

Grade Points in Comparable Courses: Teacher Education Majors Vs. Other Majors in the University

A data set was formed whereby the grade points for the four core courses required of all St. Cloud State University students could be compared. The data set consisted of a snapshot of information essentially procured at the time that students were admitted to one of the majors at St. Cloud State University, 2001 to 2007.

The four courses are laid out below, based on their *Student Handbook* descriptions and their match to the type of content knowledge that candidates should display in getting ready for careers in teaching.

Table 1. A matrix of the relationship between core courses and content knowledge.

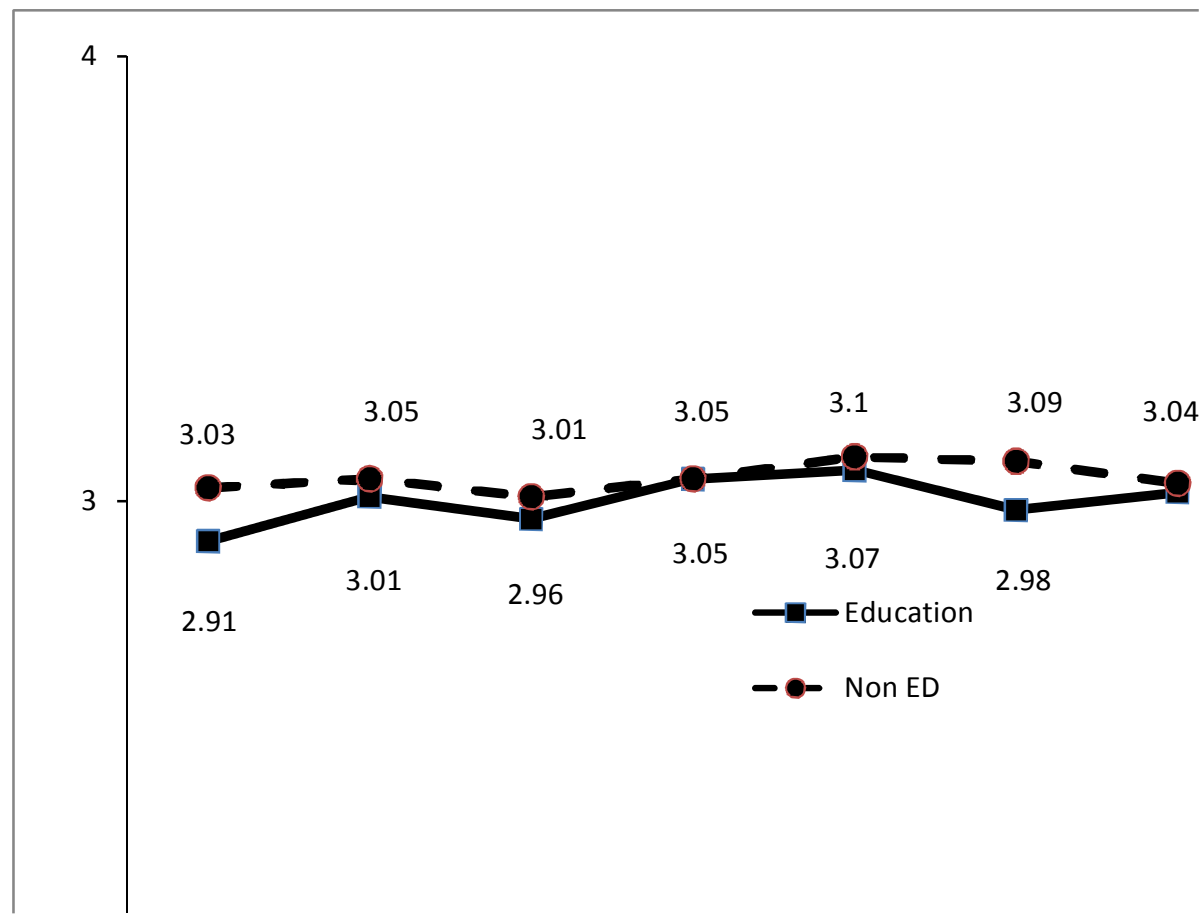
Course	Description	Relationship to Content Knowledge
ENGL 191 Introduction to Rhetorical and Analytical Writing	Analytical reading, writing, and critical reasoning in various rhetorical situations. Argumentative research project comprising analysis and interpretation of information, texts, and perspectives	Written language skills that will be used in all areas of education (Communication Arts and Literature majors pursue more courses in written expression)
CMST 192 Introduction to Communication Studies	Interpersonal communication, small group communication and public speaking. Theory and experience to relate meaningfully, think critically, organize clearly, and speak and listen effectively	Spoken language lies at the center of the teaching enterprise. Critical thinking about rhetoric is a higher-order skill employed by educators at all levels
MATH 193 Mathematical Thinking	Development of problem solving and decision making strategies using mathematical tools from arithmetic, algebra, geometry, probability, and statistics. Skills to communicate and defend solutions and decisions	This is the basic mathematics course that emphasizes mathematical reasoning (particularly algebra) that prepares education majors to apply mathematics to their fields. The course prepares students for Math 330 and mathematics methods courses
PHIL 194 Critical Reasoning	Reasoning about human values, human knowledge and our place in the scheme of things. Conceptual analysis, identifying and analyzing arguments, and recognizing fallacious reasoning	This is the only course that deals with the analysis of arguments across disciplines. It allows education majors to grow and develop in the area of critical and reflective thinking, content central to the educational enterprise

Average Performance

Figure one shows the average performance of education majors across the four courses. T-tests were run by year with MAJOR (Education Vs. Other) as the independent variable and average across the four courses as the dependent variable. Grade points (0.00 to 4.00) in the four courses were moderately (and significantly) correlated, ranging from .112 (CMST Studies and English) to .933 (CMST and Math). When the average across the four courses was treated as a scale, the reliability (Cronbach's alpha) proved to be .866.

Since seven t-tests (one per academic year) were run on the mean scores, Bonferroni's inequality was used to adjust alpha levels. The end result is that no alpha was considered significant unless it proved to be less than .01 ($.05/6 = .008$, rounded to .01). Using this standard, none of the mean grade scores proved significant across the seven academic years. In figure 1, the scores on the top were those of non-education majors, the scores on the bottom are those for education majors.

Figure 1. Education versus non-education majors average grade points in comparable courses by year (AY 00-01 through 06-07, Communication Studies 192, English 191, Math 193, and Philosophy 194).



Communication Studies 197

The same analysis as described above was run for each of the four courses across the years of the investigation. Results From academic year (AY) 2000-2001 through AY 2005-2006, no differences were observed between the performance of education majors and non-education

majors in CMST 197. However, in 2006-2007, education majors ($M = 3.30$, $SD = .56$) significantly outperformed their non-education peers ($M = 3.10$, $SD = .69$) ($t_{1379} = 3.32$, $p = .001$).

English 191

No statistically significant differences accrued between students admitted to teaching fields and those not so admitted in any academic year for ENGL 191. Descriptive data are shown below.

Math 193

Strictly speaking, differences did not accrue for education versus-non-education majors in any year in Math 192. However, in 2002-2003, the differences approached significance ($t_{573} = 2.40$, $p = .017$). If that alpha level were accepted, then a slight mean difference favored non-education majors (3.26 vs. 3.21). In real terms, the difference was extremely small.

Philosophy 194

No differences were observed between education majors and non-education majors across any of the seven academic years.

Descriptive Performance of Education Candidates

Table one shows the performance of education majors in the four courses across the years of the investigation. The “percent above 1.67, is the proportion of education majors who could be said to have truly learned content; it is equivalent to a C- and reflects all scores above the D and F range. According to St. Cloud State University grade descriptors, instructors are supposed to separate C and D at an adequate or above level of performance in the skill and knowledge set taught in the course.

As can be seen in Table 1, the great majority of education majors acquired the content of the four courses, if performance in the C range or better matches this assumption. Performance has either held steady at about 97 percent. Note that most teaching candidates in the college do not need to earn grades of C or better in these courses. Rather, these courses are reflected in overall GPA. However, the great majority of teacher candidates earn C’s or better in these core courses.

Conclusions

1. In comparisons with non-teaching majors, prospective educators perform as well as their non-teaching peers in virtually all comparative courses. In one course, MATH 193, non-education majors outperformed their education peers by a slight margin, ***but only in one academic year*** (2003-2004). Education majors outperformed other majors in CMST 197 during AY 2006-2007 by a significant margin.
2. The great majority of education majors earned grades in the C-range or above; figures hovered around 97% during the length of the study.

3. About 2 in 3 education candidates, performed within the B-range or better across the core courses, indicating that a majority had moderate-to-strong skills in the basic, college-level content domains of written expression, oral communication, mathematics comprehension/problem-solving, and critical thinking.
4. Only about half of education candidates came into the field with performance in the B range or higher; this is an area where growth could be targeted in subsequent years.
5. As St. Cloud State University moves to a more rigorous assessment system, it is quite likely that grades, especially in the four core courses, will be tied increasingly closely to performance descriptors in the key domains covered in the classes. When this occurs, grades are likely to have more meaning than they have had in past years. Because of this, these figures are useful as a baseline to evaluate future performance.

Table1. Performance of education candidates in four core courses.

Course	2000-2001		2001-2002		2002-2003		2003-2004		2004-2005		2005-2006		2006-2007	
	M (SD)	% ¹	M (SD)	%	M (SD)	%	M (SD)	%	M (SD)	%	M (SD)	%	M (SD)	%
CMST 192	3.00 (.52)	100.0	3.47 (.55)	100.0	3.32 (.54)	100.0	3.29 (.59)	100.0	3.25 (.58)	100.0	3.12 (.68)	98.6	3.30 (.56)	100.0
ENGL 191	3.28 (.63)	100.0	3.38 (.65)	100.0	3.31 (.64)	100.0	3.36 (.65)	99.2	3.28 (.71)	98.1	3.28 (.72)	98.5	3.38 (.62)	99.2
MATH 193	2.69 (.76)	98.6	2.74 (.76)	98.4	2.61 (.82)	97.0	2.66 (.82)	94.4	2.56 (.91)	89.7	2.49 (.73)	96.0	2.48 (.83)	91.9
PHIL 194	2.72 (.84)	93.1	2.83 (.86)	92.6	2.88 (.83)	95.6	2.86 (.81)	97.7	3.10 (.78)	96.8	2.96 (.82)	96.8	2.83 (.74)	98.2
Mean Percent	----	97.9	-----	97.7	----	98.2	----	97.8	----	96.2	----	97.5	----	97.3

¹Percent scoring at 1.67 or above

Table2. Performance of education candidates in four core courses, B- or above.

Course	00-01	01-02	02-03	03-04	04-05	05-06	06-07
	Percent ¹	Percent	Percent	Percent	Percent	Percent	Percent
CMST 192	90.0	93.3	93.1	89.0	89.0	83.7	90.7
ENGL 191	89.3	89.9	88.6	92.4	89.7	85.9	92.9
MATH 193	55.3	56.9	48.8	54.5	51.5	45.6	46.8
PHIL 194	59.4	66.0	65.2	63.4	79.2	68.8	69.1
Mean Percent	73.5	76.5	73.9	74.8	77.4	71.0	74.9

¹Percent scoring at 2.67 or above