CLASS SIZE: IT S INFLUENCE TO FACULTY EVALUATION BY STUDENTS

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ABSTRACT

The study attempted to find if there is an influence of class size to Faculty Evaluation by Students. Specifically it sought to determine if physics class size has an influence to physics, statistics, mathematics and information technology - teacher's evaluation by student's according to a. Mastery, preparation, organization and presentation of subject matter; b. Communication and teaching skills; c. Classroom management and d. Personal qualities, punctuality and attendance.

The result of the research could be used to improve the performance of teachers in mathematics, information technology, statistics and physics. From the result, the factor of teacher's evaluation by students that could be significantly influenced by the class size could be considered in the preparation of faculty loadings made every semester. Appropriate class size that would give a better performance of faculty in each area could be recommended.

The findings of the study show that the higher the class size, the lower the evaluation rating on: a) Mastery, preparation, organization and presentation of subject matter; b) Communication and teaching skills; c) Classroom management and d) Personal qualities, punctuality and attendance of physics and information technology teachers. It was also seen the higher the class size the lower the evaluation rate on mastery, preparation, organization and presentation of subject matter; and Personal qualities, punctuality and attendance of statistics teachers. The higher the class size the lower the evaluation rating on mastery, preparation, organization and presentation of subject matter of mathematics teachers.

It is therefore concluded that class size has a significant influence on physics and information technology - teacher's evaluation by student's according to: a). Mastery, preparation, organization and presentation of subject matter; b). Communication and teaching skills; c). Classroom management and d). Personal qualities, punctuality and attendance.

Class size has a significant effect to mathematics - teacher's evaluation by students according to mastery, preparation, organization and presentation of subject matter. Class size has a significant influence on statistics - teacher's evaluation by students according to mastery, preparation, organization and presentation of subject matter; and on personal qualities, punctuality and attendance.

INTRODUCTION

Research on class size influences at the college level is limited. In one sense, this is surprising since the range of college class sizes dwarfs the typical range of primary and secondary class sizes: at many institutions, class sizes range from four or five students to five hundred or more. Even when the course is taught by the same instructor, class size can vary considerably from semester to semester. Thus, college courses may constitute a relatively under-exploited laboratory from which to infer class size effects. Further, if class sizes do matter in higher education, this huge size variation might be some cause for concern. Indeed, the perception that college class size matters appears to be widespread: parents seem willing to pay a large tuition premium for small class sizes. (Bedard and Kuhn, 2005)

Most of the studies on class size were on its influence on student achievement. But most of the findings remain inconclusive. From the eight very methodologically diverse studies reviewed by Toth and Montagna (2002), the results were as varied as the methods, with two studies showing no relationship between class size and achievement, three indicating a negative relationship, two showing mixed results, and another reporting a positive relationship between these two variables. Additionally, a common theme appears to emerge from many of these studies which is a lack of statistical power due to small samples, loose overall methodological design, narrow assessments of achievement as measured by course grade alone, and in some cases, a lack of quantitative data.

Other studies on class size indicate that class size influence varies with subject matter--even within a discipline (McConnell and Sosin, 1984, Raimondo *et al.*, 1990). Class size in university calculus classes matters only in relation to teacher (Jarvis, 2000). Class size was not significant, and even the teacher-size interaction influence was only weakly significant. No other interaction terms involving size were significant. This suggests that if there is any effect on students' achievement due to class size, it is a function of the individual teacher and her or his ability and attitude, rather than a function of the size alone. This is also corroborated

by Marsh (1981) as cited by Gordon that the effect of the teacher on student ratings was much larger than the effect of the course being taught. Therefore, student evaluations reflected the effects of the instructor, not the course. In another study by Marsh and Hocevar (1984), they examined the consistency of student evaluations for university instructors who taught the same course at least four times in four years and concluded that the pattern of ratings for one instructor was similar throughout the four years. Marsh and Bailey (1993) analyzed the rating profiles of 123 instructors during a 13-year period. Results from their analysis indicated high consistency/stability of the profile shape of the same instructor over time, regardless of course taught.

To date, only a few studies of college class size and student ratings exist. Among these, as cited by Bedard and Kuhn (2005), McConnell and Sosin (1984), DeCanio (1986), and Siegfried and Walstad (1990) find that students dislike larger classes. However, their results may confound the influence of class size and instructor quality since, for example, department chairs might systematically assign better instructors to larger (or smaller) classes. Existing estimates may also confound course size and course difficulty, since college administrators may make an effort to assign smaller class sizes when the subject matter is more difficult (Bedard and Kuhn, 2005).

Other researches showed varied results. As cited by Simmons (1996), relationship of class size and student evaluation was uncertain (Wigington, Tollefson and Rodriguez,1989), no relationship (Feldman, 1978, 1984) and smaller classes have higher evaluation ratings (Smith & Glass, 1980 and Whitten and Unble, 1980). Jarvis (2000) in his study also cited the following - Wood, *et al.* (1974) who concluded that student ratings of instructors declined as enrollment increased to 240, but beyond that point they began to improve; Marsh *et al.*, 1979 found little correlation between class size and students' attitudes about the course; and Sweeney, *et al.* (1983) found that large economics courses were actually preferred over small ones.

The research findings above corroborated with the statement of Arreola (2000) in his book as cited by an article in the newsletter Closing the Loop: "There is no consistent relationship between class size and student ratings. However, the belief that class size affects student ratings is one of the oldest and most popular myths in education."

In an article by Mckinney, it was stated that research shows a small and negative, but practically insignificant, relationship between class size and student ratings. A variety of studies using several differ-

ent methodologies have assessed which factors account for the most variance in student ratings. It is the instructor and instructor variables, rather than course variables that account for the most variance in student ratings. Researchers conclude that most student evaluations should be used to evaluate instructors, not courses.

Instructors may believe that student course/teacher evaluations are unreliable, invalid, biased, and affected by many inappropriate factors. In general, the research does not support these beliefs (McKinney, 1997). It is still the case, however, that student ratings, and their interpretation, have limitations. Student ratings should be only one source of information used for the evaluation of teaching, and the interpretation and proper uses of student ratings are at least as important as the ratings themselves.

For over thirty years, exhaustive research has been compiled on student evaluations, that when they are appropriately developed and administered, they remain useful tools in impacting the teaching-learning process on the higher education front. As cited by Germain-Rutherford (2003) in the studies done by Huitt (1995) and Stockham & Amann (1994), regardless of purpose of student evaluations, formative or summative, their use implies belief in the following principles:

1. Learning is an active process and student involvement is an integral part of that process.

2. Student characteristics and behaviors impact perception of and interaction with the teacher.

3. Teachers view their teaching with regard to the paradigms of their students in order to facilitate change and build for growth.

4. Teachers recognize that students can make important contributions to the teaching-learning process.

5. The teaching-learning process is dynamic and should change over time and with context.

What is the importance of student evaluation? What are the determinants of student evaluation scores? In the paper of Gordon, the following studies were cited: Marsh (1983, 1984, 1993) consistently found out that the single most important factor influencing student evaluations was amount learned and the least important factor was course difficulty which was more recently supported by Ryan and Harrison (1995).

Cohen (1981) proposed that if a student knew their final grade in a course, and that grade was high, then the student's perception of amount learned would be high and he or she would directly attribute that grade to effective teaching, and the student rating would be correspondingly high. However, higher grades in a course may actually reflect grading leniency, rather than amount learned. Without comparison to some outcome measure, there is no way to tell.

Student ratings tended to be more favorable when expected grades were higher, prior subject interest was higher, levels of workload/difficulty were higher, and the percentage of students taking the course for general interest was higher.

Feldman (1988) compared the opinions of college faculty with those of college students as to what teacher characteristics resulted in what one might call good teaching. Faculty and students agreed on nine points. They include:

1. Knowledge of the subject/discipline;
2. Course preparation and organization;
3. Clarity and understandability;
4. Enthusiasm for subject/teaching;
5. Sensitivity to and concern with students' level and learning progress;
6. Availability and helpfulness;
7. Quality of examinations;
8. Impartiality in evaluating students; and
9. Overall fairness to students.

Does class size matter to faculty evaluation? This is the question that the researchers would like to determine since in Benguet State University, the sizes of classes in Physics, Mathematics, Statistics and Information Technology subjects offered to the different courses as general education subject vary from small to large which are generally composed of freshmen and second year students.

The result of the research could be used to improve the performance of teachers in mathematics, information technology, statistics and physics. From the result, the factor of teacher's evaluation by students that could be significantly affected by the class size could be considered in the preparation of faculty loadings made every semester. Appropriate class size that would give a better performance of faculty in each area could be recommended.

OBJECTIVE OF THE STUDY

The study attempted to find if there is an influence of class size to Faculty Evaluation by Students. Specifically it sought to determine if class size has an influence on the following teacher's evaluation specifically on Mastery, preparation, organization and presentation of subject matter; Communication and teaching skills; Classroom management; and on personal qualities, punctuality and attendance by students

    a. Physics teachers
    b. Mathematics teachers
    c. Statistics teachers
    d. Information Technology teachers.

MATERIALS AND METHODS

LOCALE AND POPULATION

The research was conducted at Benguet State University, La Trinidad, Benguet. Subjects considered were mathematics, physics statistics, and information technology. All of these subjects are under the department of Mathematics, Physics and Statistics department. The class sizes of these subjects offered during the second semester of the school year 2007-2008 were used in the study.

RESEARCH DESIGN

At least three replica of each class size were used in the research. For the faculty evaluation, at least three teachers were considered per subject area; seven faculty members from the mathematics group, seven from the information technology group, three from the statistics group, and six from the physics group. One to one correspondence was used to correlate class sizes with the faculty evaluation by students result grouped according to subject area and according to teachers': mastery, preparation, organization and presentation of subject matter; communication and teaching skills; classroom management; and personal qualities, punctuality and attendance. The teachers' evaluation result were also categories making use of the following Likert scale

5	4.20 – 5.00	Excellent	E
4	3.40 – 4.19	Very Good	VG
3	2.60 – 3.39	Good	G
2	1.80 – 2.59	Fair	F
1	1.00 – 1.79	Poor	P

RESULTS AND DISCUSSION

Table 1 presents the influence of student's class size on the physics-teachers' evaluation by students on master, preparation, organization and presentation of subject matter; on communication and teaching skills; on classroom management and personal qualities, punctuality and attendance.

It could be seen from the table that as the class size increases, the faculty evaluation decreases as indicated by the ratings of "excellent" from the lowest class size range of 20 and below to a rating of "very good" at the highest class size range of 61-70.

Table 1. Influence of class size on physics-teachers evaluation

CLASS SIZE	E1	DE	E2	DE	E3	DE	E4	DE	Overall	DE
20 and below	4.73	E	4.73	E	4.73	E	4.90	E	4.93	E
21-30	4.53	E	4.53	E	4.53	E	4.63	E	4.71	E
31-40	4.70	E	4.70	E	4.70	E	4.78	E	4.82	E
41-50	4.23	E	4.23	E	4.23	E	4.52	E	4.47	E
51-60	4.60	E	4.60	E	4.60	E	4.78	E	4.69	E
61-70	4.16	VG	4.16	VG	4.16	VG	4.60	E	4.45	E
TOTAL	4.36	E	4.36	E	4.36	E	4.65	E	4.57	E
R	-0.176**		-0.186**		-0.143**		-0.060*		-0.159**	
Significance	0.000		0.000		0.000		0.027		0.000	

LEGEND:
E1- Evaluation Rating on Mastery, preparation, organization and presentation of subject matter
E2 - Evaluation rating on communication and teaching skills
E3 - Evaluation rating on classroom management
E4 - Evaluation rating on personal qualities, punctuation and attendance
DE- Descriptive Difference

5	4.20 – 5.00	Excellent	E
4	3.40 – 4.19	Very Good	VG
3	2.60 – 3.39	Good	G
2	1.80 – 2.59	Fair	F
1	1.00 – 1.79	Poor	P

The r values of -0.176, -0.186, -0.143 and -0.060 for the different areas are significant at 0.01 level of significance. This implies that there is a significant negative influence of the class size on the physics-teachers' evaluation on mastery, preparation, organization and presentation of the subject matter; on communication and teaching skills; on classroom management and personal qualities, punctuality and attendance. As the class size increases, the physics-teacher evaluation by students on these areas decreases.

The computed overall r value of -0.159 is significant at 0.01 level

of significance. This indicates that there is a significant influence of class size on the physics-teachers' evaluation. The higher the class size, the more students would rate the physics teacher low. This is supported by Jarvis on his research stating that class size in university calculus classes matters only in relation to teacher.

Table 2 presents the influence of student's class size on the mathematics-teachers' evaluation by students on master, preparation, organization and presentation of subject matter; on communication and teaching skills; on classroom management and personal qualities, punctuality and attendance.

Table 2. Influence of class size on mathematics -teachers evaluation

CLASS SIZE	E1	DE	E2	DE	E3	DE	E4	DE	Overall	DE
21-30	4.30	E	4.26	E	4.21	E	4.57	E	4.33	E
31-40	4.49	E	4.43	E	4.48	E	4.57	E	4.52	E
41-50	4.48	E	4.45	E	4.50	E	4.64	E	4.56	E
51-60	4.21	E	4.19	VG	4.20	E	4.42	E	4.26	E
61-70	4.48	E	4.45	E	4.45	E	4.63	E	4.57	E
TOTAL	4.37	E	4.33	E	4.35	E	4.53	E	4.42	E
R	-0.051*		-0.011		-0.032		-0.031		-0.034	
Significance	0.024		0.329		0.102		0.111		0.090	

LEGEND:
E1- Evaluation Rating on Mastery, preparation, organization and presentation of subject matter
E2 - Evaluation rating on communication and teaching skills
E3 - Evaluation rating on classroom management
E4 - Evaluation rating on personal qualities, punctuation and attendance
DE- Descriptive Difference

5	4.20 – 5.00	Excellent	E
4	3.40 – 4.19	Very Good	VG
3	2.60 – 3.39	Good	G
2	1.80 – 2.59	Fair	F
1	1.00 – 1.79	Poor	P

The table shows that low and high evaluation rates were given to mathematics teachers regardless of the class size they belong to. The computed r value of -0.051 for mathematics teacher's rating on mastery, preparation, organization and presentation of subject matter is significant at 0.01 level of significance. This indicates that there is a significant influence of class size on the mathematics-teachers' evaluation on this area. The higher the class size the lower the rating students give to mathematics teachers on this areas.

The computed r values of -0.011, -0.032, -0.031 for the other areas were not significant at 0.05 level of significance. This implies that

there is no significant influence of class size on the mathematics-teachers' evaluation on communication and teaching skills; classroom management; and personal qualities, punctuation and attendance.

The computed overall r value of -0.034 is not significant at 0.05 level of significance. This indicates that there is no significant influence of class size on the overall evaluation of mathematics teachers. This is supported by Wright, Horn and Sanders[4] suggesting that the effects of classroom related variables such as class size appears to be very weak and should not be regarded as inhibitors to the appropriate use of student outcome data in teacher assessment.

Table 3 presents the influence of student's class size on the statistics-teachers' evaluation by students on master, preparation, organization and presentation of subject matter; on communication and teaching skills; on classroom management and personal qualities, punctuality and attendance.

Table 3. Influence of class size on statistics-teachers evaluation

CLASS SIZE	E1	DE	E2	DE	E3	DE	E4	DE	Overall	DE
20 and below	4.64	E	4.56	E	4.64	E	4.64	E	4.64	E
21-30	4.23	E	3.97	VG	4.26	E	4.31	E	4.18	VG
31-40	4.14	VG	3.90	VG	4.05	VG	4.15	VG	4.07	VG
41-50	4.63	E	4.38	E	4.56	E	4.72	E	4.63	E
TOTAL	4.45	E	4.22	E	4.39	E	4.50	E	4.42	E
R	-0.172**		0.086		-0.070		-0.176**		-0.135**	
Significance	0.001		0.059		0.103		0.001		0.007	

LEGEND:
E1- Evaluation Rating on Mastery, preparation, organization and presentation of subject matter
E2 - Evaluation rating on communication and teaching skills
E3 - Evaluation rating on classroom management
E4 - Evaluation rating on personal qualities, punctuation and attendance
DE- Descriptive Difference

5	4.20 – 5.00	Excellent	E
4	3.40 – 4.19	Very Good	VG
3	2.60 – 3.39	Good	G
2	1.80 – 2.59	Fair	F
1	1.00 – 1.79	Poor	P

From the table, it could be seen that there is a decrease in the evaluation rating of statistics teachers on the different areas as class size increases.

The computed r values of -0.172 and -0.176 for the areas: mastery, preparation, organization and presentation of subject matter; and personal qualities, punctuality and attendance are both significant at 0.01

level of significance. This implies that there is a significant negative influence of class size on statistics-teachers' evaluation on mastery, preparation, organization and presentation of subject matter; and on personal qualities, punctuality and attendance. The lower the class size, the higher the rate the students give to statistics teachers on these two areas.

The computed r values of -0.086 and -0.070 for the areas communication and teaching skills; and classroom management respectively are both not significant at 0.05 level of significance. This indicates that there is no significant influence of class size on the statistics-teacher evaluation on communication and teaching skills and on classroom management. Students rate the teacher high and low regardless of class size they belong to.

The computed r value for the overall rating is -0.135 which is significant at 0.01 level of significance. This implies that class size has a significant influence on the overall statistics-teacher evaluation. The higher the class size, the lower the statistics-teacher evaluation rating. Researches supporting this are from Smith and Glass, and Whitten and Umblesupports who said that instructors of smaller classes have higher ratings.

Table 4 presents the influence of student's class size on the information technology-teachers' evaluation by students on master, preparation, organization and presentation of subject matter; on communication and teaching skills; on classroom management and personal qualities, punctuality and attendance.

The table shows that as class size increases from class size range of 21-30 to class size range of 51-60, the evaluation rating of information technology teachers decreases from an "excellent" rating to "very good" rating respectively.

The computed r values of -0.113, -0.156, -0.123 and -0.117 is significant at 0.01 level of significance. This value implies that there is a significant negative influence of class size on the evaluation on mastery, preparation, organization and presentation of subject matter of information technology teachers. As the class size increases, the evaluation rating decreases.

The computed overall r value is -0.138 and is significant at 0.01 level of significance. This indicates that there is a significant negative influence of class size on the overall information technology-teachers evaluation. The higher the class size the lower the overall evaluation rating

the information technology teacher has. Mateo and Fernandez5, in their study using the Complutense University Teachers Evaluation Question-naire affirm that the class size have some impact on teaching ratings.

Table 4. Influence of class size on information technology -teachers evaluation

CLASS SIZE	E1	DE	E2	DE	E3	DE	E4	DE	Overall	DE
21-30	4.34	E	4.26	E	4.34	E	4.36	E	4.35	E
31-40	4.09	VG	4.17	VG	4.18	VG	4.20	VG	4.18	VG
41-50	4.11	VG	4.07	VG	4.18	VG	4.19	VG	4.16	VG
51-60	3.92	VG	3.63	VG	4.01	VG	3.82	E	3.84	VG
TOTAL	4.13	VG	4.11	VG	4.19	VG	4.20	E	4.18	VG
R	-0.113**		-0.156**		-0.123**		-0.117**		-0.138**	
Significance	0.000		0.000		0.000		0.000		0.000	

LEGEND:
E1- Evaluation Rating on Mastery, preparation, organization and presentation of subject matter
E2 - Evaluation rating on communication and teaching skills
E3 - Evaluation rating on classroom management
E4 - Evaluation rating on personal qualities, punctuation and attendance
DE- Descriptive Difference

5	4.20 – 5.00	Excellent	E
4	3.40 – 4.19	Very Good	VG
3	2.60 – 3.39	Good	G
2	1.80 – 2.59	Fair	F
1	1.00 – 1.79	Poor	P

SUMMARY

The study attempted to find if there is an influence of class size on the Faculty Evaluation by Students. Specifically it sought to determine if physics class size has an influence to physics, statistics, mathematics and information technology - teacher's evaluation by student's accord-ing to a. Mastery, preparation, organization and presentation of subject matter; b. Communication and teaching skills; c. Classroom manage-ment and d. Personal qualities, punctuality and attendance.

Findings of the study shows that higher the class size the low-er the evaluation rating on a. Mastery, preparation, organization and presentation of subject matter; b. Communication and teaching skills; c. Classroom management and d. Personal qualities, punctuality and at-tendance of physics and information technology teachers. It was also seen that the higher the class size the lower the evaluation rate on mas-tery, preparation, organization and presentation of subject matter; and Personal qualities, punctuality and attendance of statistics teachers. The higher the class size the lower the evaluation rating on mastery, prepa-ration, organization and presentation of subject matter of mathematics teachers.

CONCLUSION

The findings of the study give the following conclusions:

1. There is a significant influence of class size on the evaluation rating on mastery, preparation, organization and presentation of subject matter; on communication and teaching skills; on classroom management; and on personal qualities, punctuation and attendance of physics and information technology teachers. The higher the class size the lower the evaluation rating on mastery, preparation, organization and presentation of subject matter of physics teachers.

2. There is a significant influence of class size on the evaluation rating on mastery, preparation, organization and presentation of subject matter of mathematics teachers. The higher the class size the lower the evaluation rating on mastery, preparation, organization and presentation of subject matter of mathematics teachers.

3. There is no significant influence of class size on the evaluation rating on communication; classroom management; on personal qualities, punctuation and attendance and teaching skills of mathematics teachers.

4. There is a significant influence of class size on the evaluation rating on mastery, preparation, organization and presentation of subject matter of statistics teachers. The higher the class size the lower the evaluation rating on personal qualities, punctuality and attendance of statistics teachers.

5. There is a no significant influence of class size on the evaluation rating on communication and teaching skills; and on classroom management of statistics teachers.

RECOMMENDATION

Based on the conclusions of the research the following are recommended:

1. Class sizes less or equal to 40 should be a considered for physics, statistics and information technology to improve the teaching-learning process.

2. A corresponding point rating to class size higher than 40 should be

included in the evaluation of teachers.

3. The effect of class size to teacher's capability to provide quality education should be looked in to by the administration.

4. Further studies should be conducted to other colleges of the university to verify the result of the research.

LITERATURE CITED

ARREOLA, R. (2000). Developing a Comprehensive Faculty Evaluation System, 2nd Ed. Anker Publishing Company, Inc. Bolton MA. 83.

BEDARD, K and Kuhn. P. (2005). Class Size Really Matters: Class Size and Student Ratings of Instructor Effectiveness. Economics of Education Review. Available at http://www.econ.ucsb.edu/~pjkuhn/Research%20Papers/Papers.Index.html. Accessed on MArch 29, 2008

COHEN, P. A. (1981). Student ratings of instruction and student achievement: A meta-analysis of multisection validity studies. Research in Higher Education, 51, 281-309

DECANIO, S. J. 1986. "Student Evaluations of Teaching – A Multinomial Logit Approach," Journal of Economic Education 17: 165-175.

FELDMAN, K. A. (1984). Class size and college students' evaluations of teachers and courses: A closer look. Research in Higher Education, 21, 45-116.

FELDMAN, K. A. (1988). Effective college teaching from the students' and faculty's view: Matched or mismatched priorities? Research in Higher Education, 28(4), 291-344

HUITT, W. (1995). A systems model of the teaching/learning process. Educational Psychology Interactive. Valdosta, GA: College of Education, Valdosta State University. Available online: http://www.valdosta.edu/whuitt/psy702/sysmdlhb.html. Accessed on March 29, 2008

GERMAIN-Rutherford, A. (2003) Student Evaluation Questionnaires: Dispelling Misconceptions and Looking at the Literature. Available at: http://spiral.univ-lyon1.fr/files_m/M152/Files/196630_2014.doc. Accessed on March 29, 2008

GORDON, P. A. Student Evaluations of College Instructors: An Overview. Available at: http://chiron.valdosta.edu/whuitt/files/tcheval. Accessed on March 29, 2008

PRITCHARD, Ivor. "Reducing Class Size. What do we know?". Available at: http://www.ed.gov/pubs/ReducingClass/title.html. Accessed on March 29, 2008

JARVIS, T. J. (2000) Class Size and Teacher Effects on Student Achievement and Dropout Rates in University-Level Calculus. Available at: http://www.math.byu.edu/~jarvis/class-size/class-size.html. Accessed on March 29, 2008

MCKINNEY, Kathleen. "What do students ratings mean?" .The National Teaching and Learning Forum, December 1997, Vol. 7 No. 1. Available at: http://www.ntlf.com/. Accessed on march 29, 2008

MARSH, H. W. (1981). The use of path analysis to estimate teacher and course effects on student ratings of instrument effectiveness. Applied Psychological Measurement 6: 47-60

MARSH, H. W. (1983). Multidimensional ratings of teaching effectiveness by students from different academic settings and their relation to student/course/instructor characteristics. Journal of Educational Psychology 75 (1): 150-166.

MARSH, H. W. (1984). Students' evaluations of university teaching: Dimensionality, reliability, validity, potential biases, and utility. Journal of Educational Psychology 76 (5): 707-754.

MARSH, H. W. (1993). Multidimensional students' evaluations of teaching effectiveness. Journal of Higher Education 64 (1): 1-18

MARSH, H. W., & Bailey, M. (1993). Multidimensionality of students' evaluation of teaching effectiveness: A profile analysis. Journal of Higher Education 64 (1): 1-15.

MARSH, H. W., & Hocevar, D. (1984), The factorial invariance of students' evaluations of college teachers. American Educational Research Journal 21: 341-366.

MARSH, H. W., & Overall, J. U. (1979). Long-term stability of students' evaluations. Research in Higher Education, 10, 139-147

MARSH *et al.,* 1979. Class size, students' evaluations, and instructional effectiveness. American Educational Research Journal, 16:57-70.

McCONNELL, C.R. and K. Sosin. 1984. "Some Determinants of Student Attitudes Toward Large Classes," Journal of Economic Education 38: 220-229.

MATEO, M. A., & Fernandez, J. (1996). Incidence of class size on the evaluation of university teaching quality. Educational and Psychological Measurement, 56, (5), 771-778.

SIEGFRIED, J. J. and W. B. Walstad. 1990. "Research on Teaching College Economics," in The Principles of Economics Course: A Handbook for Instructors, ed. P. Saunders and W. B. Walstad. McGraw-Hill, New York pp. 270-286.

SIMMONS, T. L. (1996). Student evaluation of teachers: Professional practice or punitive policy? Shiken: JALT Testing & Evalution SIG Newsletter Vol. 1 No. 1, 12 – 17. Available at: http://www.jalt.org/test/pub.htm. Accessed on March 29, 2008

SMITH, M. L. & Glass, G. V. (1980). Meta-analysis of research on class size and its relationship to attitudes and instruction. American Education Research Journal 17: 419-433.

STOCKHAM, S. L., & Amann, J. F. (1994). Facilitated student feedback to improve teaching and learning. Journal of Veterinary Medicine 21 (2): 51-55

SWEENEY, M. J. B., Siegfried, J. J., Raymond, J. E., and Wilkinson, J. T. (1983). The structure of the introductory economics course in united states colleges. Journal of Economic Education 14 (4): 68-75.

TOTH, L. S. and Montagna, L. G. (2002). Class size and achievement in higher Education: a summary of current research, College Student Journal. FindArticles.com. Available at: http://findarticles.com/p/articles/mi_m0FCR/is_2_36/ai_89809976. Accessed on March 29, 2008

UNIVERSITY OF TEXAS (2002). Closing the Loop, Vol. 2, # 2 December 2002. http://www.engr.utexas.edu/abet/index.cfm. Accessed on march 29, 2008

WIGINGTON, H., Tollefson, N. & Rodriguez, E. (1989). Student's ratings of instructors revisited: Interactions among class and instructor variables. Research in Higher Education 30 (3): 331-344.

WHITTEN, B. J., & Umble, M. M. (1980). The relationship of class size, class level and core vs. non-core classification for class to student ratings of faculty: Implications for validity. Educational and Psychological Measurement 40: 419-423.

WOOD, K., Linsky, A. S., and Straus, M. A. (1974). Class size and student evaluations of faculty. Journal of Higher Education 45: 524-534.