

# Attendance and Attainment - a comparative study

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## Content

- 1. INTRODUCTION
- 2. DETAILS OF MODULE
  - 2.1 Assessment
- 3. DATA COLLECTION
  - 3.1 Data Collection Shortcomings
  - 3.2 Data Processing
  - 3.3 Use of data during Semester
  - 3.4 Assessment Data and Analysis
  - 3.5 Result Classification
  - 3.6 Result Reporting
- 4. RESULTS
  - 4.1 Comments on results thus far
  - 4.2 Attendance Pattern over Time
  - 4.3 Repeats and Retakes
- 5. TRIGGER POINTS FOR ACTION
  - 5.1 The Seventy Percent Rule
  - 5.2 The Eighty Percent Rule
  - 5.3 The Week Two Rule
  - 5.4 Corroboration
- 6. REMEDIES
  - 6.1 Attendance or involvement?
  - 6.2 Chasing Non-involved Students
  - 6.3 Current Generation of Students
  - 6.4 Longer Term
  - 6.5 Traditional and e-Learning
- 7. CONCLUSION
- 8. ACKNOWLEDGEMENTS
- 9. REFERENCES
- 10. AUTHOR DETAILS

## ABSTRACT

Through data collected over a single module first year single semester at UCE the link between attendance at teaching sessions and success in assessment is positively correlated. Attendance over time during the semester is also linked to results and final success. Indicators and action points identified have been identified that give early warning of attendance problems so that early action can be taken. Possible changes in teaching methods that could be considered in

the future are discussed.

## 1. INTRODUCTION

The purpose of making this study was to discover by measurement any correlation between attendance at teaching sessions and results for first year students of the School of Computing (SoC), University of Central England in Birmingham (UCE), Semester 1 2003/4.

## 2. DETAILS OF MODULE

The module studied was a first year BSc, Internet Application Development, offered as a compulsory double module (24 credits) that can be undertaken by both full time and part time students. The module is logically split into two interdependent halves, one covering Infrastructure and Technology of the Internet and World Wide Web and the other Programming for the World Wide Web. The module is taught via lectures, seminars and practical sessions. Timetabling is on a single day, so that each student had the opportunity of attending two lectures (one from each module half) one seminar and one lab session each week totalling four hours twenty minutes of teaching contact time.

The average student is expected to complete 240 hours study for the module. Twelve weeks teaching contact time plus examination time equates to 55 hours, leaving 185 hours for the student to complete outside of direct teaching. Data from 42 teaching sessions were recorded.

### 2.1 Assessment

The module was weighted 50% coursework and 50% final three hour written examination. The coursework was concerned with research on a topic specified by a module tutor, submitted in two stages. In week 7 a group presentation worth 30% of the total coursework and in week 10 a report and a website to XHTML1.1 and CSS2 specification covering the same subject matter as the presentation were submitted. Each of these carried 30% of the assignment marks. The final 10% covered a reflective exercise.

## 3. DATA COLLECTION

Presence data was collected for every teaching session using a signature and honesty method. A register was circulated during the teaching session and signatures sought. During lecture sessions for the first two weeks, because of the students' unfamiliarity with their students numbers and the registration process, this took rather longer than it should have done. Lab and seminar sessions saw fewer problems of this nature.

A total of 178 Students were registered on this module with 153 eventually submitting some part of the assessment.

### 3.1 Data Collection Shortcomings

Data collection was not 100% due to a number of identifiable reasons:

- Students not signing in.
- Students signing in the wrong place on the registration document.
- Illegible signatures taken on faith.
- Students turning up to the wrong sessions because it was more convenient for them and taking up someone else's

lab or seminar place.

- Incomplete registration - this happened in three cases in 42 teaching sessions.
- Impersonation - students signing someone else 'in'. This was proven by the presence of twenty six people in the seminar room and twenty eight signatures on the register.

### **3.2 Data Processing**

Data was manually entered on a spreadsheet that was compiled for the purpose. The data from each teaching session was entered as soon as possible. This intensely manual task was time consuming and error prone. Late arrival of students on modules meant that the class did not stabilize for two weeks.

### **3.3 Use of data during Semester**

As data was collected during the semester it was used in an attempt to bolster attendance twice.

In Week 3 letters were sent to students whose attendance was then giving cause for concern, i.e. less than 60% of possible sessions.

In Week 6 emails were sent to all students informing them of their attendance records and suggesting a personal course of action.

In Week 13 when results for the coursework were circulated more than 60 students were referred to the Student Support Tutor team for urgent advice on recovery for the examination.

### **3.4 Assessment Data and Analysis**

As results became available for coursework and examinations they were incorporated into the spreadsheet.

Analysis was mainly as a result of sorting into various orders and correlating the various groupings of students by either attendance and/or attainment as appropriate. Further statistical analysis is to be undertaken to attempt to discover if there are any more precise underlying trends that can assist in identifying individuals in future generations of students who are having difficulty so that remedial action can be applied in time.

### **3.5 Result Classification**

Traditional scoring was used as a differentiator.

- 70% and above - First Class.
- 60-70% - Upper Second.
- 50-60% - Lower Second.
- 40-50% - Third.
- 30-40% - Bare Fail.
- Below 30% - Fail.

In reporting all results are anonymous.

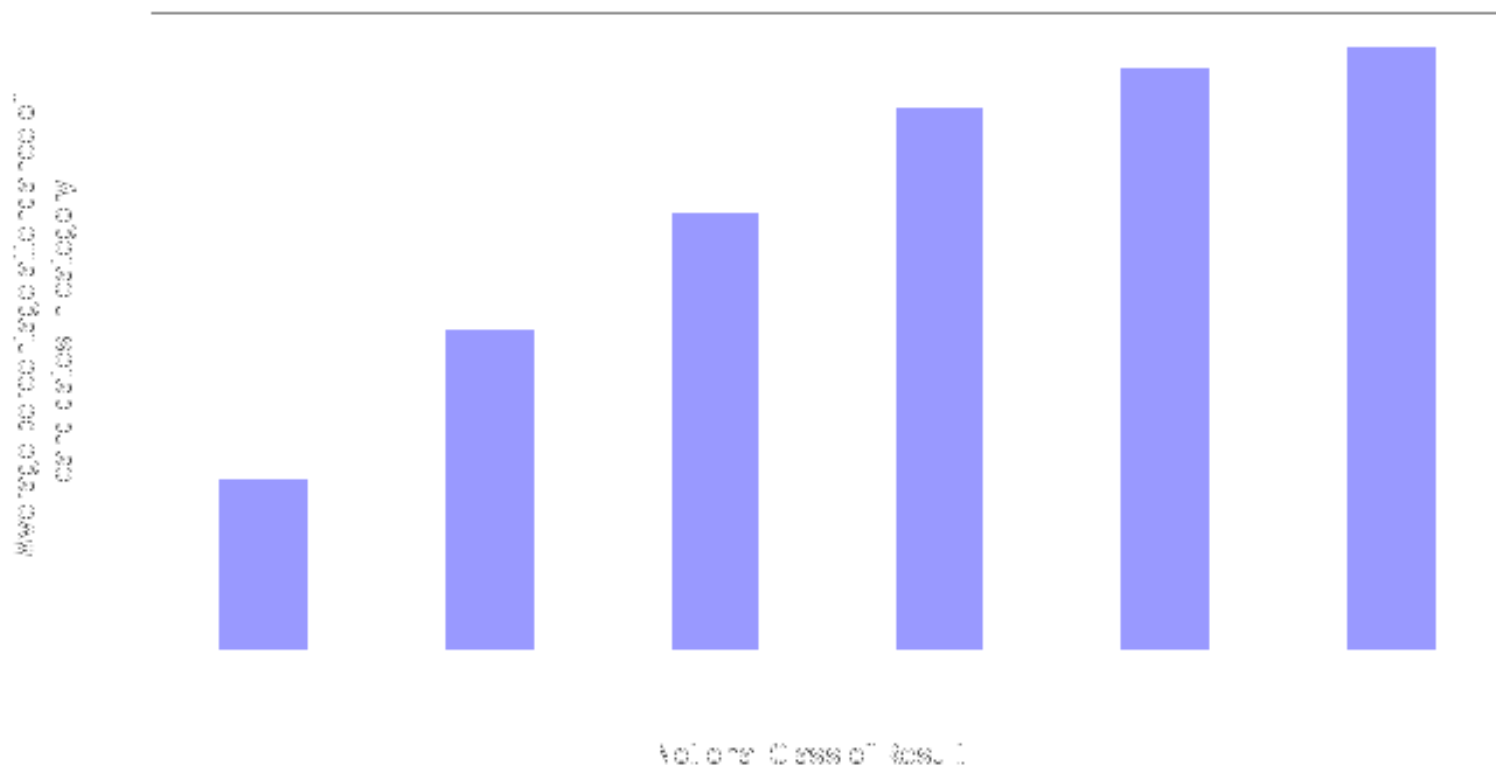
### **3.6 Result Reporting**

Results are reported graphically. More work remains to be performed to correlate this data with other modules and with entry qualifications offered by the students who study at UCE.

## 4. RESULTS

There is a very clear correlation between attendance and attainment in this module. The results presented in figure 1 shows this relationship. However it must be stressed that these are averages and there are variations in attendance pattern between individuals in the attainment band. The divisions in the attendance bands are arbitrary. Attendance of (for instance) 40%+ covers all attendance figures between 40.0% and 49.999%.

Value Class of Result



**Figure 1. Class of combined coursework and examination mark versus percentage attendance at teaching sessions for those submitting work. (n=153)**

Figure 2 (below) gives the figures for each category by attendance to show the range of attendance for each class of result.

**Figure 2. Summary table of attendance by attendance band against class of result for those submitting work.**

<b>Attend</b>	<b>first</b>	<b>upper second</b>	<b>lower second</b>	<b>third</b>	<b>bare fail</b>	<b>fail</b>
never				1	1	2
0%+					2	6
10%+				3	2	3
20%+				3	3	8
30%+		1	1	1	3	4
40%+			1	3	2	4
50%+	1		3	1	3	1
60%+		4	4	8	1	1
70%+		4	8	4	1	
80%+	2	6	12	6	4	
90%+	3	10	6	5	1	
<b>totals</b>	<b>6</b>	<b>25</b>	<b>35</b>	<b>35</b>	<b>23</b>	<b>29</b>

As a result of the banding into attendance categories, an instance where a degree of skewing has occurred is that an individual who gained a first class result shows attendance figures that venture into the 50%+ category. The true figure for this individual's attendance is above 59.7%. This was noted as an anomaly. Analysis has not been carried out on other individuals who are close to boundaries of the divisions selected in order not to have any possible influence on the findings.

However in Figure 1 the averages were calculated using the true figures of attendance.

Figures 3 and 4 illustrate the marked difference in attendance patterns between students passing and failing the module. The inescapable conclusion is that for this module and method of teaching that attendance and attainment are directly related.

Figure 3: All students submitting work passing the module based on their attendance figures

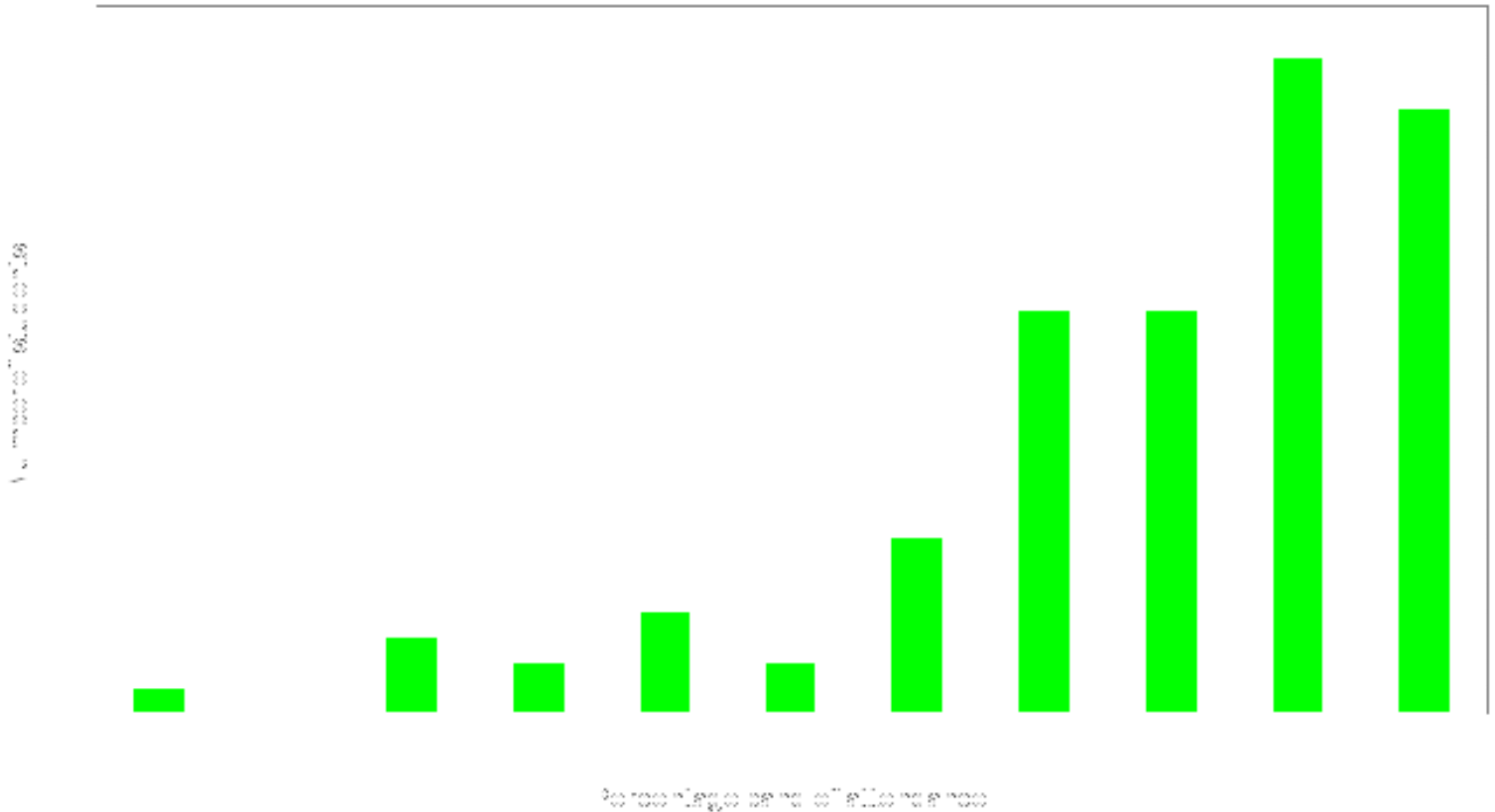


Figure 3. All students submitting work passing the module based on their attendance figures.

#### 4.1 Comments on results thus far

The general pattern for teaching within SoC at UCE is the traditional pattern of lectures, seminars and practical laboratories. This is reinforced by a Lotus Notes environment where all lecture, seminar, lab notes and additional material, such as websites, extra reading and guidance is lodged for the students. Notes are not seen as a substitute for attending teaching sessions as the teaching session reinforce and expand on the notes.. With this range of material the demonstrated pattern of results from this study was entirely expected by the teaching staff. The problem with quantifying the data has hitherto been the intensely laborious task of registration and collation.

Figure 4: All students submitting work failing the module based on their attendance figures.

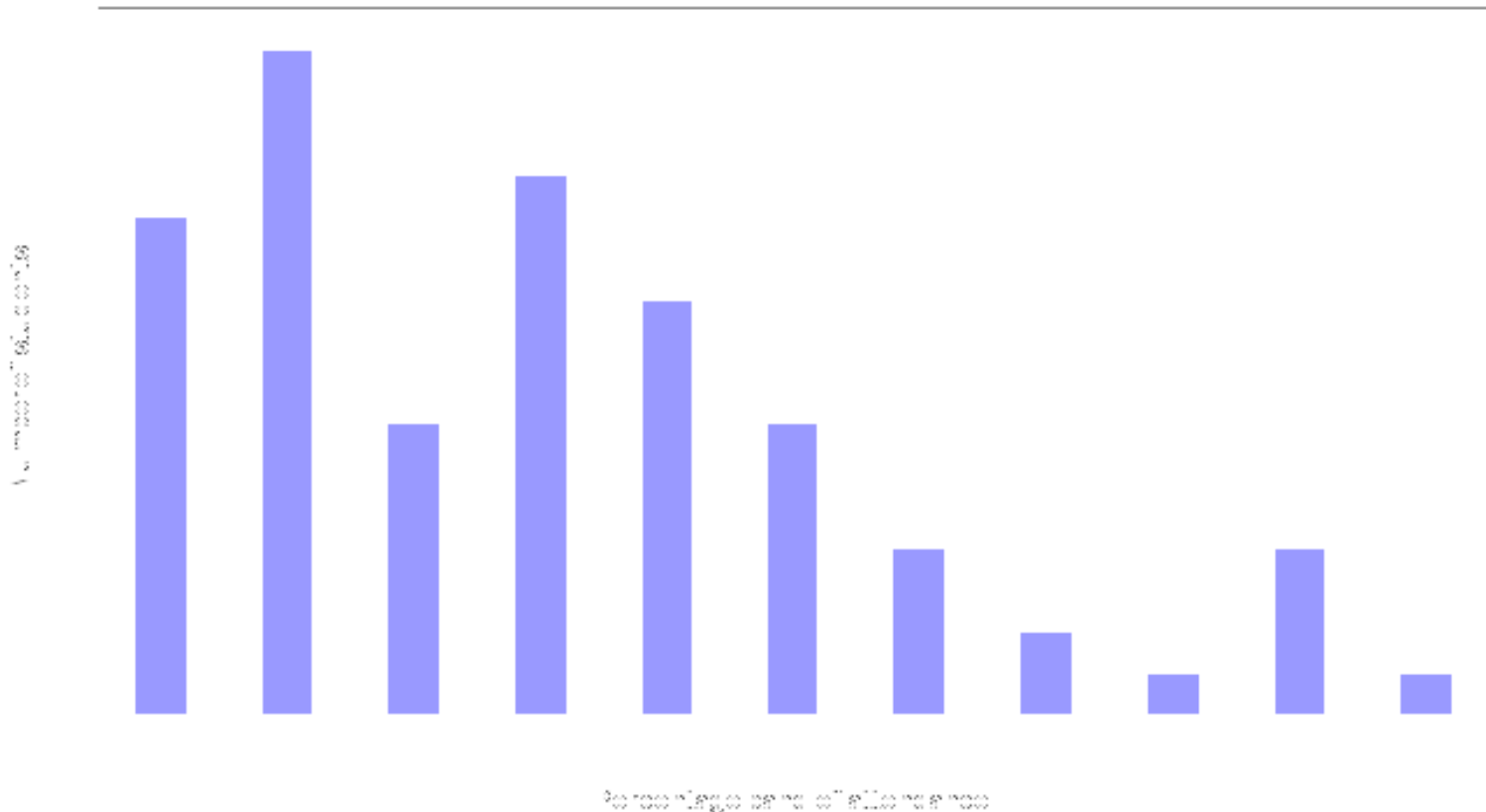


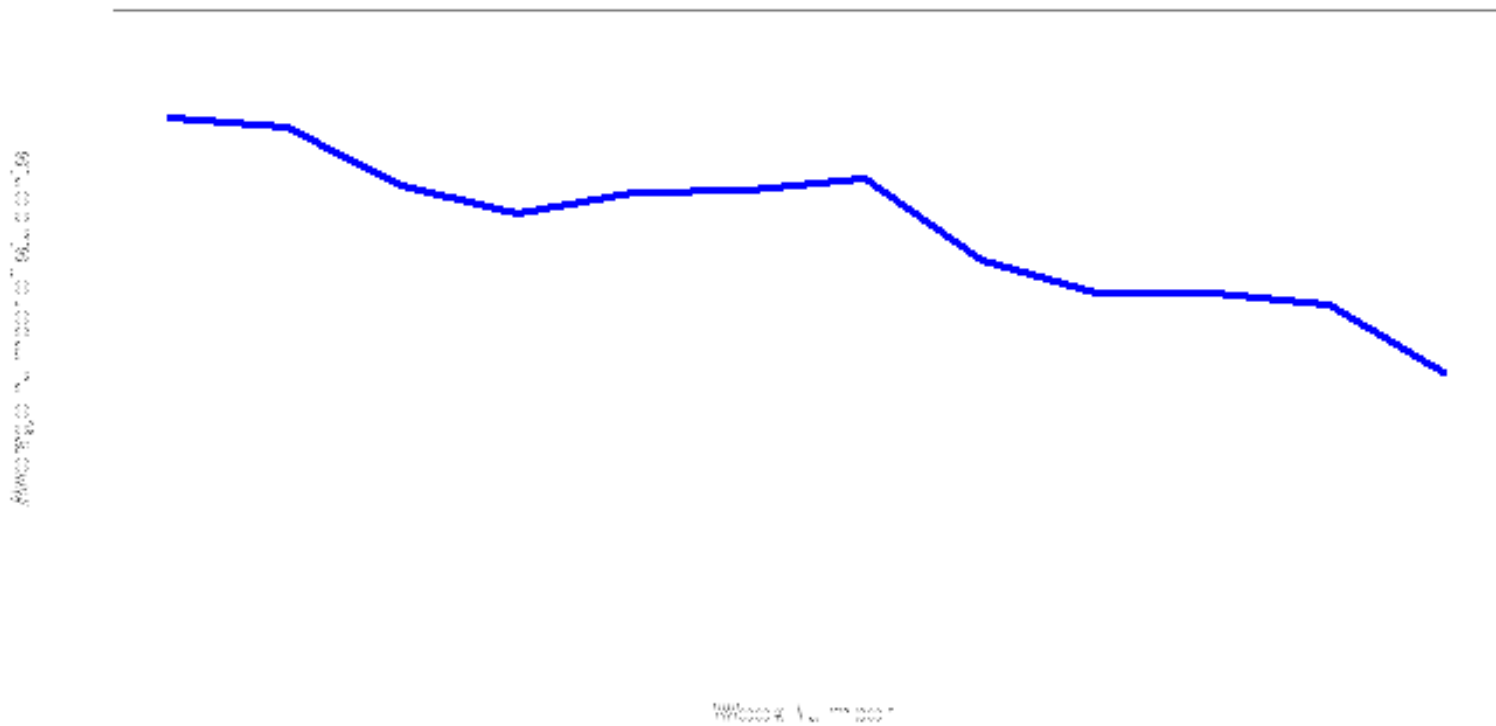
Figure 4. All students submitting work failing the module based on their attendance figures.

## 4.2 Attendance Pattern over Time

Results are also presented for the average attendance of students over time.

At the start of the semester two thirds of the students registered were attending, but by the end that figure fell to only half (Figure 5) Overall at some point in the semester 168 of 178 students made at least one appearance.

Average attendance by week of Semester 1 over all teaching sessions offered  
(n = 178)

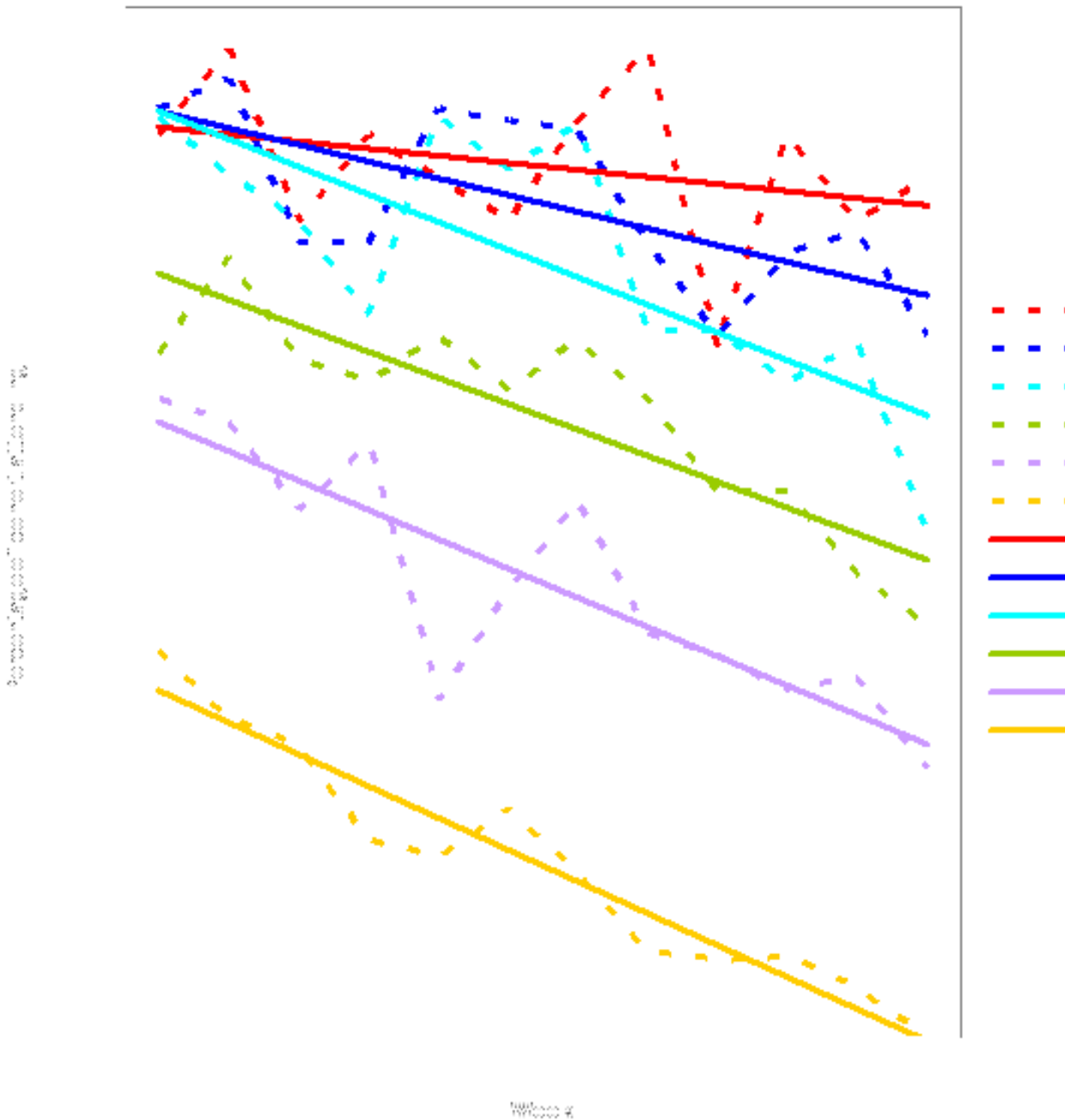


**Figure 5. Average attendance by week over all teaching sessions offered (possible 178 students in total)**

The pattern of attendance shows a general decline in line with other modules, UCE departments and other universities. This is from anecdotal evidence regarding current courses.

Figure 6 is the result of analyzing this split and illustrates linear trend (Excel generated) by cohort of class of result.

Attendance and Attainment - a comparative study



**Figure 6. Linear trend analysis of attendance by week by class of result**

Some conclusion on this will be drawn later on alarm points, but one clear outcome is that if students do not start attending teaching sessions from week 1 regularly they do not get a good result.

### 4.3 Repeats and Retakes

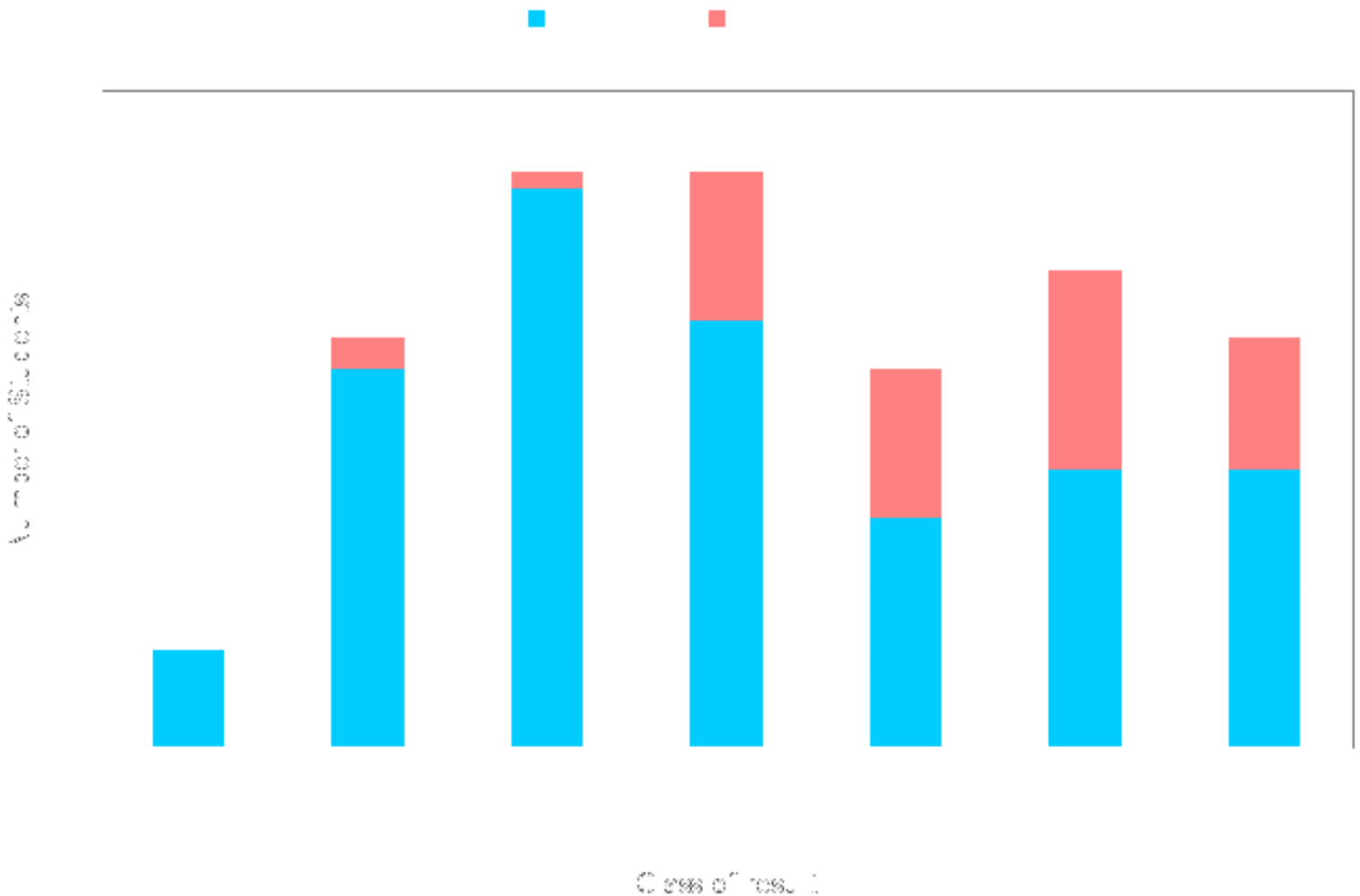
Of the total number of students registered, (178) 137 were attempting the module for the first time and 41 resitting from other previously failed modules - this was the first year of presentation of the module so that all attempts were

essentially the same and required attendance.

**Figure 7. Summary of percentage of cohort passing, failing and not submitting assessment.**

Cohort	% Pass	% Fail	% Not Submitted
First year	65	23	12
Repeat	29	51	20

There is a division in attainment between those sitting the course for the first time and those forced to take it as a repeat. The patterns for attendance reflect this as illustrated in Figure 8 that shows that attendance is significantly worse for repeating students than first time students.



**Figure 8. Attendance against attempt for all students, averaged over the semester.**

Given the lower attainment and lack of attendance of students repeating the module it may be necessary to take extra steps to assist them in engaging in the learning process so that they have more chance of success.

## 5. TRIGGER POINTS FOR ACTION

From a much fuller analysis of the data that can usefully be presented here alarm points for action can be identified along with general rules that are simple and publishable to students to alert them to the correlate between attendance and attainment.

### 5.1 The Seventy Percent Rule

**If a student does not attend at least seventy percent of teaching sessions they have a two in three chance of failing, and a four in five chance of not getting a first or upper second.**

### 5.2 The Eighty Percent Rule

**If a student does not attend at least eighty percent of teaching sessions they have an even chance of failing, and a two in three chance of not getting a first or upper second.**

### 5.3 The Week Two Rule

**If a student is absent for only one or two teaching sessions (depending on teaching load) during the first two weeks of any module then this is cause for concern. This is an alarm point. (No student shows 100% attendance - data recording factors (Section 3.1) playing a part in this.). However accurate and timely collection of attendance figures for teaching sessions is vital for action to be able to be taken.**

### 5.4 Corroboration

The Seventy Percent Rule has coincidentally been corroborated by a separate study undertaken independently by Dr David Green (2004) module taught in 2003 in the UCE Business School that gave very similar results. This was on a smaller cohort (approximately 80 students) performed after the module finished.

## 6. REMEDIES

For attendance, in order for there to be any chance of applying the rules developed there must be a way of registering students as attending without manual intervention. The technology exists, either as barcode reading, magnetic swipe cards or radio presence indicators, but the philosophical question of whether this would work in an academic context is one that also has to be addressed. Although this is a way of recording attendance, it is unable to be implemented at UCE because of cost.

### 6.1 Attendance or involvement?

This study has focused on attendance being the main driver to success. Broader strategies regarding student involvement in the learning process that build on this study are also being developed, one of which is mentioned in Section 6.5

### 6.2 Chasing Non-involved Students

The limited and manual process of chasing students proved virtually ineffective. Other institutions have used SMS text messaging with success, and this is being implemented at UCE.

## 6.3 Current Generation of Students

As Martinez (2001) has highlighted, the current generation of students have a variety of financial, cultural and time pressures on them that previous generations did not need to experience. In particular informal interviews with this cohort of students reveals that many are working full time while studying full time. This pressure must be very difficult, and tutors have no means of knowing whether this is the case, expecting that full time students will indeed be studying full time.

Whether 'laddish' or 'teen' culture, frequently identified in school studies, where it is 'uncool' to study or work academically, pervades this cohort is not identified. This may be a factor in the non-attendance and the non-engagement in the teaching process. More work is needed with individuals before this type of influence (or lack thereof) could be determined.

Other work needs to be attempted with students to discover causes for non-attendance. At UCE this is being pursued via the student support tutors. More attendance and participation data will be gathered for the 2004/5 academic year.

## 6.4 Longer Term

Having identified the pattern of attendance as a proxy indicator of commitment, longer-term strategies are being invoked in order to develop a sense of belonging and learning process ownership in students. Additional academic support tutors have been engaged at UCE within the past two years, and they are having a noticeable effect among students who have difficulty and who want to remain within their courses of study.

## 6.5 Traditional and e-Learning

The module under study was structured for traditional teaching. E-Learning is seen, according to HERO (2004), to "significantly strengthen teaching and learning in higher education today". E-Learning by itself is sometimes perceived as a threat to academics, but with the pressures of the ever increasing numbers in the student body and the pressure of retention of individuals within that body. A new module taught at the SoC mainly by e-Learning has achieved much higher engagement.

The next presentation of the module will have weekly electronic knowledge reinforcement, required e-involvement and e-self assessment. Any student not participating in this can also be identified and it is hoped that students who are unable to attend conventionally will be able to partake of learning.

## 7. CONCLUSION

There is a definite and proven correlation between attendance at teaching sessions and attainment in assessment. Different classes of result show, on average, that students have different attendance patterns according to result, and that there is a marked difference between students who are taking course for the first time and those who are having, for various reasons, to resit. Trigger points for action have been identified to inform students and to identify problems early.

## 8. ACKNOWLEDGEMENTS

Thanks for Dr Sharon Cox, Andy Hollyhead and Dr Bin Hu, colleagues at UCE, for assistance with data collection and analysis of this work.

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## 10. Author Details

John Colby is a lecturer in the Department of Computing in the Business School (formerly the School of Computing in the Faculty of Computing, Information and English) University of Central England.

Prior to joining UCE in 2003 he spent thirty years in industry, the first ten in heavy engineering, anything from battleships to coal mines. The next twenty years were spent in commercial computing, from Apples through Macs and all generations of the PC, and variously in systems training through software engineering. Since 2003 teaching has mainly ranged within the field of web design, multimedia and networking. Realising that some students were struggling with basic knowledge that was preventing their full engagement, from 2004/5 he has been instrumental in a variety of initiative to assist such students. This process is ongoing.

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