Chemistry Education Research and Practice

The Effect of Case-Based Instruction on 10th Grade Students' Understanding of Gas Concepts

Journal:	*Chemistry Education Research and Practice*
Manuscript ID:	RP-ART-07-2014-000156.R2
Article Type:	Paper
Date Submitted by the Author:	23-Oct-2014
Complete List of Authors:	Yalçınkaya, Eylem; Middle East Technical University, Boz, Yezdan; Middle East Technical University, Faculty of Education

SCHOLARONE™
Manuscripts

October 23, 2014

Dear Professor Taber,

We would like to thank you and the reviewers for your comments on our manuscript, “The Effect of Case-Based Instruction on 10th Grade Students’ Understanding of Gas Concepts”

To show how we have addressed the comments, we have enclosed the reviewers’ comments in bold typeface with our responses in regular typeface:

Editor:

p.35 "Which one of the following situations would lead to the partial pressure of the oxygen gas if the pressure in each container was measured?" This does not seem to make sense - should there be some qualifier regarding 'the partial pressure of the oxygen gas'?

We omitted the statement “if the pressure in each container was measured?” and changed the sentence as “Which one of the following situations would lead to the partial pressure of the oxygen gas if the pressure of only oxygen gas was measured?”

"In each school, one of the classes was randomly assigned as the experimental group and the other class instructed by the same chemistry teacher was assigned as the control group." "Two classes from each school were assigned randomly as the experimental and the control group." Please briefly report technique used (see editorial - Chemistry Education Research and Practice, 14(4), 359-362. doi: 10.1039/c3rp90009f)

We explained the technique regarding the random assignment of classes as experimental and control groups. Please see sample subsection in the methodology section. However, as in the article you stated, random assignment does not ensure the equivalence of the groups and we tried to provide the equivalence this by controlling various variables that can influence students’ achievement, such as students’ pre-scores regarding attitude, motivational beliefs, understanding of gas conceptions and science process skills. Still, it is impossible to ensure the equivalence of groups before study. Moreover, as you stated, random assignment of teachers to the experimental and control groups also do not make the elimination of differences between teachers since one teacher may be more resistant to teach in a novel way, the other may accommodate him/herself to teach in the way we asked. We think that this is not an issue in our research since the same teacher taught experimental and control groups and observation of the teacher by treatment verification checklist revealed that the teacher taught accordingly. However, as we mentioned in the limitations section, novelty and expectancy effects may influence the validity of the study.

Referee: 2
We did all the suggestions of Referee 2.

Thank you, again, your thoughtful review of this manuscript and for the opportunity to revise the manuscript.

Sincerely,
Dr. Yezdan Boz,
Middle East Technical University, Faculty of Education, 06531 Ankara, Turkey