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ABSTRACT

Data on how teaching effectiveness is affected by faculty incentive grants are presented based on a study of a faculty incentive program at Messiah College in Pennsylvania. Its "Excellence in Teaching" program offers awards of up to $5000 each annually to four faculty members based on student evaluations of teaching performance. Applicants must show evidence of effective advising, submit a course evaluation completed by a peer, and have a letter from the department chair indicating quality teaching and advising. They must also submit a proposal for how the money will be used (travel, research, or professional development project). Data for the statistical analysis were drawn from the faculty evaluation instrument Instructional Development and Effectiveness Assessment (IDEA). Each faculty member must have two courses each semester evaluated via IDEA. Summary institutional data for 20 instructional categories provided by the IDEA system were interpreted to see if there was a change in teacher effectiveness ratings during the years the grant program had been in effect. Individual teaching effectiveness measures were compared during the grant program time. Qualitative data were drawn from 10 faculty interviews asking for impressions of the grant program. Results indicate the following: the introduction of the incentive program has had no significant impact on teaching effectiveness; informative use of such rewards may increase motivation; and the program reflects an institutional desire to increase publishable works by faculty. Tables and the questionnaire are included. Contains 11 references. (SM)

The Impact of Faculty Incentive Grants on Teaching Effectiveness

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The Impact of Faculty Incentive Grants on Teaching Effectiveness

I) Introduction.

In recent years many American colleges and universities have instituted faculty incentive grants to reward excellent teachers. Such grants are often linked directly to classroom performance rather than to research productivity. The Handbook of Research on Teaching (Wittrock, 1986) reports that "these grants are usually awarded competitively paralleling grants awarded in support of research, and are seen as incentives promoting interest in teaching" (p. 772). J. A. Centra (1978) found that 58% of 756 institutions surveyed had some type of grant program to support development projects. Despite their widespread use, little attention has been given to evaluation of these programs. The Handbook of Research on Teaching notes that these types of grants

> apparently. . . are different from research grants at the evaluation and reporting stages because Levinson- Rose and Menges (1981) could find only one report of a study of the effectiveness of such grant schemes in improving teaching. Presumably, many reports on such projects do not include data on improving teaching (p. 772).

The one study cited (Kozma, 1978) focused on the impact on a single, very specific classroom function, concluding that even small grants could lead to an increased use of instructional innovations. The present study is an attempt to determine if there is any indication that the implementation of a faculty incentive grant program has an impact on more general measures of teaching effectiveness. This project is broadly structured along the lines of the case study method. According to A. Patrick Allen (1988) there is "extensive agreement" that this is the best framework for the evaluation of faculty development types of programs. (While it could be argued that there is a difference between faculty development programs proper and faculty incentive and reward systems, the parallels seem strong enough to suggest that this is an appropriate method of evaluation.)

The focus of this study is a faculty incentive program at Messiah College, a private liberal arts institution of about 2000 students in Pennsylvania. Several years ago the Board of Trustees at the college attempted to introduce a merit pay program based on excellence in classroom teaching. A variety of administrative problems short-circuited that program

before it could be fully implemented. As an alternative, a program was developed that is known as the "Excellence in Teaching" Program. Funded by a private donor, four awards of up to $5000 each are annually presented to faculty. Faculty members may apply for the award based on student evaluations of teaching performance during the preceding calendar year. Additionally, applicants must provide evidence of effective advising, submit a course evaluation that has been completed by a fellow faculty member, and have a letter from the department chair indicating quality performance in both teaching and advising. Faculty who apply for the award must also submit a proposal for how the award money will be used, which may include travel, summer salary for research, or any "expanded professional development project." Proposals need not be limited to the faculty member's teaching area. The listed criteria for determining which applicants receive the award are (1) quality of the proposal, (2) likelihood of successful completion of the project, (3) degree of enhancement for the faculty member involved, and (4) teaching evaluations. Award decisions are made by a committee consisting of the academic dean, assistant academic dean, and a faculty representative selected by the dean. The present study uses both quantitative and qualitative means to evaluate that award system.

II) Procedures and Sample.

The data for this study were obtained exclusively from the faculty and the academic office of Messiah College. Data for statistical analysis were drawn from the faculty evaluation instrument developed at Kansas State University, the Instructional Development and Effectiveness Assessment (IDEA), "a highly respected and popular student rating system in use at over 100 colleges and universities" (Ory, 1985). Each faculty member at Messiah College is required to have two courses each semester evaluated via the IDEA system.

A) Institutional Ratings. Summary institutional data for twenty instructional categories provided to Messiah College by the IDEA system were interpreted to see whether there had been a change in teacher effectiveness ratings during the years the grant program has been in effect. The institutional data were obtained by aggregating data from every Messiah College class which had been evaluated in a given term. Cashin and Noma suggest that "for institutions which use the IDEA system for two or more years on representative samples of the same academic unit, the means in the Institutional Summaries can be compared as one measure of whether teaching effectiveness has changed" (1983, p. 22).

B) Individual Ratings. The second portion of this study required comparison of individual teaching effectiveness measures during the time period the grant program has been in effect. Effectiveness ratings (seven summary outcome measures for classes evaluated by the IDEA system) for the semester before each award announcement were compared to ratings the semester after each award announcement. Ratings for three groups were analyzed: faculty who had applied for and received a grant (award recipients, $n = 12$), faculty who had applied for but not received a grant (non-recipients, $n = 10$), and faculty who had not applied in any year (control group, $n = 30$).

C) Qualitative Data. Qualitative data were drawn from ten faculty interviews which solicited impressions of the grant program. This group equalled approximately ten percent of the full-time faculty at the college, but they are not necessarily representative of that group. The researcher made an attempt to include a spectrum of faculty interests, disciplines, lengths of employment, and rank. A number of award winners purposely were included in the group, and others revealed during the course of the interview that they had applied for the award but not received it. Participants were asked to complete a one-page questionnaire which then formed the basis for an oral interview.

III) Results.

A) Analysis of Institutional Ratings. According to the IDEA Interpretive Guide (Cashin, Brock, Owens, & Slawson, 1976) the standard error of measurement for most of the twenty categories is approximately 0.3. A comparison of the first semester's means (Fall 1984-85) with the seventh semester's means (Fall 1987-88) showed that positive changes in institutional means fall within the range of the standard error of measurement for all twenty categories. It also should be noted that there was little negative movement in any of the categories. Institutional teaching effectiveness ratings generally remained constant during the seven semesters studied.

B) Analysis of Individual Ratings. A review of the means and standard deviations based on the "similar course" comparison which takes into account class size and motivation level revealed some distinct patterns. Means and standard deviations for each of the IDEA summary outcome measures are contained in Tables 1.1 - 1.7.

Insert Tables 1.1 - 1.7

For all seven categories, the control group ratings (both pre-award and post-award) were much lower than the ratings of either the award recipients or non-recipients. Differences in means between the award recipients and non-recipients were much less pronounced. In most cases, the award recipients had higher means, but that was not true for all categories.

The tables also allow comparison of pre-award and post- award means and standard deviations for each group. The largest difference is found in Table 1.1, where the non- recipients rated 90.50 on the post-award as compared to 75.00 on the pre-award, a change of 15.50 percentile points. In most cases, the rating is higher in the post-award category, but there were five exceptions to this. Both award recipients and the control group means declined slightly in "Improved Attitude toward Field (Table 1.3), the non-recipients declined slightly in "Communicating Content and Purpose (Table 1.5) and both award recipients and the control group declined slightly in "Preparing Examinations" (Table 1.7). Most categories, however, indicate small increases from pre-award to post- award.

An analysis of covariance was conducted which compared the differences between groups before the award to differences within each group after the award. For this design, two analyses were possible: repeated measures analysis of variance or analysis of covariance. Since the groups were not randomly assigned, and since pre-existing differences were present in the groups, the preferred analysis was the analysis of covariance. This analysis answered the following question: "If the groups began at the same point (at the pre-test), would the groups differ at the post-test?" Results of the analyses of covariance are contained in Tables 2.1 - 2.7.

Insert Tables 2.1 - 2.7

The "covariates" source in Tables 2.1 through 2.7 indicates the amount of variability associated with the correlations between the pretest and the posttest. By itself, this term does not answer a significant research question, and merely demonstrates that the assumptions for the analysis of covariance have been met. For all

seven categories, the covariates are significant ($p > .001$).

Variability between groups (award recipients, non-recipients, and control group) at the post-award is indicated by the source "main effects-group." Of the seven categories in the tables, "Improved Attitude toward Field" (Table 2.3) shows the most significant main effect ($F = 3.70$, $df = 2$, $p = .032$). However, in this case as in all seven cases, the results are much less significant than the differences among the three groups at the start. When significant differences were found, the post hoc test indicated that the awardees and the non-recipients were significantly higher than the controls. The results in all seven categories do not indicate that the award itself has had an effect on teacher effectiveness ratings.

C) Analysis of Qualitative Data. Initial qualitative data were drawn from a questionnaire completed by the inidividual faculty member prior to an oral interview. Table 3 contains the six questionnaire items, along with summary data of the original written responses.

Insert Table 3

Each individual was then asked to elaborate on his/her responses during the oral interview. Faculty were nearly unanimous in their belief that the quality of instruction at the college is improving. However, the ten faculty interviewed have doubts about whether the award impacts institutional teaching effectiveness, seem quite sure that the award has had no effect on their own teaching, and view the program as a reward system for past performance. Besides the fact that it is perceived as grounded in student evaluation, the program was criticized on the basis of faculty perceptions that: (a) it is based on ambiguous rhetoric, (b) it is political, and (c) it has an inappropriate focus. There were diverse suggestions as to how instruction at the college might be improved using methods other than the Excellence in Teaching Program.

IV) Discussion.

The present study indicated that the introduction of a faculty incentive grant program has had no significant impact on teaching effectiveness at Messiah College. Statistical data for the institution showed that teaching effectiveness as measured on the IDEA form

has remained nearly constant in the semesters since the program began. Analyses of teaching effectiveness measures for grant recipients, grant applicants who did not receive an award, and a control group indicated that the awards have been distributed to faculty who indeed are significantly more effective teachers as measured by the IDEA system. However, there was no indication of any change in teaching effectiveness as a result of the award for either successful applicants, unsuccessful applicants, or non- applicants. Interviews with faculty corroborated the statistical conclusion, in that faculty have not perceived change in teaching effectiveness at either the institutional or individual level as a result of the incentive grant program.

The basic assumption of faculty incentive grant programs seems to be that a reward will increase productivity. Programs then need to operate in full awareness of the research which has yielded some warnings about the use of rewards. For example, Deci and Ryan (1985) have referred to dozens of studies which indicate that the overuse of extrinsic rewards can decrease achievement levels. Adding an additional reward to an intrinsically enjoyable task may overjustify the activity. If people sense that they are externally controlled, there is a potential for what was once enjoyable to lose its appeal.

On the other hand, there is evidence that the informative use of rewards and support may work to increase motivation (Pittman, Davey, Alafat, Vetherill, & Kramer, 1980). Part of the challenge of designing a reward program is to build a structure that is perceived as supportive and constructive rather than controlling. A further consideration in light of recent research is whether a reward program should be competitive. Spence and Helmreich (1983) conducted studies of intrinsic motivation which concluded that achievement is most effectively fueled by individual drives for subject mastery and hard work, and that achievement is least likely when instrinsic motivation is tied to competitiveness. Since faculty work is generally independent and subject-oriented, it may be counter-productive to allow competition to be perceived as an integral part of any developmental program.

One set of numbers drawn from this study has some especially interesting implications. The largest difference between pre-award and post-award was found in the "Overall Evaluation" rating of unsuccessful applicants-- those who did not receive an award in spite of the fact that they had IDEA evaluations which qualified them. While the statistical analyses serve as warning against putting much emphasis on this change, the

increase represents the datum which is most supportive of the idea that grants might effect improved teaching. It is possible to explain this outcome as resulting from a competitive drive--to win the award in another year of application, or to prove oneself capable and deserving regardless of the award outcome. However, the possibility that the denial of an award has a greater motivating effect than the receiving of an award raises serious questions for those who design and administer award programs who undoubtedly would want to avoid appearances of coercion.

It should be stressed at this point that this study dealt with the impact of the faculty incentive grant program on only one outcome, teaching effectiveness. While the results show quite clearly that the program has had little, if any, impact in that area, there is the possibility that it has had other effects. Since the award in this case is often tied to research projects, it would be reasonable to assess the award's impact on professional development outside the classroom. In that light, the Messiah College incentive grant program may reflect an institutional desire to increase publishable works by the faculty (while at the same time requiring that teaching remain above average). This is typical of a trend for "teaching" institutions to be moving toward greater research emphasis. Faculty who receive the award have a great amount of flexibility in the type of project they pursue, but the institution may gain credibility and prestige based on what that faculty member produces. Indeed, current faculty development literature proposes that "where development programs for teaching and research . . . exist separately, they should be merged. Then we can begin to think of a teacher-scholar profession, removed from the schizophrenia of teaching/research/service" (Young, 1987, p. 14). Lack of faculty enthusiasm about the incentive grant program at Messiah College suggests that attempts to merge institutional emphases on teaching and scholarship will need to proceed with care.

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Table 1.1
Means and Standard Deviations of Percentile Rank
"Overall Evaluation"

	Pre-Award		Post-Award	
	Mean	Std. Dev.	Mean	Std. Dev.
AWARD RECIPIENTS				
All Courses	77.75	13.49	83.08	13.99
Similar Courses	78.75	12.32	83.58	16.92
NON-RECIPIENTS				
All Courses	67.50	26.90	85.07	22.40
Similar Courses	75.00	17.21	90.50	11.06
CONTROL GROUP				
All Courses	56.13	21.27	61.57	23.39
Similar Courses	58.98	18.94	64.07	23.68

Table 1.2
Means and Standard Deviations of Percentile Ranks
"Would Like Instructor Again"

	Pre-Award		Post-Award	
	Mean	Std. Dev.	Mean	Std. Dev.
AWARD RECIPIENTS				
All Courses	75.54	13.84	77.21	12.52
Similar Courses	75.25	13.76	79.92	13.37
NON-RECIPIENTS				
All Courses	54.76	26.91	64.36	28.90
Similar Courses	61.21	24.93	67.38	24.82
CONTROL GROUP				
All Courses	46.43	22.66	51.58	25.90
Similar Courses	44.40	25.59	48.17	25.59

Table 1.3
Means and Standard Deviations of Percentile Ranks
"Improved Attitude Toward Field"

	Pre-Award		Post-Award	
	Mean	Std. Dev.	Mean	Std. Dev.
AWARD RECIPIENTS				
All Courses	72.33	17.24	67.71	23.19
Similar Courses	74.29	15.73	72.75	16.51
NON-RECIPIENTS				
All Courses	54.50	27.26	70.29	28.43
Similar Courses	63.36	27.17	73.36	22.72
CONTROL GROUP				
All Courses	50.83	22.51	52.07	25.42
Similar Courses	48.75	20.61	47.95	22.93

Table 1.4
Means and Standard Deviations of Percentile Ranks
"Involving Students"

	Pre-Award		Post-Award	
	Mean	Std. Dev.	Mean	Std. Dev.
AWARD RECIPIENTS				
All Courses	78.33	15.65	81.08	16.89
Similar Courses	78.67	13.87	79.29	18.51
NON-RECIPIENTS				
All Courses	66.64	35.30	77.43	32.71
Similar Courses	70.57	31.23	76.00	31.18
CONTROL GROUP				
All Courses	53.00	23.23	60.33	21.93
Similar Courses	54.20	22.41	60.53	18.16

Table 1.5
Means and Standard Deviations of Percentile Ranks
"Communicating Content and Purpose"

	Pre-Award		Post-Award	
	Mean	Std. Dev.	Mean	Std. Dev.
AWARD RECIPIENTS				
All Courses	77.50	11.43	76.25	13.31
Similar Courses	76.33	10.54	76.83	14.41
NON-RECIPIENTS				
All Courses	57.71	21.93	63.57	22.69
Similar Courses	67.93	16.16	66.29	16.59
CONTROL GROUP				
All Courses	44.67	18.90	49.43	21.27
Similar Courses	42.98	17.76	46.13	20.01

Table 1.6
Means and Standard Deviations of Percentile Ranks
"Creating Enthusiasm"

	Pre-Award		Post-Award	
	Mean	Std. Dev.	Mean	Std. Dev.
AWARD RECIPIENTS				
All Courses	78.25	18.70	79.63	13.82
Similar Courses	78.04	14.06	78.42	14.07
NON-RECIPIENTS				
All Courses	68.79	31.26	77.00	27.31
Similar Courses	76.36	23.14	77.00	25.45
CONTROL GROUP				
All Courses	45.77	19.43	50.38	21.38
Similar Courses	44.55	17.87	47.38	22.18

Table 1.7
Means and Standard Deviations of Percentile Ranks
"Preparing Examinations"

	Pre-Award		Post-Award	
	Mean	Std. Dev.	Mean	Std. Dev.
AWARD RECIPIENTS				
All Courses	56.17	19.03	57.17	14.76
Similar Courses	57.17	17.37	56.92	15.11
NON-RECIPIENTS				
All Courses	61.43	18.41	66.79	16.95
Similar Courses	62.93	17.93	65.79	16.61
CONTROL GROUP				
All Courses	49.35	26.05	43.47	25.58
Similar Courses	50.98	25.91	44.07	25.33

Table 2.1
Analysis of Variance of Post-Award Groups
"Overall Evaluation"

SOURCE	SS	df	MS	F	P-value
Covariates	5578.57	1	5578.57	13.90	.001
Main Effects-Groups	2381.03	2	1190.52	2.96	.062
Residual	18063.17	45	401.40		

Table 2.2
Analysis of Variance of Post-Award Groups
"Would Like Instructor Again"

SOURCE	SS	df	MS	F	P-value
Covariates	15419.39	1	15419.39	41.22	.001
Main Effects-Groups	1235.25	2	617.63	1.65	.203
Residual	16833.69	45	374.08		

Table 2.3
Analysis of Variance of Post-Award Groups
"Improved Attitude Toward Field"

SOURCE	SS	df	MS	F	P-value
Covariates	6013.59	1	6013.59	13.93	.001
Main Effects-Groups	3197.28	2	1598.64	3.70	.032*
Residual	19420.23	45	431.56		

*significant

Table 2.4
Analysis of Variance of Post-Award Groups
"Involving Students"

SOURCE	SS	df	MS	F	P-value
Covariates	10781.69	1	10781.69	41.32	.001
Main Effects-Groups	268.74	2	134.37	.52	.601
Residual	11741.77	45	260.93		

Table 2.5
Analysis of Variance of Post-Award Groups
"Communicating Content and Purpose"

SOURCE	SS	df	MS	F	P-value
Covariates	7706.42	1	7706.42	23.83	.001
Main Effects-Groups	2149.36	2	1074.68	3.32	.062
Residual	14555.42	45	323.45		

Table 2.6
Analysis of Variance of Post-Award Groups
"Creating Enthusiasm"

SOURCE	SS	df	MS	F	P-value
Covariates	18846.71	1	18846.71	70.06	.001
Main Effects-Groups	216.59	2	108.30	.40	.671
Residual	12106.20	45	269.03		

Table 2.7
Analysis of Variance of Post-Award Groups
"Preparing Examinations"

SOURCE	SS	df	MS	F	P-value
Covariates	6646.25	1	6646.25	16.97	.001
Main Effects-Groups	1868.93	2	934.47	2.39	.103
Residual	17620.67	45	391.57		

Table 3
Faculty Questionnaire and Summary of Written Responses

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1. Do you believe that the quality of instruction at this college has been improving? What are the reasons for this [lack of] change?

[10 affirmative responses, with 3 of them somewhat qualified]

2. Is your own teaching becoming more effective? What makes you think so?

[8 affirmative responses; 2 negative]

3. What effect has the Excellence in Teaching Award program had on teaching effectiveness at this college?

[0 report positive effect; 6 report no effect; four see negative effect]

4. Has the Excellence in Teaching Award program encouraged you to put more effort into classroom teaching?

[2 report "possibly"; 8 negative responses]

5. Do you perceive of the Excellence in Teaching award as a reward for past performance or as an incentive for improved future performance?

[9 perceive "reward"; 1 perceives it as neither]

6. What kinds of things would help you work toward becoming a more effective teacher?

[varied responses]