

IMPMET

Instruction manual

the study. The results of the study are presented in the following sections.

2. Method

2.1. Subjects

The study was conducted with 100 students from the Faculty of Education, University of Tabriz, Iran. The students were divided into two groups of 50 students each. The first group was the control group and the second group was the experimental group. The students in the control group were not exposed to any intervention, while the students in the experimental group were exposed to a 10-week intervention.

2.2. Instruments

The study used two instruments to measure the variables of interest. The first instrument was the *Self-Regulation of Learning Scale* (SRLS), which is a 25-item scale that measures students' self-regulation of learning. The second instrument was the *Academic Self-Concept Scale* (ASCS), which is a 25-item scale that measures students' academic self-concept.

2.3. Procedure

The study was conducted in two phases. In the first phase, the students in both groups completed the SRLS and ASCS. In the second phase, the students in the experimental group received a 10-week intervention, while the students in the control group did not receive any intervention.

2.4. Data analysis

The data were analyzed using *SPSS 21.0* software. The results are presented in the following sections.

2.5. Results

The results of the study are presented in the following sections. The first section presents the results of the pre-test, and the second section presents the results of the post-test. The results of the pre-test are presented in Table 1, and the results of the post-test are presented in Table 2.

2.6. Discussion

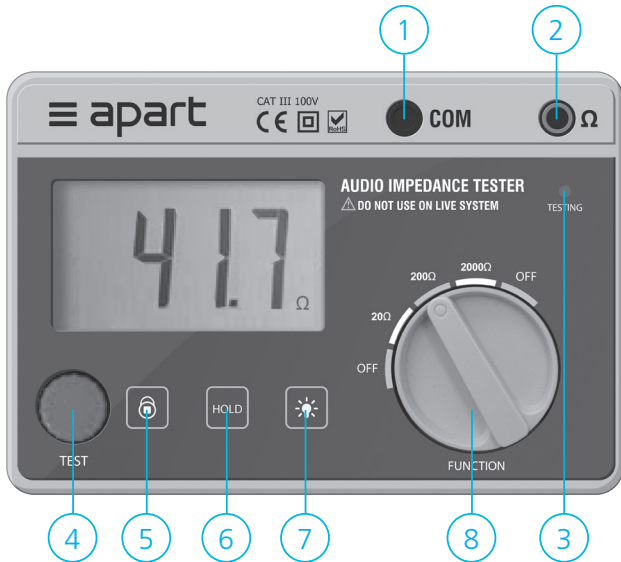
The results of the study indicate that the 10-week intervention had a significant positive effect on the students' self-regulation of learning and academic self-concept. The students in the experimental group showed a significant increase in their self-regulation of learning and academic self-concept compared to the students in the control group.

Safety instructions

- Read this manual before using this measuring instrument.
- Only use this instrument as specified in this manual.
- Do not use the instrument on live systems.
- Always disconnect the speaker lines from the power amplifiers before attempting to perform a measurement.
- Always connect the test leads before activating the measurement cycle.
- Do not connect or disconnect the test leads while the measurement is active.
- To avoid electrical shock, do not touch any live parts.
- Make sure the object to be measured has no electrical charge.
- Do not use this instrument near explosive gas, vapor or dust.

Product overview

- True impedance measurement of loudspeakers and speaker lines up to 2000 ohms at 330 Hz. Measuring frequency optimized for real life impedance measurements on Lo-Z and 100 volt speaker lines.
- Three test ranges: 0-20, 200 and 2000 ohms.
- Battery powered, uses 6 x AA batteries, long battery life.
- "Low battery" indication.
- "Data hold" function.
- Timer-operated measurement cycle, approx 30 seconds.
- LOCK-function for continuous measurement.
- Auto power off, after approx 15 minutes of inactivity.
- 2000 count LCD display with switchable backlight and 10 seconds backlight timer.



1. **COM connector:** 4 mm black insulated banana jack for black test lead (common).
2. **Ω connector:** 4 mm red insulated banana jack for red test lead (+).
3. **Testing LED:** this red LED lights up when the unit is performing a measurement cycle.
4. **TEST button:** Push the button to start the measurement. The “testing” LED will light up. After approximately 30 seconds, the

measurement will stop automatically. If you want to stop the measurement manually, push the button once again.

5. **LOCK key:** for continuous measurement. Press this key while the test is running. "LOCK" appears in the display, indicating that test mode is continuous. Pressing the test button disables continuous measurement.
6. **HOLD key:** press this key to freeze the present display reading. To exit hold mode, press the key once again.
7. **BACKLIGHT key:** enable or disable the display backlight.
8. **FUNCTION switch:** turn the function switch from the OFF position to the desired measuring range: 20, 200 or 2000 ohms. When the measurement is out of range, the symbol "I" will appear in the display. The highest measurable impedance is 1999 ohms. This equals about 5 watts in 100 volt.

Using the IMP MET

Getting started: Turn the function switch to the OFF position. Remove the test leads if present and unscrew the bottom battery cover by removing the four screws. Insert 6 fresh AA alkaline batteries. Mind the polarity! Put the cover back in place and tighten the four screws using a light touch. Remove the batteries and store them in a safe place when the unit is not used for more than 30 days, or when the batteries are exhausted. When the low battery symbol appears in the display, the batteries need to be replaced. Discard exhausted batteries according to your local waste management regulations.

Performing a measurement and calculating system power in 100 volt speaker lines:

- Make sure the system under test is disconnected from the power amplifier.
- Connect the test leads to the speaker/speaker line. Set the function switch to the expected range. Press the test button. The display will show the measured impedance. When the symbol "I" appears in the display, the value is out of range. Switch to a higher range and perform a new measurement.
- The unit can measure impedance up to 2000 ohms. This is equivalent to 5 watts in 100 volt. The formula for determining the power in 100 volt systems: $P = Z \cdot I^2 = V^2/Z$ where Z is the impedance value measured. For 100 volt systems, the power = $(100 \times 100) / Z = 10000 / Z$

- Example: you measure an impedance of 250 ohms (Z) in a 100 volt system. The system power = $100 \times 100 / 250 = 10000 / 250 = 40$ watts. This speaker or speaker line corresponds to a 40 watts load on a 100 volt power amplifier.

Note: when measuring 100 volt speaker lines, make sure that all local 100 volt volume controls have been set at max volume. Disconnect the speaker line from the amplifier before performing the measurement. Never attempt to measure the impedance on live systems! This will result in unreliable measurement results and eventually irreparable damage to the measuring instrument.

Specifications

Display	3 ½ digit LCD display (2000 counts) with data hold, low battery and measured units indication.
Power	9 VDC battery powered: 6 x AA battery (alkaline)
Dimensions	168 x 110 x 62 mm
Weight	approx. 500 g including batteries
Included accessories	test leads with separate alligator clips, soft bag and user manual
Basic accuracy	+/- 2% + 2 digits at 18 to 28°C and relative humidity <75%. Accuracy is valid for a period of one year after initial calibration
Test frequency	approx. 330 Hz
Standard	Double insulation, meets IC-1010. Installation CAT III 100V



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