A prospective, controlled, blinded cross-over study assessing the effectiveness of inquiry-based mini-case study and peer group action research in learning Human Physiology

**Methods**

Cases were presented in lab (10 min.). Consisted of a scenario that related to one of the topics and a question. Students were placed in groups of 4 and given roles:

- **Manager** kept the group focused & maintained civility
- **Recorder** who took minutes
- **Idea generator** who prompted suggestions

Each group described the significance of the case, how it related to a topic and answered the one question. Each student in the group was assigned homework. They were responsible for the development of an additional question related to the case.

- **One week for assignment**
- **Each of 4 questions in a group must be unique**
- **Student in groups encouraged to contact each other during the week.**
- **Questions developed by a student must be substantiated.**

During the following week’s lab, groups chose one of the four group questions to present to the class. The class discussed & answered the question (30 min).

**Results**

**Exam I:** Comparison of the percent of day and evening students who answering questions pertaining to two topics correctly and did or did not receive case-study/action research on the topics.

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<th>Questions</th>
<th>Case-Study</th>
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**Exam II:** Comparison of the percent of day and evening students who answering questions pertaining to three topics correctly and did or did not receive case-study/action research on the topics.

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Students stated that mini-case/action research:

1) Reinforced education & knowledge of a topic
2) Provided a practical application of topic
3) Promoted group interaction
4) Taught research skills
5) Pushed critical thinking skills
6) Taught appreciation of different perspectives

Assignments were assessed using a critical thinking rubric. A grade of 1 to 6 was given based on the level of proficiency in a category. The levels were:

- Emerging (1-2)
- Developing (3-4)
- Mastering (5-6)

There were six critical thinking categories:

1) Summarized problem, question of issue
2) Expressed own perspective
3) Analyses of supporting data and evidence
4) Application of other perspectives
5) Assess conclusion, implications, & consequences
6) Communication

Students improved in each category with experience. By the second or third exercise the average grade was within the developmental level 3-4, a few even higher.

**Conclusion**

Students in sections who performed mini-case/action research exercises had higher grades/scores on questions than those who did not receive this method of teaching. Some grades/ scores were significantly different.

Students felt the mini-case/action research method of teaching was effective. It encouraged critical thinking, reinforced understanding of a topic and provided a practical application to the information.

Group interaction allowed students to collaborate, gain a deeper understanding of a topic and provided a practical application of topic.

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