's own caveat, however — enhancement increases the probability of noticing, not the certainty of it, and the unenhanced group's noticing rate, while lower, was not zero, meaning some students in that condition still noticed and later retained a meaningful proportion of the target items. This is consistent with Schmidt's (1994) point that noticing can occur even without deliberate salience cues, simply as a function of frequency, task demands, or individual attentional differences.

The gap between the immediate recognition data (not reported in detail here but tracked throughout the study) and the delayed retention data is also worth flagging conceptually: Schmitt (2008) and Nation (2001) both stress that vocabulary knowledge is incremental and requires reinforcement over time, so a wide gap between immediate and delayed performance in either group would suggest that



noticing alone, without subsequent reinforcement, is not sufficient for durable retention — a nuance the Noticing Hypothesis itself does not fully resolve, since Schmidt's claim concerns the conversion of input to intake, not the subsequent consolidation of intake into long-term memory.

From a materials-design standpoint, the results suggest a practical takeaway for mobile vocabulary application design in secondary EFL settings: simple, low-cost visual enhancement features (bolding, color) may meaningfully increase the return on the exposure time students already spend on the application, without requiring any change to session length, item frequency, or curriculum content. This aligns with Godwin-Jones's (2011) broader observation that mobile applications' visual and interactive affordances are a large part of what distinguishes them from static print materials.

4.1 Limitations

As with the companion study on autonomy, the main limitations are the small sample ($n = 30$), the use of intact classes rather than individual random assignment, the single-school context, and the reliance on self-report for the noticing measure, which cannot fully rule out demand effects (students in the enhanced condition may have inferred what the study was testing for). The four-week intervention window and two-week delay interval are also relatively short relative to the timescales over which vocabulary knowledge typically consolidates.

5. Conclusion

Within the constraints of a small-scale, single-school quasi-experimental design, this study suggests that visually enhancing target vocabulary within mobile-mediated input can increase both learners' rate of noticing and their delayed retention of that vocabulary, relative to unenhanced input covering the same items. The findings offer classroom-level support for Schmidt's (1990, 2001) claim that conscious noticing is a key gateway between input and intake, and for Sharwood Smith's (1991, 1993) argument that salience-boosting techniques can be deliberately engineered into instructional materials to increase the likelihood of that noticing



occurring. Future research with larger and more diverse samples, individually randomized assignment where feasible, longer retention intervals, and a less self-report-dependent noticing measure (such as eye-tracking or think-aloud protocols) would help clarify how robust and generalizable this enhancement effect is across the wider population of adolescent EFL learners.

REFERENCES

- Godwin-Jones, R. (2011). Emerging technologies: Mobile apps for language learning. *Language Learning & Technology*, 15(2), 2–11.
- Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, 20(3), 271–289. <https://doi.org/10.1017/S0958344008000335>
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge University Press.
- Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11(2), 129–158. <https://doi.org/10.1093/applin/11.2.129>
- Schmidt, R. (1994). Implicit learning and the cognitive unconscious: Of artificial grammars and SLA. In N. Ellis (Ed.), *Implicit and explicit learning of languages* (pp. 165–209). Academic Press.
- Schmidt, R. (1995). Consciousness and foreign language learning: A tutorial on the role of attention and awareness in learning. In R. Schmidt (Ed.), *Attention and awareness in foreign language learning* (pp. 1–63). University of Hawai'i, Second Language Teaching & Curriculum Center.
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3–32). Cambridge University Press.
- Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. *Language Teaching Research*, 12(3), 329–363. <https://doi.org/10.1177/1362168808089921>



Sharwood Smith, M. (1991). Speaking to many minds: On the relevance of different types of language information for the L2 learner. *Second Language Research*, 7(2), 118–132.

Sharwood Smith, M. (1993). Input enhancement in instructed SLA: Theoretical bases. *Studies in Second Language Acquisition*, 15(2), 165–179.