

## **Validating the differences between Associate and Bachelor students by comparing performances in a combined class setting**

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*Abstract: Observed differences between Associate and Bachelor students are often justified by citing the comparative poorer performance of 2-year students that continue into 4-year programs. This research offers a different approach by investigating introductory-level management courses taught as a combined class at a regional campus of a state university. Results indicated noted differences between the two groups in regard to exam grades, peer reviews and attendance. This analysis of combined sophomore-level management courses supports prior findings of transfer student performance in upper-level courses.*

*Keywords: Associate students, Bachelor students, combined courses*

The growth of 2-year Associate programs has been accompanied by studies that reveal inherent differences between the students in these programs and the more traditional students in 4-year institutions. The qualitative findings about differences in social background, preparation level, commitment level, reason for enrollment, etc. (Monk-Turner, 1995; Alfonso, 2006; Whitfield, 2005) were often supported by more quantitative research revealing comparative poorer performance by 2-year students who continued their education into the 4-year programs (Smith, Opp, Armstrong, Stewart and Isaacson, 1999; Strauss and Volkwein, 2002). These students were referred to as transfer students, while traditional Bachelor students were referred to as native students.

Few studies have been done on the performance differences seen in combined classes of 2-year Associate and 4-year Bachelor students (Etzkorn, Weisskop, and Gholston, 2004). This study investigates the consequences of enrolling 2-year Associate and 4-year Bachelor students in a combined introductory management course. This felicitous research opportunity thus poses the question: if Associate students who transfer to Bachelor programs have been found to perform at a lower level in junior and senior level courses than native Bachelor students, does a similar performance differentiation exist at the sophomore level in a combined class setting? The method differs from existing comparative analyses in two ways: 1) the students are at the sophomore level of their academic career, and 2) the study includes all of the Associate students, not just the select students who continue their education.

### **I. Literature Review.**

The inherently different and changing missions of 2-year and 4-year colleges are to be considered in trying to teach students from both institutions in the same classroom. At their outset, the primary function of junior colleges, now referred to as “community colleges”, was to provide two years of course work suitable for transfer to 4-year institutions (Wilson, 1983). This

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philosophy has now changed as many 2-year programs are considered self-sufficient and a logical path to certain types of employment. Still, research indicates that community college students have a lower social class background (Monk-Turner, 1995) and are more likely to attend part-time (Alfonso, 2006). A study of over 7,000 students in 51 New York State University institutions concluded that 2-year students received higher grades while 4-year students experienced more growth (Strauss and Volkwein, 2002). The study also indicated that the different missions of 2-year and 4-year campuses exerted significantly different influences on undergraduate grade point average (GPA) and intellectual growth.

Nonetheless, the academic concern for growth and retention has created interest in the issue of 2-year students transferring into 4-year programs. The concept of “transfer shock” was an important milestone in early community college research, becoming an easy write-off of the responsibility for student performance (Hills, 1965; Boswell, 1992). Whitfield (2005) expanded this concept by describing a “transfer achievement gap” between transfer and native students that did not decline as students spent more time in the university (4-year) environment. Rather than portraying transfer shock as a temporary and recoverable effect, Whitfield referred to the ongoing effect as a “transfer coma.” Within this research is a perception that community college students are less academically talented than their university counterparts, feeding into the claim that community colleges do not adequately prepare students for upper-division study (Whitfield, 2005).

So it came to pass that the demands placed on higher education to be cost effective and meet the timetable expectations of students have caused some universities to combine apparently similar courses. Students from different majors register for a course specific to their degree requirements and find themselves in a classroom with students registered for a course with a different designation. Such combined courses have the potential for student performance considerations due to the inherent differences in the distinct populations. The question of student performance within combined courses has been addressed by researchers with various results.

Early research on the topic of combined courses indicated that the practice was logical for various reasons. Patterson (1974) compiled a list of seven principles that, in his opinion, should be agreed upon and assumed before an institution considered combining courses. One is the principle that the institution should minimize duplication of education programs and redundancy of facilities by striving for complementary academic programs. Research data concerning combined courses are traditionally averaged over numerous academic departments, so the reported results provide little incentive or direction for course-specific curricular change (Quanty, Dixon and Ridley, 1999).

Although academic researchers have found numerous differences between 2-year and 4-year programs, efforts to combine apparently similar courses into a rather seamless transition are apparent. Whitfield (2005) found that academic institutions have made great efforts to reach agreements about course equivalencies in order to ensure that students do not lose credits upon transfer from Associate to Bachelor programs. In a sample collecting data from 1,172 two-year college presidents, there were over 9,000 partnerships between 2-year and 4-year colleges (Smith, Opp, Armstrong, Stewart and Isaacson, 1999). In Washington State, 30% of students who earn a Bachelor’s degree begin their education at one of the state’s 33 community colleges. This “two plus two” system is used to help alleviate the facility problems that would otherwise overburden the state university system (SBCTC, 2003).

A commonly-used determinant of whether a student should be enrolled in associate or bachelor level coursework is the student’s scores on college entrance exams such as the ACT

from the American College Testing Program. The ACT measures subject-specific knowledge on a variety of subjects such as social studies, mathematics, natural sciences and English. A criticism of the ACT tests is that they are based on the judgment of high school and college instructors about the academic knowledge and skills students need to succeed in typical first-year college courses (Aggarwal, Vaidyanathan and Rochford, 2004). Nonetheless, ACT scores were found to be good predictors of first-year business students' grade point averages (Aggarwal, Vaidyanathan and Rockford, 2004) and predictors of transfer students being able to obtain a higher-level Bachelor degree (Dickerson, 1993).

The study of transfer student performance also strengthened the argument that such research was course-specific. A study involving 11 community colleges from the period of 1996 through 2002 found that examining transfer student performance at the course-specific level is essentially worthwhile when a course or sequence of courses is an important gateway to an academic or professional program (Whitfield, 2005). Quany, Dixon and Ridley (1999) agreed, indicating that the success of transferring from community college to the university setting is course-specific and should not be generalized.

Moreover, another area that may distinguish the performance of students within the classroom is attendance. Numerous researchers have found a direct relationship between class attendance and course grades: it has been found in economics (Cohn and Johnson, 2006), in psychology (Gunn, 1993), and in finance (Park and Kerr, 1990). If students who attend class regularly are more likely to receive higher grades in these courses, the same findings may apply to management students, regardless of whether they are pursuing 2-year or 4-year diplomas.

## **II. Method.**

The Associate degree program of the regional campus in the study contains a course entitled Introduction to Management Technology. This course is described as a study of management principles and represents the capstone management course for management majors in the 2-year degree program. There is one prerequisite business course, Introduction to Business, which concentrates on the social, economic and consumer environments of business in general.

Within the same regional campus all 4-year students in the College of Business, regardless of major, are required to take an initial management course entitled Principles of Management. This course is described as an introductory course in management and organizational design. The only prerequisite for the course is a sophomore standing; however it serves as the prerequisite for numerous management courses that logically build on it.

Due to the logistic concerns of a regional campus that offers both Associate and Bachelor programs on a relatively small scale, these two introductory management courses have been combined for many years. This study is an analysis of the results of the combined course, taught by the same instructor at the same campus 11 times over 4 years. One hundred seventy Associate and 117 Bachelor students were involved in the study. There was no differentiation of course requirements between the two groups of students. All students were required to take four exams based primarily on a popular management textbook and participate in a group project requiring work outside the classroom. For this reason, we adopted the average of the four exam grades as the main individual performance indicator of each student.

The demographic data collected on each student included their major (2-year Associate or 4-year Bachelor), gender and class meeting time (day or evening). Two additional variables were also available: the student's classroom attendance percentage and ACT score. The specific

ethnicity of the students in the study was not available; however current school records indicate that the campus student body is 95% white, 2% black, 1% other, and 2% unreported. The age of the students in the study was not available, but the sophomore standing requirement for the course would mirror the campus average of 25 years.

An additional performance metric was the average score on a peer review conducted by fellow group members. The peer review requirement is done in a manner consistent with other course assignments. The students are placed into groups of four to six by the instructor to insure diversity as far as gender, work experience, personal interest and field of study. This method of group formation was used to avoid any tendency for students to voluntarily group themselves into social cliques or differentiate themselves into groups according to major. The specific topic of the group project was left to the discretion of the team within the framework of the course and approval by the instructor.

The group assignments were completed at the end of the regular semester, requiring a paper and corresponding presentation. The peer review process was conducted during finals' week. The peer review form was passed out to each student individually and the atmosphere was that of a typical test. The students knew the form was being graded and the only person viewing it was the instructor. The form required the student to evaluate all members of the group on 12 common group assignment criteria. The student was then required to give an overall assessment of the performance of each group member as Excellent, Good, Acceptable or Needs Improvement. An area for comments was provided on the form. A four-point scale was attached to the overall summary performance choices. The resultant peer evaluation grade for each individual used in the study was the average of the scores they received from all fellow group members.

In an effort to encourage students to give serious consideration to completing the form accurately, 20% of their group grade was the thoroughness of completing the form and 20% was the aggregate score of how they were assessed by their peers. Because the group assignment constituted 20% of the final grade, the net effect was 4% of each student's final grade was determined by how he or she reviewed their peers and 4% was determined by how he or she was reviewed by their peers. The students were reminded throughout the semester about the importance of this activity, and the resultant atmosphere associated with it was as serious as the other course testing.

### **III. Results.**

Gender and age issues were not found substantially relevant to the exam grades and are not reported here. The exam grades for the Associate students averaged noticeably lower than the Bachelor students (73.1% vs. 82.6%). Based on a grading scale of ten percentage points per letter grade (90s = A, 80s = B, etc.), 2-year students' exam grades were one full letter grade lower than their 4-year counterparts.

On the basis of the four-point peer evaluation rating scale, Associate students were rated an average of 3.04 and Bachelor students were rated an average 3.49. As to the issue of attendance, Associate students were in class an average of 83.2% of the time, as compared to the Bachelor students' attendance rate of 85.9%.

Regarding prior-preparation test scores, the regional college campus system operates under an open enrollment policy that requires only a high school diploma for initial admission. The result of this policy is that 189 of the 287 students involved in the study had ACT scores in

their personal files. The remaining students were admitted to the university by taking an internal test designed to reveal initial course placement needs or through transfer from another institution. So, as far as could be determined, Associate student ACT scores averaged 20.0 and Bachelor students averaged 21.4.

A t-test was conducted to determine whether the means of the two groups of students were significantly different in each of the four measurables. As shown in Table 1, the resultant t-values came to 2.21 to 7.46. The corresponding level of significance for these values exceed the accepted alpha level for social research of .05, indicating that the differences between the means were not simply due to chance. The average, median, standard deviation and standard error of the mean, for exam grades, peer reviews, attendance and ACT scores, as broken down by program, can be found in Table 1. The t-values and levels of significance (two-tailed) comparing the 2-year and 4-year means for the four measurables are also provided.

**Table 1. Demographic measurables.**

<b>Demographic (n)</b>	<b>Exam Grade %</b>	<b>Peer Review</b>	<b>Attendance %</b>	<b>ACT Score</b>
<i>2-year (170)</i>				
Average	73.1	3.04	83.2	20.0
Median	75.0	3.00	88.0	20.0
Std Dev	10.7	0.75	14.8	3.0
Std Err of Mean	0.80	0.06	1.11	0.28
<i>4-year (117)</i>				
Average	82.6	3.49	89.8	21.4
Median	84.0	3.50	92.0	21.0
Std Dev	7.7	0.55	10.3	3.4
Std Err of Mean	0.79	0.05	1.0	0.41
<i>Total (287)</i>				
Average	77.0	3.22	85.9	20.5
Median	79.0	3.30	90.0	21.0
Std Dev	10.6	0.71	13.6	3.2
Std Err of Mean	0.63	0.04	0.80	0.24
<i>2-year vs. 4-year t-test</i>				
t-value	7.46	5.77	3.97	2.21
Significance	0.001	0.001	0.001	0.025

Class records provided various demographics, allowing for these measurables to be analyzed according to gender and scheduled class time (day versus evening). There were no significant performance differences between male and female students for any of the four measurables. This supported similar findings of upper-level economics courses (Williams, Waldauer and Duggal, 1992). An analysis of performance differences between day and evening students revealed almost identical average and median scores for all four measurables.

As displayed in Table 2, the correlation analysis between the four measurables of the study revealed that exam grades, peer reviews and attendance are all good predictors of each other. Social science guidelines consider Pearson correlation sizes of 0.37 or larger as evidence of

substantial correlation effects. This is how we interpret the Pearson correlations numbers of 0.358 and 0.466, with a two-tailed significance level of 0.000 between attendance and exam grades and peer reviews respectively. It is useful to note that, in this particular case, the corresponding r-squared values indicated that 13% to 22% of the variance of either variable is shared by the other variable.

ACT scores proved to be a good indicator of exam grades, with a Pearson correlation of 0.455, a two-tailed significance of 0.000, and an r-squared value of 0.207. On the other hand, ACT scores were not significantly correlated to either peer reviews or attendance. The correlation, significance, and r-squared values of the four measurables can be found in Table 2.

**Table 2. Correlation between measurables.**

	<b>Exam Grade</b>	<b>Peer Review</b>	<b>Attendance</b>	<b>ACT Score</b>
<i>Exam Grade</i>				
Correlation	1.00			
Significance	X			
r-squared	X			
<i>Peer Review</i>				
Correlation	0.428**	1.00		
Significance	0.000	X		
r-squared	0.183	X		
<i>Attendance</i>				
Correlation	0.358**	0.466**	1.00	
Significance	0.000	0.000	X	
r-squared	0.128	0.217	X	
<i>ACT Score</i>				
Correlation	0.455**	0.000	0.049	1.00
Significance	0.000	0.998	0.508	X
r-squared	0.207	0.000	0.002	X

\*\* Correlation is significant at the 0.01 level (two-tailed test)

#### **IV. Limitations.**

This study was limited to one combined course taught 11 times on one campus. The combined course setting is ideal for testing performance differences of 2-year and 4-year students; so expanding this research method to other Associate/Bachelor combined courses and other locations would give greater credibility to the findings.

Another limitation was the inability to compare these findings of distinct group performance in the combined class setting to performance from similar courses that remained separated for Associate or Bachelor students. The relatively small size of the campus in the study prohibited offering the course exclusively to each group. Reproducing this research method in a larger academic setting with more scheduling options might provide new research opportunities.

## V. Conclusions and Recommendations.

The significant positive correlation between exam grades and peer reviews found in this study raises interest in the area of multi-source assessment. This is an area in which practice is considered well ahead of empirical research (London and Smither, 1995), indicating a clear need for additional research on 360-degree feedback systems (Dunnette, 1993; London and Beatty, 1993; London and Wohlers, 1991). The application of the peer review research methods used in this study to other management courses could contribute to these expressed needs.

This study revealed that, at the sophomore level, Associate management students attended class less often, contributed less to group projects, and scored lower on coursework exams than their Bachelor student counterparts in the same classroom setting. The independent samples t-test values indicate that these differences were not due to chance. These findings support existing research about performance differences between the two groups conducted under the different circumstances of upper-level courses involving only Associate-to-Bachelor transfer students.

Decisions concerning combined courses are often made for administrative reasons without sufficient regard to appropriate scholarly research concerning the impact that such decisions have on students. While some scholars have hypothesized that combined courses may increase the learning experience for the 2-year students, this study indicate marked differences in exam performance, team performance, and classroom attendance exist between the groups. Curricular decisions to combine Associate and Bachelor students in the same class should be carefully considered if a goal of the institution is to maintain the highest standards in its baccalaureate program.

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