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ABSTRACT

Cohort groups in higher education have been established in response to the demographic shifts that have occurred with greater proportions of adult students and students who work off-campus. Cohort groups are defined as a group of students who begin coursework in a degree or certificate program together and who remain together for at least two-thirds of the classes in the program. This cohort learning study compared the learning outcomes of students in 12 matched groups, 6 representing degree programs scheduled in traditional, non-cohort formats and 6 representing the same degrees at the same institutions but in cohort formats. The institutions represented three large public research universities, one private research institution, and one private comprehensive institution. From a total of 353 students surveyed, usable response data came from 287. Learning outcomes were measured by grade point averages and the results of a student self-survey. Comparison between all cohort and non-cohort groups showed slightly higher cohort student learning on affective, cognitive, and learning transfer dimensions. Overall, there were more similarities than differences in learning outcomes between the cohort and non-cohort students surveyed. One figure and seven tables of data are appended. (Contains 25 references.) (JLS)

# Postsecondary Education in Cohort Groups:

# Does Familiarity Breed Learning?

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# POSTSECONDARY EDUCATION IN COHORT GROUPS: DOES FAMILIARITY BREED LEARNING?

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Demographic shifts on college and university campuses throughout the United States, specifically toward greater proportions of adult students and students who work off-campus, have inspired remarkable creativity in the development of course and program formats aimed at accommodating changing student needs and preferences. Faculties and administrators have demonstrated growing interest in innovative schedules (e.g., weekend programs, evening courses, intensive schedules) and new structural responses (e.g., off-campus sites, interactive video) that recognize the logistics of student life (Adelman and Reuben, 1984; East, 1988; Kerr, 1994; Thompson, 1985).

Cohort programs comprise one such structural response and are establishing a growing presence on American college and university campuses (Reynolds and Hebert, 1995). For purposes of this study, a "cohort" is defined as a group of students who begin coursework in a degree or certificate program together and remain together for at least two-thirds of the classes in the program. These lock-

step groups contrast to the "stranger groups" better known in traditional higher education classes, and they are found in programs ranging from the widespread "executive" MBA and MPA endeavors to educational administration graduate degrees and job specific professional certification programs. While cohorts are most commonly found in professional fields, they also have been initiated in disciplines in the humanities and social sciences. While they are particularly responsive to working adults who return to higher education for graduate degrees, they also can be found as formats for undergraduate degree programs. As colleges and universities continue to pursue innovative arrangements for demographically diverse student populations, cohort programs can be expected to grow in number. Additionally, they are looked to for cost efficiencies, since they establish economies of certainty by assuring exactly who and how many will be in each class (Massy and Zemsky, 1990).

A 1992 review of literature found numerous studies of the extent and learning impact of intensive courses (Scott and Conrad). Evening classes and modular courses also have been the subject of at least some outcome investigation (Conrad and Pratt, 1986; East, 1988; Eckert, 1972; Woodruff and Mollise, 1995). Cohort formats, however, have been the subject of only limited investigation; and, beyond anecdotal reports, little is known about the learning outcomes for cohort students and how they may vary from students in more traditional programs where each class is a new mix of students.

**The Cohort Learning Impact Study: Purpose and Framework**

The cohort learning impact study extends earlier research by Reynolds and Hebert (1995) that examined student and faculty processes in cohort and non-cohort groups. Specifically, the earlier investigation studied matched groups of cohort and non-cohort students in graduate programs on three campuses to determine possible differences in student interaction and student-faculty interaction (both in and out of class), as well as possible differences in task and social group cohesiveness in cohort and non-cohort classes. The research results, based on statistical significance in the analysis of student survey data and on interviews with faculty teaching in both cohort and non-cohort programs, indicated that cohort groups do experience greater in and out of class interaction and greater group cohesiveness than non-cohort groups in the same degree programs on the same campuses.

A mental leap from these findings to learning impact might be motivated by a variety of studies that have demonstrated the influence of peers, faculty and other campus socializing agents on educational outcomes (Lacy, 1978; Pascarella, 1980; Smith, 1977; Terenzini, Theophilides & Lorang, 1984). However, this possibility of indirect learning effects from cohort arrangements is less appealing in light of research demonstrating that numerous student involvement variables influence learning outcomes in a manner that is cumulative and interrelated, rather than specific to any one or more variables (Pascarella, 1989; Terenzini, Springer & Pascarella, 1993). Thus, it does not automatically follow that the gains in interaction and cohesion experienced by cohort groups lead, in and of themselves, to

enhanced learning. In fact, at least some analysts have noted that cohesive groups can suffer from distracting social interaction that contributes to "reduced likelihood of successful goal attainment" (Davis, 1969). An appropriate next step in studying cohort program arrangements was to examine more directly their possible influence on student learning. The study reported here was aimed at beginning to understand if and how cohort groupings of college and university students influence learning outcomes. Whereas the earlier study examined how course environments compared between cohort and non-cohort groups, the recent study examined how learning outcomes compare between cohort and non-cohort groups. It was designed to contribute a piece to the puzzle of myriad influences on learning by addressing, "What are the learning outcomes of students in degree programs with cohort structures, and to what extent do they differ from learning outcomes of students in degree programs with non-cohort (stranger group) structures?".

"Learning outcomes" are framed in this study by a taxonomy suggested by Astin (1973) which views postsecondary educational impact in terms of the interaction of time span with two types of learning outcomes, cognitive and affective, and two types of data used to measure those outcomes, psychological and behavioral. Cognitive development, as defined in this study and others, refers to intellectual processes such as knowledge acquisition, communication, analysis, critical thought and reasoning. Affective development is in the domain of personal maturation and includes attitudes, values, interpersonal competencies, self esteem and self doubts. Astin's reference to psychological data refers to students'

attitudinal or trait related demonstrations of outcomes which suggest development of internal attributes; whereas the behavioral data element refers to observed or experienced activities which suggest development of external states. In the Astin taxonomy, college outcomes may be viewed on a two-by-two matrix as cognitive development assessed from behavioral or psychological data or as affective development assessed from behavioral or psychological data. Learning related to both the cognitive and affective dimensions and assessed in terms of psychological and behavioral data is seen as important in the design of this study. An additional dimension also is particularly relevant to the working adult students in professional degree fields whose needs are substantially responsible for the development of cohort programs. This dimension is labeled "learning transfer" in this study and refers to the perceived application of classroom learning in other settings.

These outcome dimensions--cognitive learning, affective learning, and learning transfer--comprise the dependent variables of the cohort learning impact study. The impact of the program structure variable--cohort or non-cohort--on these outcomes is the issue of investigation. The final framework for the learning dimensions examined in this study then becomes an adaptation from the original Astin matrix, with the two affective learning quadrants (affective/behavioral and affective/psychological) collapsed together into "affective learning" and with the comparable cognitive quadrants labeled individually as "cognitive learning" (the cognitive/psychological quadrant) and "learning transfer" (the cognitive/behavioral quadrant). Figure 1 depicts these relationships.

**Design and Methods**

The cohort learning study compared the learning outcomes of students in 12 matched groups, six representing degree programs scheduled in traditional, non-cohort formats and six representing the same degrees at the same institutions, but in cohort formats. For example, a group of MPA students in a traditional format program was matched with a group of MPA students in a cohort program on the same campus, with several classes in the traditional program surveyed and students from two cohorts (first year of study and second year of study) surveyed. This matching, limited to students who had completed at least six courses in their required program of study, yielded paired groups that were subject to similar admissions and graduation requirements, similar course content and, in many cases, the same instructors. Such matches increased confidence that data could reveal any environmental (program format) influences since the cohort/non-cohort variable in the same degree program on the same campus had little correlation with input variables such as age, sex and previous level of academic achievement (Astin, 1970).

The 12 student groups were drawn from five campuses, representing three large public research institutions, one private research institution and one private comprehensive institution. institution. Three groups were students pursuing business degrees in cohort formats; and these were matched with three pursuing business degrees in traditional formats at the same institutions. Two public administration cohorts were matched with two public administration programs in

traditional formats on their campuses, and one educational administration cohort was matched with a traditional format group. From a total of 353 students surveyed, usable response data came from 287.

Learning outcomes were measured by grade point averages and the results of a student self-report survey. While the GPA data demonstrated students' academic achievement, the survey data reported learning acquired in the dependent variable areas of cognitive, affective and learning transfer development. Survey questions about age, employment status, field of study, sex and number of courses completed enabled further attention to input variables. The remainder of the survey included items rated on a five-point Likert-type format ("Strongly agree" to "strongly disagree"). Development of scale items was guided by such sources as the Omnibus Personality Inventory (Heist and Young, 1968), the Critical Thinking Appraisal (Watson and Glaser, 1964) and a self-report index of critical thinking behavior (Chickering, 1972). The nine items of the affective learning scale asked questions about esteem, intellectual curiosity, values, interpersonal interactions and anxieties. The eight cognitive learning scale items sought information on knowledge acquisition, skill development, concept use, analysis and critical thought. The learning transfer dimension was represented by questions about the use of subject matter and various interpersonal skills.

The cognitive learning scale had an internal consistency reliability (Cronbach's Alpha) coefficient of 0.86, while the affective learning scale yielded a coefficient of 0.81, and the learning transfer scale had a coefficient of 0.82.

**Limitations**

The two outcome measures, grade point average and self-reports, have well recognized limitations. However, the use of these measures with matched groups of cohort and non-cohort classes afforded controls not generally attained in multi-institutional studies and advantages in terms of internal validity. The students in the study represent masters degree professional programs, and may not be representative of a larger population that could include undergraduates and/or other academic disciplines.

In addition, there is dilemma pertaining to the suggestion that structural aspects (such as program format) in higher education may be important only as indirect effects which influence educational outcomes only through their impact on the direct influence of peer and faculty interaction (Pascarella and Terenzini, 1980; Pascarella, 1984). Nevertheless, a variety of studies do demonstrate direct effects on educational gains through structural characteristics such as course sequencing and combinations (Jones, 1992) and course intensity/duration (Gleason, 1986; Kuhns, 1974; Mazanec, 1972). A further design limitation occurs in taking a segmented approach that examines only one characteristic of the institutional context and only in regard to short-term outcomes. It is probable that sustained changes in affective and cognitive learning, as well as learning application, are cumulative and complex in ways not examined in this study. Therefore, this study does not address the full range of variables leading to learning outcomes or the magnitude of possible learning gains over time.

**Findings and Conclusions**

Taken in the aggregate, comparisons between all cohort and all non-cohort groups showed slightly higher cohort student learning on affective, cognitive and learning transfer dimensions. However, these aggregate differences were significant only in terms of the affective learning scale (Table 1). While students reported substantial learning gains on each scale, the highest gains for both cohort and non-cohort students were reported in learning transfer, the application of skills and knowledge in other settings (Table 3).

As noted in Tables 1 through 4, there is much more similarity than difference in learning outcomes among the cohort and non-cohort students surveyed. Differences in grade point averages also were not statistically significant, although cohort students did tend to have slightly higher grades.

The few significant differences that did occur in the affective learning area indicated that males in cohort groups and younger students (under 30) perceive significantly higher gains in affective learning than their counterparts in non-cohort programs. It is possible, although highly speculative, that gender and age play a part in the baseline starting point of affective development, leading to more or less available "room" for gains in that area.

As might be expected, cohort students who had taken eight or fewer classes reported significantly greater affective learning gains than non-cohort students at that point in their programs. However, the non-cohort students appear to eventually catch up, reporting almost identical affective gains when they have taken more than

eight classes. Class size also may have some influence, as students in non-cohort groups demonstrated slightly greater affective and cognitive learning outcomes than those in cohort classes when programs generally had only 10 to 14 students per class. When classes were generally 15 and above, cohort students reported slightly higher learning gains than the non-cohort students (Tables 1 - 4).

As can be seen in Tables 5 through 7, the analysis of data from students in the three program types followed the overall results in terms of Business Administration and Educational Administration. In both these fields of study, gains in affective learning were significantly higher among cohort students, while the differences in gains in cognitive and learning transfer areas generally were not significant. The educational administration students surveyed deviated from this pattern only in reporting greater cognitive learning gains among cohort students in classes of 25 or more students (Table 7). Business administration cohort students also deviated in only one area, with unemployed students in cohorts reporting greater learning transfer gains than their non-cohort counterparts (Table 5).

The public administration students surveyed told a different story, however, differing from the aggregate results generally--and somewhat surprisingly--in the direction of non-cohort students experiencing greater learning gains than their cohort counterparts in several areas. As Table 6 indicates, this was significant in the case of non-cohort students in small classes and in the learning transfer experienced by non-cohort students working fulltime. It is important to note that the public administration area included data from programs on only two campuses, with

surveys conducted in a total of three cohort and three non-cohort groups. Given the possibility of group anomalies, especially in the cohesive cohort groups, the aggregate data representing all students may be at least as revealing to faculty and administrators as the data for any one field of study.

The results of this study of learning gains among cohort v. non-cohort students are much less dramatic than the earlier Reynolds and Hebert study (1995) that indicated significantly greater interaction (with peers and faculty, in and out of class) and cohesiveness in cohort groups. Together, these results could raise questions about widely suggested links between educational outcomes and in- and out-of-class interaction. Or, they might lend support to the idea that distracting social interaction can cancel out learning gains in cohesive groups (Davis, 1969). However, a more holistic conclusion can be informed by a 1995 study of influences on critical thinking skills, which prompted the authors to appeal for learning outcomes research that can "take into account the multiple sources of influence that span the entire college experience" (Terenzini, et al., p. 36).

While the results of this study alone do not support the notion of possible differential learning outcome influences for cohort v. non-cohort formats, they do have implications for how colleges and universities tackle degree program structural issues. The findings suggest that expectations of learning outcome enhancement derived from cohort arrangements are likely to be disappointed in most areas, but neither do cohort arrangements work against learning outcomes. Instead, it is important to recognize that cohort format is one of a number of contextual variables

that interact together and cumulatively on learning. Additionally, since multi-site studies do not allow for the many possible site-specific influences, individual programs concerned with student learning in cohort and/or non-cohort formats might find it valuable to use this study as a starting point for a more in-depth examination of outcomes particular to their own programs.

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Figure 1. Adapted Learning Outcome Classification*

Type of Outcome

**Cognitive**

**Cognitive Outcomes:**

Critical Thinking
Subject Knowledge
Skills and Attitudes
Reasoning

**Learning Transfer Outcomes:**

On-the-job problem solving
Vocational skill application
Career Development

**Psychological** — **Behavioral**

**Affective**

Values
Beliefs
Attitudes

**Outcomes:**

Interpersonal relations
Self esteem
Self-doubts/ anxiety

**Affective**

*See Astin, Panos, and Creager, 1967.

**Table 1**

**AFFECTIVE LEARNING**

| | OVERALL | | | BUSINESS | | | PUBLIC ADMN | | | EDUCATION | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CM | NCM | t | CM | NCM | t | CM | NCM | t | CM | NCM | t |
| **Gender** | | | | | | | | | | | | |
| Male | 3.75 | 3.54 | 2.45* | 3.69 | 3.51 | 1.73 | 3.77 | 3.75 | 0.13 | 4.03 | 3.34 | 2.37* |
| Female | 3.68 | 3.63 | 0.45 | 3.65 | 3.49 | 0.96 | 3.51 | 3.80 | -1.46 | 4.01 | 3.72 | 1.53 |
| **Age** | | | | | | | | | | | | |
| 26-29 | 4.00 | 3.63 | 2.57* | 3.81 | 3.61 | 0.96 | 4.08 | 3.68 | 1.59 | 4.22 | 3.65 | 1.23 |
| 30-39 | 3.64 | 3.57 | 0.59 | 3.61 | 3.46 | 1.18 | 3.46 | 3.79 | -1.22 | 4.15 | 3.63 | 1.61 |
| 40-49 | 3.75 | 3.69 | 0.23 | 3.73 | 3.78 | -0.12 | 3.69 | 4.17 | -1.32 | 3.91 | 3.52 | 0.90 |
| **Employment Status** | | | | | | | | | | | | |
| Full-time | 3.73 | 3.65 | 1.01 | 3.67 | 3.56 | 1.13 | 3.65 | 3.83 | -1.04 | 4.00 | 3.71 | 1.97 |
| Part-time | 3.92 | 3.45 | 1.24 | 3.67 | 3.32 | 0.72 | ---- | ---- | ----- | ---- | ---- | ---- |
| Not employed | 3.54 | 3.64 | -0.55 | 3.71 | 3.60 | 0.47 | 3.11 | 3.74 | -2.07 | ---- | ---- | ---- |
| **Student Status** | | | | | | | | | | | | |
| Full-time | 3.69 | 3.54 | 1.73 | 3.69 | 3.48 | 1.84 | 3.67 | 3.73 | -0.47 | ---- | ---- | ---- |
| Part-time | 3.79 | 3.66 | 1.18 | 3.64 | 3.53 | 0.79 | 3.43 | 3.98 | -1.56 | 4.01 | 3.86 | 0.95 |
| **GPA** | | | | | | | | | | | | |
| 3.0-3.3 | 3.60 | 3.55 | 0.26 | 3.67 | 3.41 | 1.39 | 3.07 | 3.69 | -1.75 | ---- | ---- | ---- |
| 3.4-3.7 | 3.77 | 3.64 | 1.35 | 3.72 | 3.57 | 1.20 | 3.80 | 3.92 | -0.74 | 4.02 | 3.52 | 1.47 |
| 3.8-4.0 | 3.71 | 3.54 | 1.52 | 3.64 | 3.46 | 1.20 | 3.57 | 3.69 | -0.58 | 4.01 | 3.59 | 2.06* |
| **# Students in class** | | | | | | | | | | | | |
| 10-14 | 3.59 | 3.71 | -0.45 | ---- | ---- | ---- | 3.45 | 4.17 | -2.56* | 4.15 | 3.65 | 1.17 |
| 15-19 | 3.71 | 3.62 | 0.53 | 3.50 | 3.11 | 0.35 | 3.70 | 3.96 | -1.61 | 3.81 | 3.75 | 0.26 |
| 20-24 | 3.84 | 3.55 | 1.98 | 3.59 | 3.19 | 1.46 | ---- | ---- | ----- | 4.08 | 3.44 | 2.56* |
| 25 & over | 3.71 | 3.57 | 1.72 | 3.70 | 3.58 | 1.29 | ---- | ---- | ----- | 4.28 | 3.28 | 1.44 |
| **# Classes completed** | | | | | | | | | | | | |
| LTE 8 | 3.82 | 3.61 | 2.63* | 3.75 | 3.59 | 1.38 | 3.83 | 3.68 | 0.71 | 4.02 | 3.57 | 2.49* |
| GT 8 | 3.54 | 3.56 | -0.19 | 3.38 | 3.46 | -0.49 | 3.61 | 3.88 | -1.61 | ---- | ---- | ----- |
| **Total** | 3.72 | 3.58 | 2.10* | 3.68 | 3.50 | 2.02* | 3.63 | 3.77 | -1.19 | 4.02 | 3.57 | 2.76* |

* $p < 0.05$

CM= Cohort group Mean NCM= Non Cohort group Mean t= t value

**Table 2**

**COGNITIVE LEARNING**

| | OVERALL | | | BUSINESS | | | PUBLIC ADMN | | | EDUCATION | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CM | NCM | t | CM | NCM | t | CM | NCM | t | CM | NCM | t |
| **Gender** | | | | | | | | | | | | |
| Male | 3.93 | 3.84 | 0.99 | 3.84 | 3.85 | -0.03 | 4.09 | 3.95 | 0.88 | 4.08 | 3.65 | 1.29 |
| Female | 3.83 | 3.92 | -0.74 | 3.78 | 3.74 | 0.19 | 3.67 | 4.04 | -1.68 | 4.14 | 4.09 | 0.32 |
| **Age** | | | | | | | | | | | | |
| 26-29 | 3.80 | 3.90 | -0.36 | 3.50 | 3.86 | -0.53 | 3.97 | 4.03 | -0.28 | 4.06 | 3.91 | 0.23 |
| 30-39 | 3.83 | 3.98 | -1.32 | 3.79 | 3.92 | -0.88 | 3.75 | 3.96 | -0.57 | 4.17 | 4.19 | -0.11 |
| 40-49 | 3.97 | 3.98 | -0.04 | 3.91 | 3.94 | -0.07 | 3.99 | 4.19 | -0.50 | 4.07 | 3.93 | 0.30 |
| **Employment Status** | | | | | | | | | | | | |
| Full-time | 3.89 | 3.97 | -0.89 | 3.82 | 3.84 | -0.13 | 3.89 | 4.13 | -1.15 | 4.10 | 4.17 | -0.45 |
| Part-time | 3.88 | 3.70 | 0.51 | 3.50 | 3.61 | -0.27 | ---- | ---- | ---- | ---- | ---- | ----- |
| Not employed | 3.80 | 3.92 | -0.57 | 4.05 | 3.99 | 0.25 | 3.19 | 3.94 | -3.53* | ---- | ---- | ----- |
| **Student Status** | | | | | | | | | | | | |
| Full-time | 3.89 | 3.84 | 0.63 | 3.87 | 3.81 | 0.49 | 3.91 | 3.90 | 0.02 | ---- | ---- | ----- |
| Part-time | 3.88 | 3.95 | -0.63 | 3.71 | 3.80 | -0.65 | 3.64 | 4.40 | -2.06 | 4.09 | 4.11 | -0.13 |
| **GPA** | | | | | | | | | | | | |
| 3.0-3.3 | 3.79 | 3.79 | 0.04 | 4.00 | 3.71 | 1.38 | 3.08 | 3.87 | -0.97 | ---- | ---- | ----- |
| 3.4-3.7 | 3.87 | 3.91 | -0.35 | 3.79 | 3.87 | -0.49 | 3.98 | 4.13 | -0.82 | 3.98 | 3.78 | 0.60 |
| 3.8-4.0 | 3.92 | 3.87 | 0.44 | 3.81 | 3.78 | 0.24 | 3.88 | 3.94 | -0.25 | 4.18 | 3.98 | 0.94 |
| **# Students in class** | | | | | | | | | | | | |
| 10-14 | 3.80 | 4.04 | -0.80 | ---- | ---- | ----- | 3.45 | 4.17 | -2.56* | 4.25 | 3.92 | 0.41 |
| 15-19 | 3.92 | 3.90 | 0.13 | 3.81 | 3.47 | 0.70 | 3.94 | 4.19 | -1.51 | 3.90 | 4.00 | -0.46 |
| 20-24 | 3.81 | 3.93 | -0.69 | 3.46 | 3.81 | -0.87 | ---- | ---- | ----- | 4.13 | 4.00 | 0.26 |
| 25 & over | 3.91 | 3.79 | 1.34 | 3.90 | 3.83 | 0.71 | ---- | ---- | ----- | 4.44 | 3.28 | 4.25* |
| **# Classes completed** | | | | | | | | | | | | |
| LTE 8 | 3.95 | 3.87 | 0.89 | 3.89 | 3.75 | 1.04 | 3.88 | 4.02 | -0.68 | 4.12 | 3.90 | 1.07 |
| GT 8 | 3.78 | 3.88 | -0.93 | 3.56 | 3.84 | -1.86 | 3.86 | 3.96 | -0.50 | ---- | ---- | ----- |
| **Total** | 3.89 | 3.86 | 0.18 | 3.83 | 3.81 | 0.21 | 3.87 | 3.99 | -0.96 | 4.12 | 3.91 | 1.20 |

* $p < 0.05$

CM= Cohort group Mean NCM= Non Cohort group Mean t= t value

**Table 3**

**LEARNING TRANSFER**

| | OVERALL | | | BUSINESS | | | PUBLIC ADMN | | | EDUCATION | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CM | NCM | t | CM | NCM | t | CM | NCM | t | CM | NCM | t |
| **Gender** | | | | | | | | | | | | |
| Male | 4.12 | 4.11 | 0.17 | 4.07 | 4.06 | 0.09 | 4.13 | 4.35 | -1.24 | 4.36 | 3.90 | 1.53 |
| Female | 4.29 | 4.17 | 1.11 | 4.31 | 3.99 | 2.00 | 4.16 | 4.28 | -0.54 | 4.47 | 4.39 | 0.44 |
| **Age** | | | | | | | | | | | | |
| 26-29 | 4.28 | 4.08 | 1.27 | 3.90 | 4.01 | -0.53 | 4.40 | 4.36 | 0.15 | 4.80 | 4.03 | 1.63 |
| 30-39 | 4.06 | 4.23 | -1.37 | 4.08 | 4.13 | -0.31 | 3.78 | 4.29 | -1.60 | 4.47 | 4.47 | 0.00 |
| 40-49 | 4.32 | 4.11 | 0.71 | 4.27 | 4.00 | 0.67 | 4.30 | 3.90 | 1.01 | 4.49 | 4.20 | 0.62 |
| **Employment Status** | | | | | | | | | | | | |
| Full-time | 4.18 | 4.17 | 0.06 | 4.12 | 3.98 | 1.19 | 4.16 | 4.44 | -1.43 | 4.40 | 4.44 | -0.25 |
| Part-time | 4.25 | 4.07 | 0.53 | 3.70 | 4.09 | -1.09 | ---- | ---- | ----- | ---- | ---- | ----- |
| Not employed | 4.31 | 4.14 | 0.92 | 4.56 | 4.11 | 2.30* | 3.70 | 4.27 | -1.46 | ---- | ---- | ----- |
| **Student Status** | | | | | | | | | | | | |
| Full-time | 4.17 | 4.16 | 0.05 | 4.12 | 4.13 | -0.01 | 4.22 | 4.28 | -0.36 | ---- | ---- | ----- |
| Part-time | 4.24 | 4.09 | 1.29 | 4.19 | 3.91 | 1.70 | 3.77 | 4.50 | -3.12* | 4.41 | 4.37 | 0.26 |
| **GPA** | | | | | | | | | | | | |
| 3.0-3.3 | 4.09 | 4.16 | -0.32 | 4.13 | 4.17 | -0.16 | 3.67 | 4.15 | -0.55 | ---- | ---- | ----- |
| 3.4-3.7 | 4.14 | 4.14 | 0.00 | 4.08 | 4.05 | 0.24 | 4.26 | 4.49 | -1.36 | 4.17 | 4.02 | 0.50 |
| 3.8-4.0 | 4.24 | 4.10 | 1.25 | 4.18 | 3.95 | 1.64 | 4.12 | 4.20 | -0.32 | 4.51 | 4.28 | 1.06 |
| **# Students in class** | | | | | | | | | | | | |
| 10-14 | 3.97 | 4.11 | -0.50 | ---- | ---- | ----- | 3.87 | 4.30 | -1.28 | 4.40 | 4.08 | 0.43 |
| 15-19 | 4.29 | 4.16 | 0.76 | 3.90 | 3.68 | 0.41 | 4.26 | 4.29 | -0.10 | 4.57 | 4.50 | 0.26 |
| 20-24 | 4.18 | 4.34 | -1.40 | 4.00 | 4.37 | -2.10 | ---- | ---- | ----- | 4.34 | 4.20 | 0.55 |
| 25 & over | 4.19 | 4.05 | 1.59 | 4.17 | 4.05 | 1.30 | ---- | ---- | ----- | 4.80 | 3.70 | 2.65 |
| **# Classes completed** | | | | | | | | | | | | |
| LTE 8 | 4.23 | 4.16 | 0.97 | 4.17 | 4.04 | 1.20 | 4.05 | 4.30 | -0.86 | 4.42 | 4.19 | 1.53 |
| GT 8 | 4.11 | 4.12 | -0.11 | 4.00 | 4.03 | -0.20 | 4.16 | 4.33 | -0.96 | ---- | ---- | ----- |
| **Total** | 4.19 | 4.14 | 0.79 | 4.14 | 4.04 | 1.21 | 4.15 | 4.31 | -1.28 | 4.42 | 4.19 | 1.38 |

* $p < 0.05$

CM= Cohort group Mean NCM= Non.Cohort group Mean t= t value

**Table 4**

**OVERALL GROUP**

| | AFF. LRNG | | | COG. LRNG | | | LRNG. TRFR | | |
|---|---|---|---|---|---|---|---|---|---|
| | CM | NCM | t | CM | NCM | t | CM | NCM | t |
| **Gender** | | | | | | | | | |
| Male | 3.75 | 3.54 | 2.45* | 3.93 | 3.84 | 0.99 | 4.12 | 4.11 | 0.17 |
| Female | 3.68 | 3.63 | 0.45 | 3.83 | 3.92 | -0.74 | 4.29 | 4.17 | 1.11 |
| **Age** | | | | | | | | | |
| 26-29 | 4.00 | 3.63 | 2.57* | 3.80 | 3.90 | -0.36 | 4.28 | 4.08 | 1.27 |
| 30-39 | 3.64 | 3.57 | 0.59 | 3.83 | 3.98 | -1.32 | 4.06 | 4.23 | -1.37 |
| 40-49 | 3.75 | 3.69 | 0.23 | 3.97 | 3.98 | -0.04 | 4.32 | 4.11 | 0.71 |
| **Employment Status** | | | | | | | | | |
| Full-time | 3.73 | 3.65 | 1.01 | 3.89 | 3.97 | -0.89 | 4.18 | 4.17 | 0.06 |
| Part-time | 3.92 | 3.45 | 1.24 | 3.88 | 3.70 | 0.51 | 4.25 | 4.07 | 0.53 |
| Not employed | 3.54 | 3.64 | -0.55 | 3.80 | 3.92 | -0.57 | 4.31 | 4.14 | 0.92 |
| **Student Status** | | | | | | | | | |
| Full-time | 3.69 | 3.54 | 1.73 | 3.89 | 3.84 | 0.63 | 4.17 | 4.16 | 0.05 |
| Part-time | 3.79 | 3.66 | 1.18 | 3.88 | 3.95 | -0.63 | 4.24 | 4.09 | 1.29 |
| **GPA** | | | | | | | | | |
| 3.0-3.3 | 3.60 | 3.55 | 0.26 | 3.79 | 3.79 | 0.04 | 4.09 | 4.16 | -0.32 |
| 3.4-3.7 | 3.77 | 3.64 | 1.35 | 3.87 | 3.91 | -0.35 | 4.14 | 4.14 | 0.00 |
| 3.8-4.0 | 3.71 | 3.54 | 1.52 | 3.92 | 3.87 | 0.44 | 4.24 | 4.10 | 1.25 |
| **# Students in class** | | | | | | | | | |
| 10-14 | 3.59 | 3.71 | -0.45 | 3.80 | 4.04 | -0.80 | 3.97 | 4.11 | -0.50 |
| 15-19 | 3.71 | 3.62 | 0.53 | 3.92 | 3.90 | 0.13 | 4.29 | 4.16 | 0.76 |
| 20-24 | 3.84 | 3.55 | 1.98 | 3.81 | 3.93 | -0.69 | 4.18 | 4.34 | -1.40 |
| 25 & over | 3.71 | 3.57 | 1.72 | 3.91 | 3.79 | 1.34 | 4.19 | 4.05 | 1.59 |
| **# Classes completed** | | | | | | | | | |
| LTE 8 | 3.82 | 3.61 | 2.63* | 3.95 | 3.87 | 0.89 | 4.23 | 4.16 | 0.97 |
| GT 8 | 3.54 | 3.56 | -0.19 | 3.78 | 3.88 | -0.93 | 4.11 | 4.12 | -0.11 |
| **Total** | 3.72 | 3.58 | 2.10* | 3.89 | 3.86 | 0.18 | 4.19 | 4.14 | 0.79 |

* $p < 0.05$

CM= Cohort group Mean NCM= Non Cohort group Mean t= t value

**Table 5**

**BUSINESS ADMINISTRATION**

| | AFF. LRNG | | | COG. LRNG | | | LRNG. TRFR | | |
|---|---|---|---|---|---|---|---|---|---|
| | CM | NCM | t | CM | NCM | t | CM | NCM | t |
| **Gender** | | | | | | | | | |
| Male | 3.69 | 3.51 | 1.73 | 3.84 | 3.85 | -0.03 | 4.07 | 4.06 | 0.09 |
| Female | 3.65 | 3.49 | 0.96 | 3.78 | 3.74 | 0.19 | 4.31 | 3.99 | 2.00 |
| **Age** | | | | | | | | | |
| 26-29 | 3.81 | 3.61 | 0.96 | 3.50 | 3.86 | -0.53 | 3.90 | 4.01 | -0.53 |
| 30-39 | 3.61 | 3.46 | 1.18 | 3.79 | 3.92 | -0.88 | 4.08 | 4.13 | -0.31 |
| 40-49 | 3.73 | 3.78 | -0.12 | 3.91 | 3.94 | -0.07 | 4.27 | 4.00 | 0.67 |
| **Employment Status** | | | | | | | | | |
| Full-time | 3.67 | 3.56 | 1.13 | 3.82 | 3.84 | -0.13 | 4.12 | 3.98 | 1.19 |
| Part-time | 3.67 | 3.32 | 0.72 | 3.50 | 3.61 | -0.27 | 3.70 | 4.09 | -1.09 |
| Not employed | 3.71 | 3.60 | 0.47 | 4.05 | 3.99 | 0.25 | 4.56 | 4.11 | 2.30* |
| **Student Status** | | | | | | | | | |
| Full-time | 3.69 | 3.48 | 1.84 | 3.87 | 3.81 | 0.49 | 4.12 | 4.13 | -0.01 |
| Part-time | 3.64 | 3.53 | 0.79 | 3.71 | 3.80 | -0.65 | 4.19 | 3.91 | 1.70 |
| **GPA** | | | | | | | | | |
| 3.0-3.3 | 3.67 | 3.41 | 1.39 | 4.00 | 3.71 | 1.38 | 4.13 | 4.17 | -0.16 |
| 3.4-3.7 | 3.72 | 3.57 | 1.20 | 3.79 | 3.87 | -0.49 | 4.08 | 4.05 | 0.24 |
| 3.8-4.0 | 3.64 | 3.46 | 1.20 | 3.81 | 3.78 | 0.24 | 4.18 | 3.95 | 1.64 |
| **# Students in class** | | | | | | | | | |
| 15-19 | 3.50 | 3.11 | 0.35 | 3.81 | 3.47 | 0.70 | 3.90 | 3.68 | 0.41 |
| 20-24 | 3.59 | 3.19 | 1.46 | 3.46 | 3.81 | -0.87 | 4.00 | 4.37 | -2.10 |
| 25 & over | 3.70 | 3.58 | 1.29 | 3.90 | 3.83 | 0.71 | 4.17 | 4.05 | 1.30 |
| **# Classes completed** | | | | | | | | | |
| LTE 8 | 3.75 | 3.59 | 1.38 | 3.89 | 3.75 | 1.04 | 4.17 | 4.04 | 1.20 |
| GT 8 | 3.38 | 3.46 | -0.49 | 3.56 | 3.84 | -1.86 | 4.00 | 4.03 | -0.20 |
| **Total** | 3.68 | 3.50 | 2.02* | 3.83 | 3.81 | 0.21 | 4.14 | 4.04 | 1.21 |

* $p < 0.05$

CM= Cohort group Mean NCM= Non Cohort group Mean t= t value

**Table 6**

**PUBLIC ADMINISTRATION**

| | AFF. LRNG | | | COG. LRNG | | | LRNG. TRFR | | |
|---|---|---|---|---|---|---|---|---|---|
| | CM | NCM | t | CM | NCM | t | CM | NCM | t |
| **Gender** | | | | | | | | | |
| Male | 3.77 | 3.75 | 0.13 | 4.09 | 3.95 | 0.88 | 4.13 | 4.35 | -1.24 |
| Female | 3.51 | 3.80 | -1.46 | 3.67 | 4.04 | -1.68 | 4.16 | 4.28 | -0.54 |
| **Age** | | | | | | | | | |
| 26-29 | 4.08 | 3.68 | 1.59 | 3.97 | 4.03 | -0.28 | 4.40 | 4.36 | 0.15 |
| 30-39 | 3.46 | 3.79 | -1.22 | 3.75 | 3.96 | -0.57 | 3.78 | 4.29 | -1.60 |
| 40-49 | 3.69 | 4.17 | -1.32 | 3.99 | 4.19 | -0.50 | 4.30 | 3.90 | 1.01 |
| **Employment Status** | | | | | | | | | |
| Full-time | 3.65 | 3.83 | -1.04 | 3.89 | 4.13 | -1.15 | 4.16 | 4.44 | -1.43 |
| Not employed | 3.11 | 3.74 | -2.07 | 3.19 | 3.94 | -3.53* | 3.70 | 4.27 | -1.46 |
| **Student Status** | | | | | | | | | |
| Full-time | 3.67 | 3.73 | -0.47 | 3.91 | 3.90 | 0.02 | 4.22 | 4.28 | -0.36 |
| Part-time | 3.43 | 3.98 | -1.56 | 3.64 | 4.40 | -2.06 | 3.77 | 4.50 | -3.12* |
| **GPA** | | | | | | | | | |
| 3.0-3.3 | 3.07 | 3.69 | -1.75 | 3.08 | 3.87 | -0.97 | 3.67 | 4.15 | -0.55 |
| 3.4-3.7 | 3.80 | 3.92 | -0.74 | 3.98 | 4.13 | -0.82 | 4.26 | 4.49 | -1.36 |
| 3.8-4.0 | 3.57 | 3.69 | -0.58 | 3.88 | 3.94 | -0.25 | 4.12 | 4.20 | -0.32 |
| **# Students in class** | | | | | | | | | |
| 10-14 | 3.45 | 4.17 | -2.56* | 3.45 | 4.17 | -2.56* | 3.87 | 4.30 | -1.28 |
| 15-19 | 3.70 | 3.96 | -1.61 | 3.94 | 4.19 | -1.51 | 4.26 | 4.29 | -0.10 |
| **# Classes completed** | | | | | | | | | |
| LTE 8 | 3.83 | 3.68 | 0.71 | 3.88 | 4.02 | -0.68 | 4.05 | 4.30 | -0.86 |
| GT 8 | 3.61 | 3.88 | -1.61 | 3.86 | 3.96 | -0.50 | 4.16 | 4.33 | -0.96 |
| **Total** | 3.63 | 3.77 | -1.19 | 3.87 | 3.99 | -0.96 | 4.15 | 4.31 | -1.28 |

* $p < 0.05$

CM= Cohort group Mean NCM= Non Cohort group Mean t= t value

**Table 7**

**EDUCATION**

| | AFF. LRNG | | | COG. LRNG | | | LRNG. TRFR | | |
|---|---|---|---|---|---|---|---|---|---|
| | CM | NCM | t | CM | NCM | t | CM | NCM | t |
| **Gender** | | | | | | | | | |
| Male | 4.03 | 3.34 | 2.37* | 4.08 | 3.65 | 1.29 | 4.36 | 3.90 | 1.53 |
| Female | 4.01 | 3.72 | 1.53 | 4.14 | 4.09 | 0.32 | 4.47 | 4.39 | 0.44 |
| **Age** | | | | | | | | | |
| 26-29 | 4.22 | 3.65 | 1.23 | 4.06 | 3.91 | 0.23 | 4.80 | 4.03 | 1.63 |
| 30-39 | 4.15 | 3.63 | 1.61 | 4.17 | 4.19 | -0.11 | 4.47 | 4.47 | 0.00 |
| 40-49 | 3.91 | 3.52 | 0.90 | 4.07 | 3.93 | 0.30 | 4.49 | 4.20 | 0.62 |
| **Employment Status** | | | | | | | | | |
| Full-time | 4.00 | 3.71 | 1.97 | 4.10 | 4.17 | -0.45 | 4.40 | 4.44 | -0.25 |
| **Student Status** | | | | | | | | | |
| Part-time | 4.01 | 3.86 | 0.95 | 4.09 | 4.11 | -0.13 | 4.41 | 4.37 | 0.26 |
| **GPA** | | | | | | | | | |
| 3.4-3.7 | 4.02 | 3.52 | 1.47 | 3.98 | 3.78 | 0.60 | 4.17 | 4.02 | 0.50 |
| 3.8-4.0 | 4.01 | 3.59 | 2.06* | 4.18 | 3.98 | 0.94 | 4.51 | 4.28 | 1.06 |
| **# Students in class** | | | | | | | | | |
| 10-14 | 4.15 | 3.65 | 1.17 | 4.25 | 3.92 | 0.41 | 4.40 | 4.08 | 0.43 |
| 15-19 | 3.81 | 3.75 | 0.26 | 3.90 | 4.00 | -0.46 | 4.57 | 4.50 | 0.26 |
| 20-24 | 4.08 | 3.44 | 2.56* | 4.13 | 4.00 | 0.26 | 4.34 | 4.20 | 0.55 |
| 25 & over | 4.28 | 3.28 | 1.44 | 4.44 | 3.28 | 4.25* | 4.80 | 3.70 | 2.65 |
| **# Classes completed** | | | | | | | | | |
| LTE 8 | 4.02 | 3.57 | 2.49* | 4.12 | 3.90 | 1.07 | 4.42 | 4.19 | 1.53 |
| **Total** | 4.02 | 3.57 | 2.76* | 4.12 | 3.91 | 1.20 | 4.42 | 4.19 | 1.38 |

* $p < 0.05$

CM= Cohort group Mean NCM= Non Cohort group Mean t= t value

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