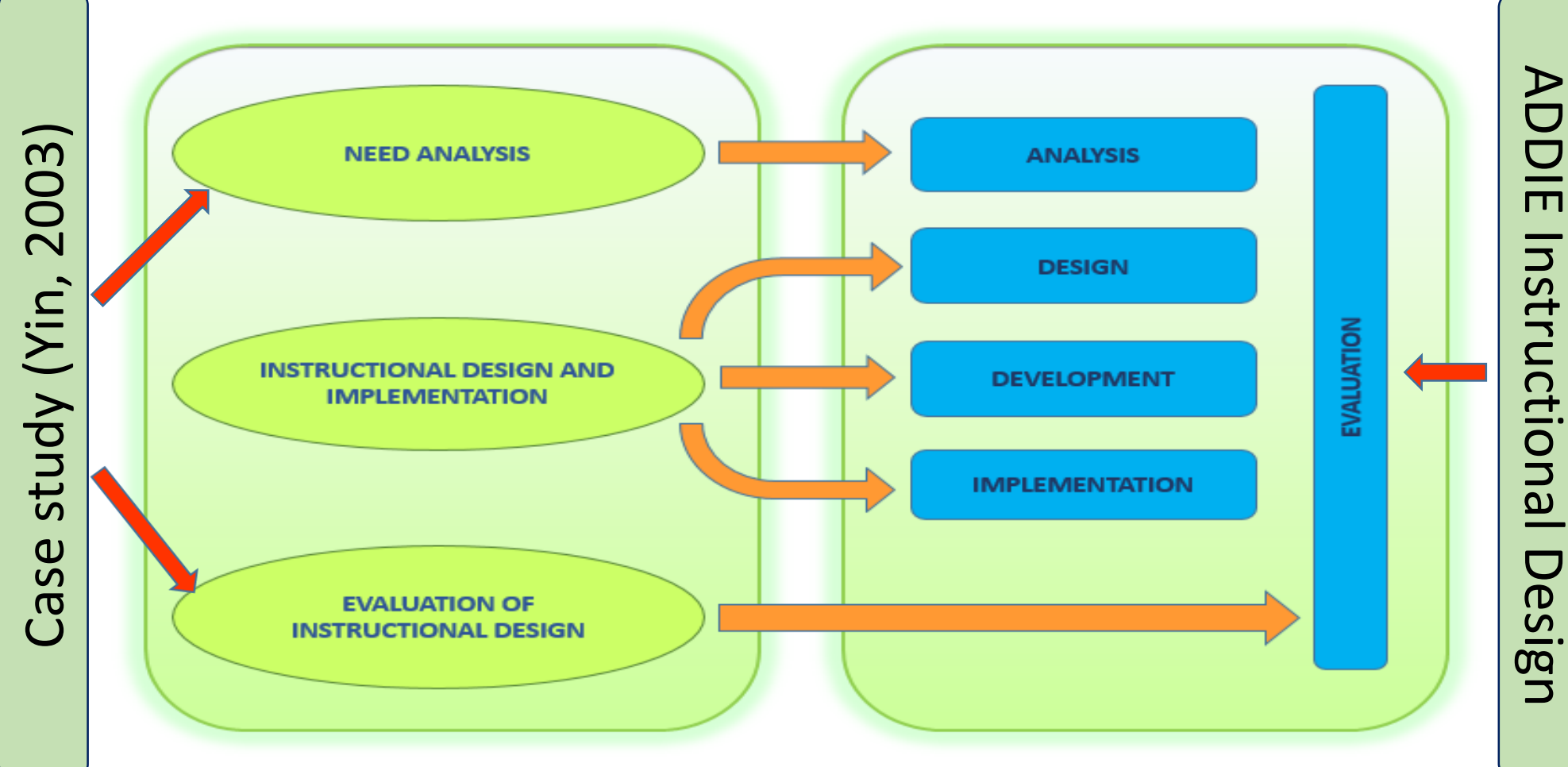


ABSTRACT

This study aims to develop an instructional design for teaching electrical resistance to 6th grade visually impaired students. The visually impaired students' needs for learning science were identified. By taking the needs into consideration an instructional material was designed and implemented.



Design Based Research (Design-Based Research Collective, 2003)

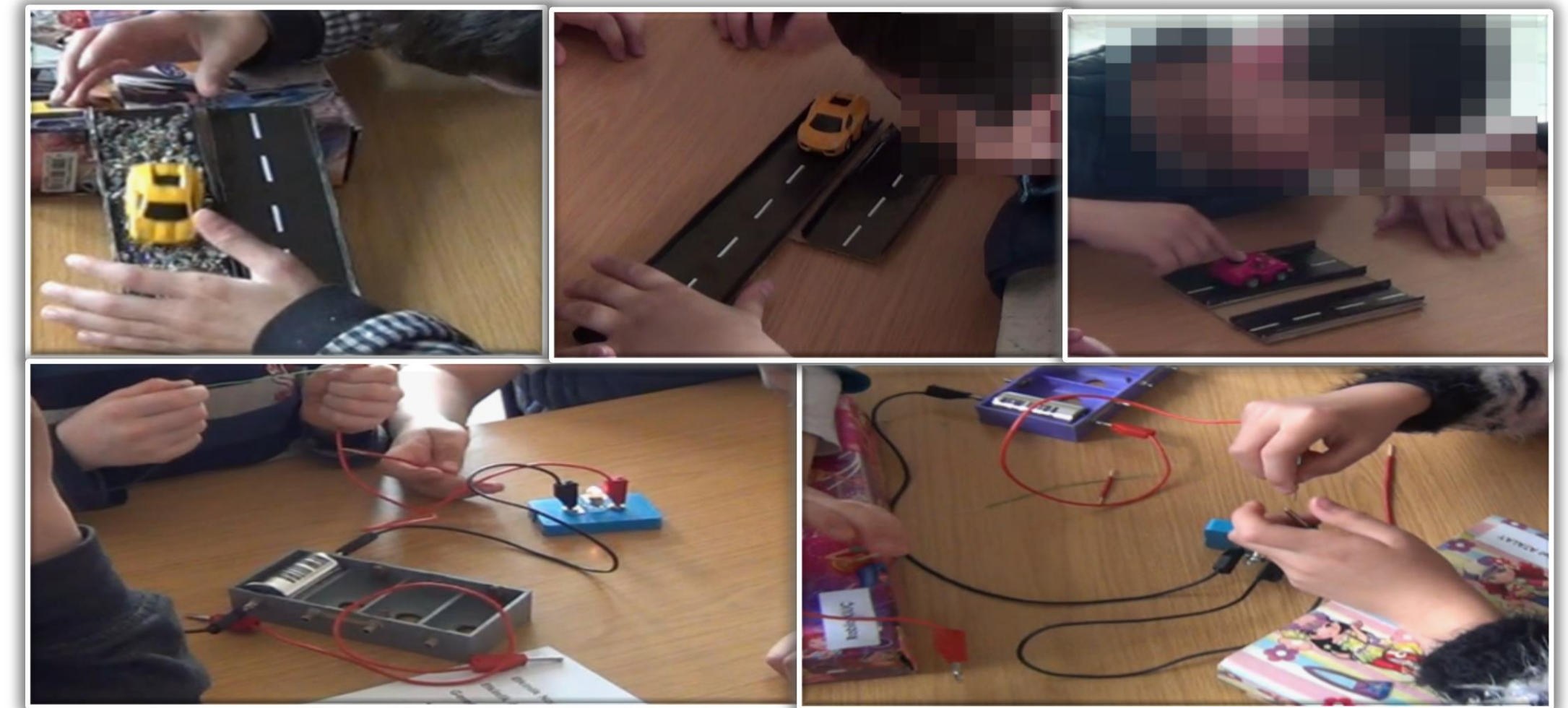


METHOD

An activity was designed related to electrical resistance and the factors related to resistance. Firstly, an analogy model is used to represent electrical current and resistance «roads are wires, cars are electrical current and different surface covered roads are type of wires». Variables affecting electrical resistance are the length of the wire, the diameter of the wire and kind of the wire. There are moving cars on the roads with different characteristics (different lengths, different diameters and different types). The movements of the cars on the roads varies according to the type of the roads. Consequently variables affecting electrical resistance are explained by the used simple electrical circuit.

IMPLEMENTATION

The analogy developed was implemented with seven 6th grade students studying in a special school for visually impaired students in Erzurum city centre. The implementation carried out for 2 hours in the school. 3 participants were blind, while 4 of them were partially sighted. Students' learning were tested with achievement test and individual interviews.



Students	Pre Test	Post Test	Gain Score	Learning Outcomes	S1	S2	S3	S4	S5	S6	S7
S1	15	80	0.76	L.O.1.	+	+	+	+	+	+	+
S2	25	90	0.87	L.O.2.	+	+	+	+	+	+	+
S3	30	90	0.86	L.O.3.	+	+	+	+	+	+	+
S4	25	85	0.80								
S5	35	75	0.62								
S6	45	75	0.55								
S7	35	85	0.77								
Total Gain Score			75								

As a result, with the model used, firstly students' perceptions that the resistance of the conductive wires may be different. After this model, students with conductive wires in different characteristics were made to conduct an experiment. The gain score controls for individual differences in pretest scores by measuring the posttest score relative to the each person's pretest score. [Gain Score (g) = (%posttest – %pretest) / (100 – %pretest)].

RESULT

DISCUSSION & SUGGESTION

The results confirms that the lack of vision cannot be seen as a barrier for learning science if appropriate instructional adaptations are made. Moreover, anecdotal evidences indicate students interest are improving towards science through accessible materials and instructional settings. It is believed that this study will lead to further studies. In addition, it is also evident that these kind of instructional materials are not just helping visually impaired students but also beneficial for students with normal sight.

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