5-9-2012

Varying Curricula to Meet Physics Students Learning Styles

Gavin Grillo  
Valparaiso University

Follow this and additional works at: http://scholar.valpo.edu/sarp

Part of the Education Commons

Recommended Citation

http://scholar.valpo.edu/sarp/10

This Research Project is brought to you for free and open access by the Department of Education at ValpoScholar. It has been accepted for inclusion in Education Senior Action Research Projects by an authorized administrator of ValpoScholar. For more information, please contact a ValpoScholar staff member at scholar@valpo.edu.
Overall the CSEM scores show low levels of knowledge pre and post-instruction. Would other inventories such as the Force Concept Inventory be better at gauging these gains? Logical/mathematical, bodily-kinesthetic, spatial/visual, interpersonal, and intrapersonal strengths and weaknesses.

When analyzing the itemized responses for each question on the CSEM, teachers are able to make changes to the lesson plan for the day based upon the responses to the online assignments the night before class via the internet.

The learning styles survey showed that the top learning styles in the experimental group were logical/mathematical, musical, bodily-kinesthetic, and interpersonal. Further Questions/Research:

- What would the gains on the CSEM have been for a new teacher if they had never used these strategies?
- How does the content being taught, such as electricity and magnetism, effect the gains from the strategies used in this research?
- Would other inventories such as the Force Concept Inventory be better suited for these strategies?

Contact Information

Gavin Grillo  
T: 616 485 9224  
E: Gavin.Grillo@valpo.edu  

Dr. Gillispie  
Valparaiso University  
Department of Education Miller Hall  
Valparaiso, Indiana 46383

Analysis

- Overall score data from the CSEM for pre- and post-instruction shows gains in students’ mean scores. The histograms for the CSEM scores show a shift toward higher post-instruction scores.
- The control group showed a 0.78 out of 20 higher gain in total score than the experimental group or a 3.9% overall increase in final score.
- When analyzing the itemized responses for each question on the CSEM, the data showed similar performances for the control and experimental groups on questions 6, 7, 8, and 13.
- Questions 4, 5, 9, and 20 show significantly higher gains for the experimental group. A t-test was computed for the responses for question 5, finding a statistically significant difference (p < 0.01) in student gains between the experimental group (higher gain) and the control group (lower gain).

Conclusions

- Overall the CSEM scores show low levels of knowledge pre-test with small gains after instruction.
- The scores show that the instruction for the control group was more effective than the experimental group. However, the t-test shows that there is not a significant statistical difference (p > 0.16) in the gains.
- The strategies used by the student teacher did not result in student learning gains to match or exceed that from the students of the experienced teacher (20+ years teaching physics).
- Differentiating instruction to the learning styles present in your classroom can be effective in increasing students’ knowledge and understanding of the content being taught.
- From the limited data in this research it appears that the strategies used had an effect on students’ learning and understanding of the content. However statistical analysis shows that the data is inconclusive.

Reference