

Using Learning Styles in the Physics Classroom

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Why Learning Styles?

My interest in learning styles was prompted by the following observations of the students in my physics (and science) classes, some of which you may recognise

- Student is good at discussing things but very weak at writing an answer
- Student loves doing experiments and / or hearing stories about real discoveries in physics but scores poorly in tests
- A number of students draw fantastic 3-D diagrams of lab experiments but the rest of their write up is weak.
- Student seems to be not listening (i.e. looking at desk while teacher is talking) but student recalls the teacher's exact words.

When the physics in-service courses started and teachers were invited to do a project on or concerning the teaching of physics, an investigation of learning styles seemed an obvious choice for me. With the "deluge" of excellent ICT material given to us during the in-service, I couldn't help wondering if this new media would replicate the same old issues that occurred with the traditional physics textbook -

- Heavy bias towards read / write
- Very little active learning
- Students with a practical leaning left to fend for themselves

Would a learning styles methodology give me an indication as to what medium my students were inclined to use?

Using the VARK Learning Preferences

So, having my curiosity stirred, I sought to apply a learning style methodology that I had encountered recently. This methodology was called VARK (Visual - Aural - Read/write - Kinesthetic) and it had four distinct characteristics that appealed to me:

- It was free, unlike many other learning style methodologies.
- It did reflect the learning preferences of the individual
- It was very simple to apply - a 10-minute questionnaire would generate a learning preferences profile for an individual
- It was open to change as the individual changed - your learning styles profile now might be different from learning styles profile in a year's time.

The VARK profile (Fleming & Mills) had 4 different learning styles - visual, aural, read / write and kinesthetic. The reaction of my students when I took 10 minutes out of a class

to run the questionnaire was surprising - they were extremely curious to know more about it and how they could use their profile to benefit their studies and awareness of themselves.

The results bore an uncanny reality. The students in (a) and (d) above came out as very strongly aural and weak on read / write. The student in (b) came out with a strong preference for kinesthetic learning, while students in (c) had a very healthy visual learning style but low read / write style. This seemed to be the lead I had hoped for in terms of a tool that might "predict" how receptive students might be to different media.



What about the Teacher?

The really interesting part of learning styles is that the teacher's preferences contribute to the transmission of knowledge in the classroom. A student with a strong visual learning style will be challenged by a teacher with a strong read / write style. So, I took the questionnaire and my own learning style was revealed to me. This made me more conscious of attempting to use all learning styles in the classroom interaction. However, when it came to monthly assessments, the learning styles profiles were of mixed benefit.

Limitations of Learning Styles

As the school year progressed, it became increasingly apparent that a number of kind variables were not taken into account by the learning styles profiles. The most important of these I would consider being student motivation to learn, followed by a supportive learning culture at home. Each learning preference was given a numerical score and the relative scores for each individual gave the learning preferences. Comparing the individual scores for each preference between individuals (e.g. read / write scores only) did not seem to generate any insight into the academic development of the student. To follow this investigation in more detail, the reader is directed to Fleming's own publication (Fleming) and to an excellent review of many different learning styles by Mosley.

Recommendations

Despite the limitations of this, and other, learning styles methodologies, I would recommend them to both teachers and students. They provide the teacher and student with an insight into how they learn best, which is a valuable contribution to the classroom dialogue and management. With the increasing flow of new media (i.e. ICT) arriving, it can give an insight into how your students will receive such media. Best of all, the VARK profile is free and simple to apply - it's even available online!

References

1. Fleming, N.D. & Mills, C. , "*VARK, a guide to learning styles*", <http://www.vark-learn.com/english/index.asp>
2. Fleming, N. D., "*Teaching and Learning Styles: VARK Strategies*", ISBN 0-473-07956-9
3. Moseley, David, "*Learning Styles: help or hindrance?*", NSIN Research Matters, no. 26 Autumn 2005, Institute of Education, University of London.