Attendance and Exam Performance at University

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Abstract

Marburger (2006) explored the link between absenteeism and exam performance by assessing the impact on absenteeism of *removing* a university wide policy of mandatory attendance for a single class. His results indicate that while an attendance policy has a strong impact on reducing absenteeism the link between absenteeism and exam performance is weak.

This paper presents an alternative exploration into the link between absenteeism and exam performance by assessing the impact of *implementing* a module-specific attendance policy. Our results suggest the link between absenteeism and exam performance is strong, and that student-specific factors are important, including revision strategies and peer group effects. These results question the uniformity of the relationship between attendance and exam performance.

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1. Introduction

It is generally accepted by tutors that there is a positive relationship between attendance and student achievement; this view is supported by Grendron and Pieper (2005) who demonstrate that a strong negative link between absenteeism and assessment performance is usually reported in the literature although the statistical significance of this link is not consistently found. For sceptics of mandatory policies on attendance (such as Petress, 1996) this lack of significance is enough to challenge the idea that such policies offer universities the ‘golden bullet’ that will improve both their overall marks and their progression rates.

Against this background Marburger (2006) presents an empirical study of the impact of relaxing an American university’s mandatory attendance policy for a 1st year undergraduate module in order to identify whether the lack of policy influenced attendance and whether attendance affected the student’s grade on the module. His contribution to the literature is in response to Romer’s (1993) suggestion for an attempt to measure the “pure” effect of absenteeism on exam performance.

The purpose of this paper is to analyse the methodology and findings of Marburger (2006) and to identify whether the effect of implementing an attendance policy had a similar effect as removing an attendance policy. If it does not then there might be evidence that the perspectives of Grendron and Pieper (2005), Petress (1996) and Marburger (2006) could all be acceptable in different circumstances. Although we emphasise that Marburger’s findings are far from conclusive because of concerns over the credibility of removing a university-wide mandatory attendance policy for a single seminar group and because the potential impacts of peer group effects and revision strategies are not explicitly taken into account, our main conclusion is that the relationship between attendance and exam performance may not be uniform across different rates of attendance; the effect of attendance criteria on exam performance are likely to be much stronger at low levels of attendance and are likely to reduce as attendance rate rise. A small empirical analysis complements our arguments

2. Marburger’s (2006) study

There are two main ways of measuring the impact of an attendance policy on exam performance. Our choice will depend on the university:

1. We can relax a university-wide mandatory attendance policy so that it does not apply to a sample of students. This strategy is generally more applicable in US universities where there are usually attendance policies, as employed by Marburger (2006).

2. We can create an attendance policy and apply it to a sample of students in an institution where there is no university-wide attendance policy. This is generally more applicable to universities in the UK and is employed here in our statistical analysis.

Both approaches are valid in their own right. The question is however: will the findings from each be reliable and robust enough to inform policy?

Marburger’s (2006) study focuses on two groups of students studying an introductory module in microeconomics in two consecutive years at the same university; students in one group (no-policy) are told that the university-wide attendance policy will not be applied to them and students in the other groups (policy) are subject to the university-wide attendance policy. Members of the no-policy group (n = 38) attended the module in 2002 while members of the policy group (n = 39) attended the same module in 2003; in both cases the module ran during the autumn semester and on Monday, Wednesday and Fridays (MWF) at midday.

An overall picture of Marburger's (2006) study can be seen in Table 1: in 2002 a student in group 2 is a member of the no-policy group. Students in the other classes (10am and 2pm) in that year's cohort are subject to the standard university-wide attendance regulations. To take into account that absenteeism might be endogenous to the day and timing of a particular class Marburger (2006) uses students from the same teaching slot in 2003 as the control group (policy).

{Insert Table 1 about here}

To make the 'match' between absenteeism and exam performance, Marburger recorded the class attendance of both groups in each lesson and, at the end of the lesson, devised multiple choice questions that related to that lesson's topic. These questions then appeared in later exams conducted over the semester. The hypothesis being tested is that absence from a lesson can be matched to an incorrect answer for the corresponding multi-choice exam question i.e., this "pure" effect of absenteeism could be detected and measured. A summary of Marburger's (2006) results is presented in Table 2.

{Insert Table 2 about here}

Table 2 shows that Marburger's (2006) initial observations concur with others (Romer, 1993; Marburger, 2001) and that in the absence of any mandatory policy on attendance, absenteeism in the no-policy group increases throughout the semester. This phenomenon is not unfamiliar to most higher education tutors, these authors included; it is also a characteristic of our study (see Table 3).

However, the magnitude of the absenteeism in relation to the university's policy aspirations is not readily apparent. Using the information presented in his paper, we calculated that the attendance policy in Marburger's study is designed to ensure that students attend 83% of all lectures (i.e. 29 of the 35 classes timetabled over the semester).[1] Marburger's results show an average rate of absenteeism (over the semester) for the no-policy group of 20.78%; this compares with 11.52% for the policy group; i.e. a student in the no-policy group missed an average of 7.3 classes over the semester, while a student in the policy class missed an average of 4 classes. If we re-interpret these values as *average attendance rates* we get 79.22% and 88.48% respectively; these numbers are about four and five percentage points either side of the 83% proscribed by the university's policy. Unfortunately we do not know whether the pattern of absenteeism in both groups was random or the result of particular individuals regularly absenting themselves from classes.[2]

Overall Marburger's (2006) research design is in line with what we understand to be Romer's (1993) suggestion of using a controlled experiment within higher education. Although it is an experiment, we are not convinced that the students within the "no-policy" group are not influenced by students in the normal "policy" groups. This scepticism comes from taking a closer look at the circumstance surrounding the module and the research design used by Marburger. Referring back to Table 2 we can see that the no-policy group could have contact with at least five other groups – three from the previous year who would now be 2nd year students to the no-policy group as well as students in the other two groups in the 2002 cohort. These five groups would be subject to the strictures of an attendance policy; clearly the same process could occur if the freshmen speak to third and fourth year students. The proximity of the no-policy group to these other groups is we feel cause for concern on at least three counts.

First as the no-policy group is not within a 'vacuum' they will be influenced by forces outside of their own class. Research by Thomas *et al*. (2001) emphasises the effects of peer groups on student choice while Webber and Walton (2006) illustrate that peer groups can be gender specific. Absenteeism from university seminars may be the result of one friend's attending either that seminar or another class on the same day, and not an independent decision by the student. While the presence and significance of friendships are difficult to model, it is our experience that many freshmen place a high value on the chance to socialise while at university such that attendance in class is often a bi-product of this socialising with friends. Thus if the no-policy student's friends are attending other seminars or lectures around the same time as they could be attending their own classes then the potential social benefits of non-attendance would be less.

Second we do not know if the students in the no-policy group also had other lessons on the same day; lessons which would be subject to the mandatory attendance policy. If so, the value of missing the microeconomics class might only be an hour's worth of drinking coffee in the student's common room; a small pay-off when compared to taking a whole day off to engage in employment.

Third, habit needs to be taken into account; if the student attends all (or most) of their classes for other modules, then a conscientious choice must be made *not* to attend the microeconomics classes.

These three possibilities might have combined to reduce the impact of removing mandatory attendance – that is to say the rates of absenteeism would have probably been higher if the no-policy group had been 'in a vacuum'.

Although there are cultural differences, UK universities that typically do not have mandatory attendance policies experience much higher rates of absenteeism than those reported in Marburger (2006). The effect in exam performance of implementing an attendance policy in the UK might be much larger.

The small difference between Marburger's two group's exam performances (see Table 2, column 9) might also be explained in terms of the no-policy group's proximity to these other groups. We might wonder whether, in the absences of follow up seminars (which are typical in the UK), all students in the 2002 cohort got together and formed *ad hoc* 'study clubs' to swot up on the questions likely to appear in that teaching block's exam, which then improved the no-policy group's performance and thereby weakening the 'pure' effects of absenteeism by this group.[3]

It is our feeling and for reasons largely out of his control that Marburger's (2006) experiment was not particularly robust or rigorous. After all if it was felt that the control conditions were robust his findings would suggest that for first year undergraduates, a mandatory policy of attendance (if not attendance itself) is virtually redundant. This is counter to most UK tutor's work-a-day experience and which many US tutors would probably challenge. What can be reasonably concluded from Marburger (2006) is that the influence of the attendance policy on the other groups in the no-policy group's cohort seems to have had spill over effects – ones which facilitated beneficial peer group activity. This suggests that a policy of mandatory attendance might not need to be applied to all the modules in a given year. We develop our analysis of peer groups later in this script.

3. Background to our study

In order to assess the influence of an attendance policy on student performance we adopt the second of the two possible methods mentioned at the beginning of Section 2. Hence in contrast to Marburger's attempt to identify the effect of not enforcing a university-wide attendance policy, our analysis concerns an attempt to identify the effect of implementing an attendance policy which is not university-wide.[4]

Our empirical examination differs from Marburger's (2006) study, but has a similar aim. Unlike the US, mandatory attendance policies in the UK are rare but where attendance is taken into consideration the usual practice is to award marks for attendance at seminars and/or lectures which then make up part the coursework component of the student's final mark. Indeed most UK tutors are not in a position to implement a mandatory attendance policy on their own modules as such a strategy would be against the ethos of their university. These conventions prevent us from replicating Marburger's (2006) policy/no-policy experiment; instead we are studying the variation in student behaviour within one cohort of students where attendance forms part of the student's final marks.

The other major difference is our study draws on the experience of a tutor of a core level 3 module in international economic policy as opposed to Marburger's focus on first year students studying microeconomics. It should be borne in mind that as a final year module many of the students would already know each other having shared many of the same classes in their first and second years. As a result we can be sure that some peer effects will be at work, in contrast to Marburger's (2006) study where new social connections will evolve during the period of study.

One final difference lies in the nature of the final exam, unlike Marburger's students, the students in our study face one single end of year exam (3 hours long) which entails choosing four out of eight questions to answer. Unlike a multiple choice test where the known probabilities of guessing correctly generally encourages the student to attempt all the questions, this exam requires the student to choose those questions they believe they have the best chance of gaining a high mark.

As for similarities with Marburger (2006), we are testing the hypothesis that absence from a seminar can be matched to a low mark for an exam question relating to that seminar's topic: i.e., the effect of absenteeism could be detected and measured. This similarity arises because, as in Marburger (2006), this module makes explicit the link between attendance at seminars and performance in the final exam.

The module

This module ran for the first 12 weeks of an autumn term. The whole cohort met in a lecture which took place at 10.30am on Thursdays, the students were split into three seminar groups; seminar group one met at 11.30am, seminar group two met at 1.30pm and seminar group three met at 3.30pm all on the same day as the lecture.

As part of the assessment, students are expected to write two essays and present a recently published paper to their seminar class. These presentations take place in the seminar slots over the last eight weeks of the module. The papers all contributed to the module's theme, by extending or complementing a particular argument, thus paper number 3 might be strongly related to the findings of papers 1 and 2, while paper number 7 might challenge the findings of papers 3 to 5 and so on. All students in a presenting group received the same mark as determined by the tutor; the mark of their first essay is then weighted by their presentation mark.

The students who make up the audience to these presentations also receive a 'mark' which is conditional on handing in (at the end of the seminar) an evaluation of the presentation. To give structure to these evaluations all students used the same form. This form asks them to comment and grade the introduction, the structure of the presentation, the analysis, the clarity of argument, the conclusion and the usefulness of the presentation for their own revision – these forms are checked by the tutor and are subsequently handed back to the students. The submission of these peer assessments can be thought of as a pseudo module-specific attendance policy as the total number of 'ticks' for attending presentations is then used to weight the students' marks for their second essay.

To make the link between attendance and the final exam explicit the students were informed that the eight questions in the end of year exam related directly and explicitly to each of the eight papers which the students presented over the term. Furthermore, all students were told that good quality cross-referencing to the other papers discussed in the module would attract higher marks in the exam. On several occasions the students were reminded that it was in their interests to attend the presentations as it would count towards their assessment in two ways: higher coursework grades and the opportunity to listen to something which they knew would definitely be in the exam.

Group presentations: the marks and attendance rates

Reflecting the central role that the eight presentations play in both the learning and assessment on this module, Table 3 shows the presentation marks and attendance across the three seminar groups for the whole cohort of 45 students who took this module. This table shows, by group, the number of students in a particular presentation 'team', the percentage mark the 'team' received, the rank of that mark in relation to the presentation marks for all 'teams' and finally the number of students who attended the seminar. The bottom of the table then shows the aggregated marks for the whole cohort.

{Insert Table 3 about here}

The first notable thing from Table 3 is the high levels of attendance – not unlike the attendance rates for the policy group reported in Marburger's (2006) study. However, after the first two presentations the level of attendance varies and interestingly the rates of absence between two of the seminar groups are highly correlated. Correlations for attendance between group 1 and 2 and between group 1 and 3 are 0.74 and 0.75 respectively. Interesting also is the relatively low rate of correlation of attendance between groups 2 and 3; here the correlation is only 0.4. The lowest rate of attendance (79% overall) for all groups was for seminar number 5. Contrary to the typical experience within UK universities, it can be seen that the average attendance rate in these seminars was very high at 90% a fact commented on when this average rate of attendance was discussed with colleagues in the department.

4. The model

Our analysis does not consider the need to work for remuneration which might have impacted on the attendance decision; likewise it was not possible to collect data on whether the student was a local resident.[5] These are important variables and their exogenous effects should by subsumed in the error term; if they did not change between level 2 and 3 then their effects might be included in the ability variable.[6] In order to look at the determinants of student's exam performance (EXAM) for this cohort five important variables were parameterised; these relate to attendance, ability, two variables which represent attempts to capture the different learning and revision strategies students appear to adopt when preparing for the exam, and a peer group effect:

Attendance (ATTENDANCE):
The is the number of peer assessments submitted. The intention here is to see to what extent attendance in general might have on the final exam marks. Not surprisingly the correlation with the exam mark is 0.370 (see Table 4).

Ability (ABILITY):
The module had a prerequisite, and the exam mark for that module is used as an indicator of the student's entry ability.[7] From Table 4 the correlation between ability and exam performance is 0.171. The rather low correlation suggests that these previous exam marks might not be the most suitable indicator of entry abilty. After all, given this is a third year module, we might expect (if not hope) to see a discernable change in the student's learning behaviour and application as, like a runner, they give their all as they approach the finishing line.[8]

Learning strategy for non-attendance (LSNA):
The purpose of this variable is to detect and measure whether there has been an absenteeism effect, as postulated in Marburger (2006). There are eight students (21% of the sample) who have answered an exam question which related to a presentation they did *not* attend, these students are given a score of 1 and all others a score of zero. For students with a score of 1 we would expect a lower overall final exam mark. Table 4 shows that the correlation of LSNA with the exam mark is negative, at -0.127.

Revision strategy for presentation question (RSPQ):
On this module the more effort the student puts into preparing for their presentation then the less effort the student needs to put in for the revision of that question for the exam. To take account of this effect, we include in the regression the rank of the exam question which relates to their presentation. If the mark for the exam question that relates to their presentation was their best (or equal best) mark, then it would be coded 4. If it was the second (or equal second) best then they would receive code of 3. If it was the third (or equal third) best then they would receive a code of 2. If it was their worst mark then it would be assigned a code of 1. Finally if they chose not to answer the question in the exam which related to the paper they presented then it would receive a value of zero. The correlation between this variable and exam mark is 0.286 (see Table 4). It should be noted that this zero score is associated with six of the students in this sample and the average mark for these 6 presentations was 65.17% (sd: 6.80%), compared to 61.08% (sd: 12.04%) for all other presentations.

Peer group ability (PGA):
Finally as students mix with other students we should have a measure of peer groups. For each student we take the average ABILITY mark of all the other students in their seminar group. The correlation between this variable and exam performance is 0.160 (see Table 4).

{Insert Table 4 about here}

Table 4 shows that ability is positively related with exam mark and attendance but negatively related with PGA and RSPQ. This could be explained by better able students deciding to focus their revision on understanding other papers, but unfortunately the student did not then put in the effort on the paper they presented because they thought they knew it well enough. Conversely it might be capturing the effect of less able students deciding to focus on getting a good answer in the exam for the paper they presented. Students who thought about the assessment of this module would realise that it is possible to get 25% of the total exam mark by answering one question perfectly. As the pass mark is 40%, only 5% is needed for each of their other three answers and so they would only need an average individual exam essay mark of 20% for the other questions to pass the exam. Descriptive statistics relating to all these variables appear in Table 5.

{Insert Table 5 about here}

5. Results

Table 6 shows the results of the regressions, which all pass the RESET and *F* tests. We start by isolating the attendance effect and simply regress exam mark on attendance; these results are presented in column 1 of Table 6. The results suggest that for every seminar the student attended, the student could expect to receive a 4.1% increase in their exam mark. Attending a seminar will increase knowledge allowing the student to perform better in the exam.

{Insert Table 6 about here}

Column 2 then presents re-estimates the column 1 but this time including ability. Even after we have taken account of ability it appears that the student can expect to have a higher exam mark by 3.8% for every seminar they choose to attend. The drop in the magnitude of the coefficient might illustrate that with more explanatory variables and individual specific data further regressions might lead to the dilution of the effect of attendance on student achievement. Indeed, the use of student specific dummy variables, as employed by Marburger (2006) may have led to the identification that attendance only has a very small although important effect on student achievement.

We then progress to column 3. In addition to taking into account the impact of attendance and ability on exam performance we now include the effect of peer groups and the student's learning and revision strategies (LSNA & RSPQ). Several interesting points should be emphasised here. First the R^2 increases substantially to 0.348; suggesting that the addition of the extra explanatory variables greatly increase the explanatory power of the model. Second peer group effects are found to be a significant determinant of exam performance, suggesting that better quality peers aid the student's learning ability – this is in line with much of the empirical literature on peer group effects which have come from a variety of contexts. Third ability has a positive effect on exam performance. Fourth the revision strategies are important for their exam performance: answering a question in the exam which corresponds to a seminar that the student did not attend has a positive effect. Earlier we observed that this variable is strongly negatively correlated with attendance; the interesting point however is that the raw data indicates that only one person attended less that 5 of the 8 presentations, and this should have provided all but one of the students enough knowledge to answer 5 questions in the exam – this begs the question why the students decided to answer one of the other questions which they did not attend.

The effect of the revision strategy for the presentation question is reassuring in that this variable is highly statistically significant and positive. It suggests that students who provided relatively better quality answers to the exam question that related to the paper they presented would also receive a higher overall exam mark: for every increase in rank for the presentation related question then they would also obtain a 2.8% higher mark for their overall exam mark.

Finally, the results suggest that if the student answered a question relating to a missed presentation then they would have a higher mark. This is not what we would expect as it seems to suggest that students would do better if they do not attend. Nevertheless attempting these particular questions was a choice. We can understand how this result has come about by looking at the overall exam performance of these eight students as shown in Table 7. The shaded values denote the mark (out of 25) each student received for answering the question which related the presentation they did *not* attend. From Table 7 we can see that for all but student number 6 (from group one) this mark was greater than their average mark per question. Furthermore the attendance at presentations for all but student number 6 was at least 62% or above.

{Insert Table 7 about here}

While Table 6 explains how the learning strategy of non-attendance has come to have a positive effect it does not explain why it is the case. It follows that the low attendance of student number 6 would make it more difficult for them to exploit the skills and understanding of their peers, which is what we believe has occurred in the case of the other students. That is to say regular attendance which has been facilitated by the design of this module's assessment and curriculum have enabled students to rely on their fellow students to help them learn and catch up on missed material – an effect we believe might have happened in Marburger's (2006) study.

The point of this exercise, however, is to investigate the effect of attendance on exam mark, and to show an appreciation of the complexity of the issue. Once we take into consideration the effects of peer groups and student specific revision and learning strategies then the effect of attendance on exam mark is strong and statistically significant; it also appears stable and robust to the inclusion of extra explanatory variables. Put another way, the lack of an appreciation of the contribution of peer groups and student strategies means that the effect of attendance on exam mark appears to be diluted. In our sample, once we take into account peer groups and student strategy the effect of attending one extra seminar would have increased the student's exam mark by over 7.7%. This high value seems to vindicate the intention of this module's curriculum, namely that it is designed to make the link between seminar activities and the final exam explicit and transparent to all students, as a result students' attendance is improved.

6. Discussion

The purpose of this paper was to analyse the methodology and findings of Marburger (2006) and to identify whether the effect of implementing an attendance had a similar effect as removing one. Marburger's (2006) study indicates that the removal of a mandatory attendance policy has a small effect on exam performance, a magnitude of only 2%. The results presented in this study suggest that the implementation of an attendance policy increases exam performance: a student can expect to receive an extra 7.7% for each extra seminar they attend.

In order to fully appreciate the differences in these results, we need to recognise that the removal of the mandatory attendance policy in Marburger's (2006) study is set within an environment where attendance is relatively high, at about 85%. He observed only a small fall in attendance by the students to about 76%. This study shows that an attendance policy has contributed to the attainment of a 90% attendance rate; for comparison, our anecdotal evidence for the UK suggests that attendance can be as low as 35% by the end of the academic year.

The relationship between attendance and exam performance may not be linear; the effect of attendance criteria on exam performance are likely to be much stronger at low levels of attendance and are likely to reduce as attendance rate rise. Further empirical investigations should be undertaken to identify whether this is the case across disciplines, universities and countries.

7. Conclusion

This paper has investigated the relationship between attendance and exam performance. We constructively criticised Marburger's (2006) study which suggests that higher attendance only has a small positive effect on exam performance. The paper has presented an alternative examination based on the effect of implementing an attendance policy; the results suggest there is a large effect on exam performance.

Although the results presented here suggest that attendance is important in determining exam success, other factors are also important in predicting exam performance which are correlated with attendance; these include learning and revision strategies adopted by the students and peer group effects.

Common to both studies is the explicit and transparent link between attendance and the exam. This not only makes attendance more attractive, it reduces the need for students to speculate what will be in the exam making their revision both focused and efficient. It appears that in both studies the assessment design might have had a bigger role in determining exam success than both studies expected or indeed focused on. Nevertheless for first year students some form of attendance policy (either engineered through policy or encouraged by innovative curriculum design) might be desired if it aids students to develop social connections that they can rely on later, not only in their first year but in their final year.

Finally, the disparities in the results suggest that the relationship between attendance and exam performance may not be uniform or constant; the effect of attendance criteria on exam performance is likely to be much stronger at low levels of attendance and is likely to reduce as attendance rate rise. Further empirical investigations should be undertaken to identify whether this is the case across disciplines, universities and countries.

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Table 1: All Cohorts: 2001 to 2003

2001 cohort	**Control**	**2002 cohort**	**Control**	**2003 Cohort**	**Control**
(1) 10.00 MWF	Policy	(1) 10.00 MWF	Policy	(1) 10.00 MWF	Policy
(2) 12.00 MWF	Policy	**(2) 12.00 MWF**	**No - Policy**	**(2) 12.00 MWF**	**Policy**
(3) 2.00 MWF	Policy	(3) 2.00 MWF	Policy	(3) 2.00 MWF	Policy

Table 2: Summary of Marburger's (2006) results

Organisation of classes and exams(1)			**Rates of absenteeism**(2)		**Average number of classes missed**(3)		**Increased likelihood of incorrect response – percentage**(4)	
Teaching block	No. of classes	Exam number	No Policy (2002)	Policy (2003)	No Policy (2002)	Policy (2003)	Because of absence - all students	Because of **no policy**
I	12	1	13.8	12.5	1.7	1.5	9.0	0.06
II	11	2	21.4	10.8	2.4	1.2	12.8	0.87
III	12	3	27.2	11.2	3.3	1.3	14.0	1.96
Average			**20.78**	**11.52**	**7.3**	**4.0**		

Sources: [1]Marburger (2006, fn5, p. 155); [2]Marburger (2006, p. 150); [3]Author calculations from our understanding of Marburger's (2006) paper; [4]Marburger (2006, Table 5, p. 154)

Table 3: Group presentations: marks and attendance

Paper number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Ave
Group 1 (n = 17) time: 11.30 am									
Number presenting	2	2	2	2	2	3	2	2	
Mark (%)	66	54	67	52	70	66	67	57	62.38
Rank of mark	**4**	**7**	**2**	**8**	**1**	**4**	**2**	**6**	
No. attending	15	14	13	14	11	11	12	12	12.75
Group 2 (n= 14) time 1.30 pm									
Number presenting	1	2	2	2	2	2	1	2	
Mark (%)	53	58	56	73	60	56	0	65	52.63
Rank of mark	**7**	**4**	**5**	**1**	**3**	**5**	**8**	**2**	
No. attending	13	12	12	11	9	11	12	10	11.25
Group 3 (n= 14) time 3.30 pm									
Number presenting	2	2	2	1	1	2	2	2	
Mark (%)	63	65	57	63	59	62	75	66	63.75
Rank of mark	**4**	**3**	**8**	**4**	**7**	**6**	**1**	**2**	
No. attending	12	12	10	13	10	12	9	9	10.88
Over all (n = 45)									
Paper number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Number presenting	5	6	6	5	5	7	5	6	
Ave Mark (%)	62.2	59.0	60.0	62.6	63.8	62.0	56.8	62.7	61.14
	4	7	6	3	1	5	8	2	
Total Attendance	45	44	41	43	35	41	38	37	40.50
Attendance (%)	100	98	91	96	78	91	84	82	90

Note: *n* = 45

Table 4: Correlations between variables

	EXAM	ATTENDANCE	ABILITY	LSNA	RSPQ	PGA
EXAM	1	0.370	0.171	-0.127	0.286	-0.230
ATTENDANCE	–	1	0.211	-0.783	0.056	-0.229
ABILITY	–	–	1	-0.182	-0.231	-0.554
LSNA	–	–	–	1	0.028	0.085
RSPQ	–	–	–	–	1	-0.051
PGA	–	–	–	–	–	1

Note: *Obs* = 38.

Table 5: Descriptive statistics of variables

	Mean	SD	Skew	Max	Min	Kurtosis
Exam	52	12.333	-1.405	70	14	4.943
ATTENDANCE	7.289	1.113	-2.022	8	3	7.376
ABILITY	58.921	10.226	-0.292	81	35	3.163
LSNA	0.211	0.418	1.420	1	0	3.017
RSPQ	2.421	1.464	-0.393	4	0	-1.840
PGA	57.304	1.192	0.454	59.154	54.500	2.268

Notes: *Obs* = 38

Table 6: Regression results

	1	2	3
ATTENDANCE	4.103 (1.716)**	3.876 (1.771)**	7.736 (2.652)***
ABILITY		0.117 (0.193)	0.417 (0.219)*
PGA			3.145 (1.846)*
LSNA			13.333 (7.008)*
RSPQ			2.777 (1.274)**
Constant	22.088 (12.649)*	16.850 (15.407)	-218.694 (119.857)*
F test	5.72**	2.99*	3.42**
R^2	0.137	0.146	0.348
RESET test	0.93	0.82	0.83

Notes: *Obs* = 38.

Table 7. The exam performance of students answering an exam question which related to a presentation they did *not* attend.

Student number & group number	sex	Total seminars attended	**Exam questions attempted & the mark out of 25**								Ave Mark per question	Total Exam mark
			Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**		
2 / 1	m	6	13			12			10	**12**	11.75	47
3 / 1	m	5	11	15			**14**	9			12.25	49
6 / 1	m	3	10	9	**1**	6					6.50	26
16 / 2	m	7	10	18		**15**			7		12.50	50
17 / 2	m	5	9	10	12		**15**				11.50	46
18 / 2	m	7	15	14	16		**14**				14.75	59
29 / 3	m	6	14			13	**15**		12		13.50	54
30 / 3	f	6	14	16		17	**14**				15.25	61

1 In terms of the attendance policy, footnote 2 (page 154) states that a student who misses more than twice the number of lectures normally scheduled per week would receive an ‘F’ grade and that student who misses more than 6 microeconomics classes would receive an ‘F’.

2 The reported results on the link between exam performance and absenteeism are rather surprising. From Table 2 we see that for all students, who missed a given class, the likelihood of responding incorrectly to a question relating to that class’s topic increases from 9% in exam 1 to 14% in exam 3. Yet when absenteeism was at it highest for the no-policy group, in teaching block III and prior to the final exam, this group was only 2% more likely to get a wrong answer compared to those students in the policy group.

3 As it is we can not speculate any further as Marburger does not tell us the distribution or average marks for all nine groups covering 2001 to 2003. Other concerns rest with the exam results, firstly we are given no details about the time or the length of the exams, or the number of multiple choice questions that were set or the number of choices found in each question. Burton (2001) demonstrates that a typical 60-question four-choice test is “inherently too unreliable for the demands commonly placed on it” (p 47). If it turns out that the exams set during Marburger’s study where of this nature then the degree of guessing could be significant, and would comprise the validity of the final marks for all students.

4 It is our view that the impact of either removing or imposing a policy on attendance is unlikely to be uniform across attendance rates or consistent across cohorts. Each approach will arrive at different conclusions which could then mislead policy makers.

5 It is interesting to note from Marburger’s study that the local students worked less; this is most evidence in the policy class. In the no-policy class there were fewer locals and these individuals worked more hours on average. This may be associated with higher living costs for rent (not living at home with parents) and for travel costs to get back home to see the family

6 The extent to which the year 2 mark accurately captures the student’s ability is questionable; the analysis of the changes in exam marks is presented below.

Table fn6: Changes in exam performance between year 2 and year 3 for this sample of students

Grade Order	Observations	Average % Change
70% +	4	-25.3%
60 – 69%	13	-1.3%
50 – 59%	16	+4.2%
40 – 49%	3	+16.6%
39% or less	2	+55.8%

We would expect there to be some degree of regression to the mean, after all the exam mark captures ability and a degree of luck on the day; we would therefore expect students who received higher grades in level 2 to get lower grades in level 3 and for the reverse to have occurred for the less-able students. Of course, this is based on the proposition that there is an element of luck. If this were not generally the case then one might expect to see some degree of stratification in that relatively more- (less-) able students remain relatively more- (less-) able, and this should be borne out in the results. Nevertheless, we are surprised by the amount of average increase in the exam mark for students at the bottom end of the distribution and further research should focus on attempting to identify which types of students gain most from an explicit focus on attendance (either engineered by policy or by curriculum design). It might be possible to identify whether it is the least able students who gain the most from a heavy emphasis on attendance, as is hinted at in the above table.

7 This prerequisite module is only applicable if the student followed a specific course. This prerequisite module was not taken by 7 students as they came to the module through a different (non-standard) route, which means that this data attrition reduces the sample to 38 in these descriptive statistics and the econometrics which follow.

8 This possibility is further supported by the fact that the degree awarded to the student is based on 70% of the level 3 marks and 30% on their level 2 marks.