# Motor Learning & Skill Acquisition

PSK4U | Student laboratory assignment | 1 of 4

## Prepare for your investigation

Name: _____ Date: _____ Class: _____

## Research question

How do practice schedule and feedback frequency influence acquisition performance and delayed retention in a simulated aiming skill?

Learning goal: use the virtual model to gather evidence, explain motor learning & skill acquisition and communicate a supported conclusion.

Materials: WorksheetGalaxy virtual laboratory, this assignment, calculator or spreadsheet if needed. Virtual observations only; do not recreate hazardous procedures or perform physical fitness tests without teacher approval.

1. Define two relevant scientific terms from the Background Information tab. (K/U)

2. Write a prediction or hypothesis with a scientific reason. (K/U, T/I)

3. Identify the variable or feature compared, the measured outcome and constants or consistent observation criteria. (T/I)

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## Perform the virtual laboratory

Open the corresponding virtual lab and read Background Information. Follow the investigation instructions below. Record authentic simulated results; do not invent data.

Procedure

• Open the Experiment tab and examine the virtual aiming target. Select the same learner profile and 18 practice trials for all comparisons.

• Run a blocked practice session with 100% feedback. Record the practice mean, immediate-test score and delayed-retention score.

• Run random practice with 100% feedback. Keep all other settings unchanged.

• Repeat blocked and random practice with 33% feedback .

• Repeat one condition at least three times, then compare variation across simulated trials.

• Use Data & Graphs to inspect learning curves, export your CSV, and answer the Lab Report questions.

Variables

• Record at least four controlled conditions and one repeated condition.

• Interpret acquisition and retention separately, citing numerical evidence.

• Identify at least two limitations and propose a real-world experimental design.

Record each completed observation using the simulator’s record control when available. Use Data & Graphs to review results. Export CSV if available; attach additional rows or screenshots when needed.

Record the exact settings and any changes to the method.

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## Observations & results

Enter the actual results. Keep trial IDs consistent between continued tables. Attach the full exported data or extra sheets when the procedure requires more rows. Include units as displayed.

Data table 1

| Trial / item | Run | Profile | Schedule | KR | Trials |
|---|---|---|---|---|---|
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Data table 1 — continued (2)

| Trial / item | Practice mean | Immediate | Delayed |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Qualitative observations / sample calculation (show units where applicable)

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## Analysis, conclusion & assessment

4. Present a labelled graph of a measured relationship, or an annotated diagram / comparison chart for qualitative investigations. Attach it separately. Explain the pattern using recorded evidence. (C, T/I)

5. Explain how outcome feedback might help or interfere with learning. Refer to your observations. (K/U, A)

6. Identify two limitations of this model and explain how a real study could be improved. (K/U, A)

Conclusion and evaluation: answer the research question, revisit the prediction using evidence, identify a model limitation and propose an improvement. (T/I, A)

Submit this assignment plus your completed Lab Report (printed or saved as PDF from the lab) and any supporting data/figures.

| K/U: accurate concepts /10 | T/I: method, data, reasoning /12 | C: clear tables, units, report /8 | A: explanation, conclusion, transfer /10 |
|---|---|---|---|
| | | | |

Total: /40