LACK OF INFORMATION TRANSFER BETWEEN COURSES

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Abstract — *In recent years students seem to exhibit a greater tendency to carry less and less information from one class to another in a formal curriculum. This is a source of frustration for both the Faculty members in the foundation courses and the Faculty members in the later courses. The authors, who are Professors for a pre-requisite Physics sequence and later construction courses at the same college will share examples and some solutions about this non-transfer phenomenon.*

Index Terms — Physics, construction, information transfer, University of Cincinnati

OVERVIEW

The University of Cincinnati (UC) is a rather large urban research university located in the Midwest section of the United States. The university is composed of 13 colleges and currently has slightly less than 40,000 students. The OMI College of Applied Science (OCAS) of the University of Cincinnati offers ABET-accredited degrees in the engineering technologies and currently has approximately 2000 students. As of this writing OCAS is in a unique situation at UC in that the Faculties of the service courses are housed in the same college as the Faculties of the degree-granting fields.

THE PROBLEM

In the autumn of 2008 the authors contacted one another with a disturbing problem. After having completed the first course in the required Physics for Technology sequence students were having difficulty graphically adding vectors in an early construction science course. After consultation, both of us were dismayed as this subject had been covered in the Physics course yet the majority of students in the Construction course could not solve simple vector addition problems and, indeed, claimed they had never seen the topic before.

As similar problem emerged later in that academic year when students in a fluids course had difficulty solving basic problems relating to topics covered in the second Physics for Technology course. Again that Professor consulted with Professor Sullivan and the situation was discussed.

In the case of the vector problems the students additionally had seen the material in the Mathematics course sequence so it was particularly disturbing that they had difficulty the third time this material came before them. We have also had anecdotal reports from other Professors of material that is not being transferred from one course in their major to later courses.

PATHWAYS

In order to do a systematic study the authors feel that a mapping of knowledge topics that should be transferred from one course to another should first be constructed. Fortunately the service courses and many of the degree-granting departmental courses have standard syllabi that have been agreed upon by the respective departments and are available. A listing of these topics could be first made and this list could then be culled down to a workable number of key items that could then be studied in detail. Hopefully many situations where knowledge is transferred will emerge and there will be indications of paths that might be followed to remedy any knowledge transferral problems.

The authors hope to do this but the day-to-day workload issues have thus far prohibited the beginning of this project.

TEMPORARY SOLUTIONS

One thing that OCAS currently has in its favor is the closeness of the Faculty. In the current climate of higher education it may be hard to believe but, at OCAS, Physicists and Mathematicians not only talk regularly to each other but also communicate regularly with Civil and Electrical Engineers as well as Construction Managers. Each weekday afternoon there is a college coffee / tea session for all Faculty at which any topic of interest can be discussed. This (and many other topics) has been discussed at these sessions and some ideas seem to come from the informal consensus.

Faculty must communicate with each other as soon as questions of this nature develop.

As topics of this importance are first developed students can be forewarned that they will reappear in specific later classes and students in the later classes can be reminded to review their notes from earlier classes before the topics reappear.

Also terminology can differ in the support courses and in the degree courses. An example of this is the term "specific weight" which is often used in an Engineering course has the same meaning as 'weight density" as used in

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a Physics course. When such terms are encountered students should be made aware of both of them at both course levels to minimize confusion.

CONCLUSIONS

The authors, of course, realize that this problem is not new – it has been in higher education for many years and probably will never completely disappear. However it seems to have become much more prevalent in the last couple of years and we feel it should therefore be addressed.

On the one hand we are hoping to find the time to do a more formal study and then address the situation in an appropriately straightforward manner. On the other hand we are wishing that either the problem is largely transient in time or that it is sufficiently mitigated by our temporary solutions so as not to be a major concern in the future.