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Compensation Strategies in Web-Based Distance Education

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INTRODUCTION

As more institutions of higher education move toward the utilization of online, distance learning courses the debate over compensation of faculty intensifies. There have been several surveys that focused on how institutions compensate faculty for their involvement in the development and delivery of distance learning courses Morgan (5), Berg (1), Craig (3). In one of the more empirical research studies on faculty compensation in a distance-learning environment Schifter (9) concluded, "No clear patterns of faculty compensation and incentive models for participating in DE programs arose…" Her study involved 212 individuals from 160 identified institutions. The fact is that despite all the rhetoric on the subject precious little actual modeling has been conducted Moscato (6,7). A recent NEA (8) study concludes the following:

(1) 84% do not get a corresponding reduction in workload,
(2) 63% are compensated for their distance learning course as if it were part of their normal course load,
(3) faculty believe that they will be hurt financially by DL and
(4) more than half of distance learning faculty spend more hours on their distance-learning course than traditional courses.

The author decided to employ a simulation-based study that would capture the richness of the decision-making environment for distance learning. A total of 2160 simulations were run. This number was necessary in order to obtain a sufficient level of sensitivity analysis of the key drivers. In the next section the model is developed.

THE NEED FOR A GENERAL MODEL

Each time a professor, college unit or university performs an analysis of moving toward an online course essentially the identical thought process is followed. This reality leads to the obvious conclusion that it should be possible to formulate a generalized model of the process. The value of the existence of such a model is that it allows decision makers to focus on the key factors that must be understood regarding the economics of the decision.

Most of the existing research on the economics of online learning focuses on the required infrastructure in terms of what hardware, software and personnel are necessary. Boettcher (2) wrote "Every medium requires an infrastructure: content expert, instructional designer, web master, content researcher, graphic designer and a development and production producer." Unfortunately, some instructors quickly discover that they are expected to fulfill all of these roles. What is missing is a framework or model from the faculty perspective as it relates to compensation for online courses.

THE ROLE OF ASSUMPTIONS

In developing a model for faculty compensation for online courses a few initial assumptions must be postulated. The first assumption is that we will define three phases for the process. They are as follows: course design, course development and course implementation. Each phase has its own characteristics of cost behavior. We will assume that each phase has both fixed and variable costs associated with it. We also assume that the faculty member and the university view the concept of cost differently. This notion is developed later in the paper.

IDENTIFYING THE COST COMPONENTS

For each phase of an online course we can identify its unique fixed and variable costs.

DESIGN PHASE

For the instructor, the fixed costs of the design phase are high. These costs must be incurred regardless of the number of students in the course. Some key operational questions are as follows: Has the course been taught before in the traditional mode? Is there an existing course syllabus available? The answer to each question will affect the magnitude of the fixed costs incurred by the instructor. The variable costs for this phase are minimal.

DEVELOPMENT PHASE

For the instructor, the fixed costs of the development phase are high. Some cost drivers are as follows: Who will collect the course content? Order the content in modules? Who will load the content into the course container? Who will validate the content and test out all of the hyperlinks? A great deal of these costs can be shifted to the university if it chooses to invest in the personnel infrastructure that was discussed earlier in the paper. Nevertheless, the instructor acting as the subject matter expert, must still interact with this cadre of support people. There is still a definite cost to the faculty member especially if his/her technical skill level is at a basic level at the start of development. The variable costs in this phase are insignificant.

IMPLEMENTATION (DELIVERY) PHASE

In this phase, the fixed costs for the instructor are low but the variable costs become increasingly important as the size of the course increases. This realization can have a profound impact on the compensation model under which the instructor operates. Some of the costs of this phase are as follows: monitoring student progress, online chat (synchronous) sessions or online office hours, reading e-mails, keeping up with the asynchronous discussion boards, troubleshooting technical problems, initial "hand holding" for rookie online students. The more students in the course, then the more effort required in grading, communicating, etc. These factors influence the variable costs. However, under some compensation models, there is no concomitant increase in revenue for the instructor!

In the next section we present an analytical approach to modeling the compensation activity. Several perspectives are analyzed. First, we look at compensation based on a per student basis. This perspective is further analyzed from both the university and faculty perspectives. Finally, we approach compensation as an overload for the faculty member.

COMPENSATION MODEL ON A PER STUDENT BASIS

Assume that the cost of the course for each student is $500. Assume that the compensation for the course is $200 per student. Let "V" = Fixed cost to the university to offer the course (recall the discussion earlier on the infrastructure). Let "x" = the number of students in the course.

Model For the University:

$$\$500*x = V + \$200*x \ .$$

Solving for x, we have

$$X^* = V/\$300 \ ,$$

where x^* is the breakeven point in terms of the number of students. Any profit that the university wants to make can be added to the numerator. The simple effect of this is to require more students in the course in order to reach the targeted level of profitability. Also, the higher the cost to the student and/or the lower the faculty compensation level per student, then the fewer students that will be needed to achieve the targeted levels by the university.

If we assume that the instructor is compensated on an overload basis that is a fixed amount rather than on a per student basis, the model becomes the following:

Assume $4000 compensation per online course on an overload basis.
Assume the student's cost is the same as before, $500, as is the fixed costs "V".
Let m be the variable cost for the faculty. Therefore,

$500 x = $4000 + V + m*x

or
Revenue = cost of faculty + fixed and variable cost to offer the course.

Note: If we take the university's perspective, there is no variable cost to the faculty.
From the faculty member's viewpoint:

Let "q" = fixed cost incurred by the instructor
"g" = variable cost incurred by the instructor
Then, for the overload fixed rate compensation, the model is as follows:

$4000 = q + g*x.

Solving for x^*, we have **($4000 – q) / g**.

X^* is the breakeven number of students taught. A number higher than x^* means that the cost to the faculty member exceeds the revenue earned. For a value less than x^*, the reverse is true. For example, if "q" is $5000 and "g" is $25 , the x* is actually negative! Since the fixed cost alone is larger than the course compensation, it follows that from a financial point of view, the faculty member should not teach the class. However, if the fixed costs were lowered sufficiently and/or the compensation was increased it might become worthwhile to teach the course.

For an overload, variable rate compensation scheme, the model becomes as follows:

$200*X = Q + G*X..

Solving for X* we have **q / ($200 – g)**.

x* is the breakeven number of students taught. For the faculty member to benefit, the fixed costs to teach the course, “q”, would have to be small relative to the variable cost “g.” For example, if “q” is $5000 and “g” is $25 per student, then x* is 28.57 0r 29 students. But if “q” is doubled to $10000, the x* would become 57.14 or 58 students. This assumes that “g” stays the same, which it would not; because we know the variable cost must increase as “x”(the number of students in the course) rises. So if “g” also doubles to $50 per student, the x* rises to 66 students to breakeven.

Taking a breakeven approach to modeling while simple in its appeal can be rather limiting in the insight derived from the approach. Of course, we can perform a limited degree of sensitivity analysis on the framework. There are other more insightful approaches to modeling the impact of faculty compensation in a web-based distance- learning environment.

The previous section presented an analytical approach to compensation model development. In the next section we present a more flexible simulation approach that incorporates the ability to do extensive sensitivity analysis of the key drivers of the compensation process.

SIMULATION MODEL DEVELOPMENT

The objective function studied is “Gain to the University”. The Gain is as follows:

Revenue - Cost

= (Number of students in course * revenue per credit hour * number of credit hours for course)

- (Cost for faculty + Cost of Overhead to develop or maintain DL course).

The cost for the faculty variable follows the work of Turoff (10) in which he posits three approaches for staffing a course. They are as follows:

use of an adjunct faculty member
use of a teaching assistant and
use of a full-time member’s salary prorated per course.

The overhead cost was determined to be either the initial cost to develop a distance learning course or the ongoing cost to maintain the currency of a course. See the work of Boettcher (2) in which she develops the idea of using a team approach that relies on the use of area specialists. Fink (4) demonstrates a similar approach followed at the University of Toledo

In order to perform sensitivity analysis, the variable number of students ranged from a low of five to a maximum of 100, however, increments of five were used in the range between five and forty students. The variable tuition per credit hour ranged from $100 to $500 in increments of $50 that reflects enough variability to include the gamut from public community colleges to private universities. The variable cost of faculty was assigned values according to the following logic. An adjunct was paid $2500 to teach the course. A teaching assistant’s compensation was prorated to be $5000 per course. If a full-time faculty person is paid $88,000 , then 1/8 of his salary was assumed to be $11,000. Clearly, the aforementioned values would be different for each institution but those selected are consistent with the work of Turoff (10).

Model Assumptions:

Number of Students	Tuition Per Credit Hour	Faculty Compensation*	Fixed Cost To Develop	Fixed Cost To Maintain
5	$100	$2,500	$0	$0
10	$150	$5,000	$5,000	$500
15	$200	$11,000	$10,000	$1,000
20	$250		$15,000	$1,500
25	$300		$20,000	$2,000
30	$350			
35	$400			
40	$450			
100	$500			

***Adjunct=$2500**
TA=$5000
Faculty Load=$11000

Figure 1

The final variable included in the model reflected either the initial development cost that was allowed to vary from zero to $20,000 in increments of $5,000. Succeeding offerings of the course were assumed to require a maintenance cost that was allowed to vary from zero to $2,000 in increments of $500. This later cost was assumed to be 10 percent of the development cost. All courses were assumed to be for three credits.

When you combine all of the scenarios you have 2160 unique simulations captured by thirty EXCEL® spreadsheets with each spreadsheet capturing seventy-two scenarios. Figure 2 illustrates one of the thirty spreadsheets. This spreadsheet depicts the gain to the university for an initially offered course taught by a full-time faculty person. The development cost is set at $10,000.

Gain for University

Time Offering	**Once**
Staffing Option	**Full Time**
Development Cost	**10000**

		Tuition Per Credit Hour							
		150	**200**	**250**	**300**	**350**	**400**	**450**	**500**
Number Of Students Enrolled	**5**	(18750)	(18000)	(17250)	(16500)	(15750)	(15000)	(14250)	(13500)
	10	(16500)	(15000)	(13500)	(12000)	(10500)	(9000)	(7500)	(6000)
	15	(14250)	(12000)	(9750)	(7500)	(5250)	(3000)	(750)	1500
	20	(12000)	(9000)	(6000)	(3000)	0	3000	6000	9000
	25	(9750)	(6000)	(2250)	1500	5250	9000	12750	16500
	30	(7500)	(3000)	1500	6000	10500	15000	19500	24000
	35	(5250)	0	5250	10500	15750	21000	26250	31500
	40	(3000)	3000	9000	15000	21000	27000	33000	39000
	100	24000	39000	54000	69000	84000	99000	114000	129000

Figure 2

SENSITIVITY ANALYSIS OF MODEL

Breakeven Values For Assumption of First Time Offering**:**

Development Cost : Adjunct- 10 students at any tuition, 5 students a tuition > $200

$0 **T.A**.- 15 at $150, 10 at $200 and 5 at $300

F.T.- 25 at $150,20 at $200,15 at $250,10 at $400 , never at 5

Development Cost: Adjunct- 20 students at $150,15 at $200, 10 at $250

$5,000 **T.A**.- 25 at $150,20 at $200,15 at $250,10 at $350, never at 5

F.T. – 40 at $150,30 at $200,25 at $250,20 at $300, 15 at 400,never at 5 or 10 students

Development Cost: Adjunct-30 students at $150,25 at $200,20 at $250, 15 at $300,10 at $450

$10,000 **T.A**. – 35 students at $150,30 at $200,20 at $250,15 at $350, 10 at $500, never at 5 students

F.T. - >40 students at $150,35 at $200,30 at $250, 25 at $300,20 at $350, 15 at $500, never at 5 or 10 students

Development Cost: Adjunct-40 students at $150,30 at $200,25 at $250 ,20 at $300,15 at $400

$15,000 **T.A**. - >40 students at $150,35 at $200,25 at $300, 20 at $350, 15 at $450, never at 5 or 10 students

F.T. - >40 students at $150,>40 at $200,35 at $250, 30 at $300, 25 at $350, 20 at $450, never at 5,10 or 15 students

Development Cost: Adjunct->40 students at $150,40 at $200,30 at $250, 25 at $300, 20 at $400, 15 at $500

$20,000

T.A. - >40 students at $150 & $200,35 at $250, 30 at $300, 25 at $350, 20 at $450,>15 at $500, never at 5,10 or 15

F.T. - >40 students at $150,$200 & $250, 35 at $300, 30 at $350, 25 at $450, never at 5,10,15,& 20 students.

Breakeven Values For Assumption of Maintaining Offering:

Maintenance Cost: **Adjunct**- 10 students at $150, 5 at $200
$0 **T.A**. – 15 students at $150,10 at $200,$250 & $300, 5 at $350
F.T. – 25 students at $150,20 at $200,15 at $250, 10 at $400, never at 5 students

Maintenance Cost: **Adjunct**- 10 students at $150
$500 **T.A**.- 15 students at $150, 10 at $200,$250,$300,&$350, 5 at $400
F.T. – 30 students at $150,20 at $200,15 at $300, 10 at $400, never at 5

Maintenance Cost: **Adjunct**- 10 students at $150 and $200
$1,000 **T.A**. – 15 students at $150,10 at $200,$250,$300,& $350, 5 at $400
F.T. – 30 students at $150,20 at $200,15 at $300, 10 at $450,never at 5 students

Maintenance Cost: **Adjunct**- 10 students at $150, $200,& $250, 5 at $300
$1,500 **T.A**. – 15 students at $150 & $200, 10 at $250,$300, $350 & $400, 5 students at $450
F.T. – 30 students at $150,25 at $200,20 at $250, 15 at $300,10 at $450, never at 5 students

Maintenance Cost: **Adjunct**- 10 students at $150, $200, & $250, 5 students at $300
$2,000 **T.A**. – 20 students at $150,15 at $200, 10 at $250,$300,$350,$400 and $450, 5 students at $500
F.T. – 30 students at $150,25 at $200, 20 at $250, 15 at $300, 10 at $450, never at 5 students

SUMMARY OF SIMULATION MODEL RESULTS

The results of this approach demonstrate quite clearly the impact of two major factors that impact the economic gain to the university. This first is the accounting allocation for the development of the distance-learning course. When coupled with the second factor, the faculty staffing option, the economics of distances learning courses changes dramatically. Clearly, the number of times the course is given and the number of students in the course also affect the gain. The sad fact is that as the staffing cost increases the more students are required to breakeven regardless of the development or maintenance option. The contribution of this research is that the specific sensitivity of these factors is quantified for the first time.

Future research by the author will explore different cost factors relating to the compensation of faculty in distance-learning courses.

USE OF COURSE REMISSIONS TO DEVELOP ONLINE COURSES

There are two schools of thought on this topic. Some say that new course development should be a normal expectation for every instructor. Others argue that online course development is unduly labor intensive and should be treated using a different approach.

If course remission is used as an incentive, then the cost to the university increases. The effect of this policy is to cause the breakeven level of students to rise accordingly. However, if it is part of the faculty member's load, then the fixed costs to the faculty member rise but there should be no effect on the variable costs to the instructor. If the fixed costs rise, then the breakeven level must also be higher. The change of costs will force the instructor to require more students which forces a change in the variable costs to the faculty member in the form of grading, etc.

USE OF PROFESSIONAL COURSE TECHNOLOGISTS

Employing professional online support personnel should result in a shift of fixed costs from the faculty member's development time to the more efficient instructional technologists. This shift should be in both magnitude and location. The impact on variable costs should not be material to either the university or to the faculty member.

There may be a noticeable issue of quality of the final product. One could assume that using a team of professional instructional technologists would lead to a higher demand for the course (assuming all other factors stay the same.) If the use of an instructional technologist does not add to quality, then it is possible that the only impact will be to add to the overall fixed cost structure of delivering distance learning courses. However, the professor's role becomes one of a SME (subject matter expert) who drives the development process. The overall fixed

costs to the faculty member might not change but the nature of the cost drivers might shift from clerical activity to creative activity. This change might yield an improvement to the "quality of life" issues of teaching in a distance-learning environment.

USE OF GRADUATE ASSISTANTS TO SUPPORT FACULTY

Areas of impact of graduate assistants will be in the design and, more importantly, in the development phase. Utilization of these assistants will lower the fixed costs to both the faculty and the university. The obvious assumption that is being made is that there will not be an issue of deterioration of quality as a result of this substitution of activity. Whether or not graduate assistants are used in the first two phases is one thing but they should not be used as freely during the implementation phase. Activities in this phase are best left to the faculty member.

THE RISE OF THE EXCLUSIVE ONLINE FACULTY MEMBER

At the present time most universities are in a situation where the full-time faculty teaching online courses are also teaching traditional courses on campus or on campus-affiliated sites. It is not entirely implausible that some time in the future some instructor's teaching loads will consist on online courses exclusively. There are several issues that should be raised in this discussion. Will this situation result in a lack of institutional bonding? Does this matter at all? Will an "out of sight, out of mind" mentality ensue? Will there be an equity balance out of sync with traditional faculty? Will this situation create a "rent –a-faculty" paradigm? (Consider global faculty availability.) This situation could conceivably result in a savings of office space as seen in the telecommuting impact on corporations. Will the temptation of this mode be so compatible with issues of child-care, elder care and medical recuperation that it encourages its acceptance by selected faculty?

There are obviously many unanswered questions that in time might get resolved. Many of the issues surround faculty compensation for teaching online courses.

LONG-TERM COMPENSATION AND REWARD ISSUES FOR TEACHING ONLINE COURSES

In this section of the paper, we list the issues according to the perspectives of the instructor and the university.

For Faculty Member: Is it worth the effort especially for tenured, senior faculty approaching retirement?
Will the effort be recognized in the tenure decision?
What will be the impact on collegiality? Mentoring? Politics?
How will textbook publishers' support materials lessen the fixed cost to faculty member to create online courses?

For the University: Is it more cost effective for the university, more efficient use of resources?
Is it more appropriate for graduate or undergraduate level?
Will the intellectual capital issues be resolved?
Will it create the rise of an “excluded” faculty class?
Are commercial course containers preferable to those developed
by individual universities?

CONCLUSION

This paper has discussed many of the most significant issues surrounding the compensation of faculty who develop and teach web-based distance learning courses. No clear compensation policy has emerged as institutions and faculty are in the early stages of policy formulation. Whether existing university faculty should be paid “extra” to develop online courses or whether they should be part of the responsibility of faculty for course development is still an open question. Should the development of online courses be a work for hire and separated from the teaching phase of the course? Or should they be considered a natural tandem completed by the same faculty member? What is an equitable strategy will most likely vary according to the existing culture of the university.

REFERENCES

1. Berg, Gary. (2000). Early Patterns of Faculty Compensation for Developing and Teaching Distance Learning Courses, Journal of Asynchronous Learning Networks,Vol.4,No 1, June.

2. Boettcher, Judith V. (1998). The Journey to the Web: Simple Adaptions or New Curricula? , Syllabus, January, 48-52.

3. Craig, Ford M.(1999). A Sampling of Distance Learning Compensation Practices 1998-1999, Office of Institutional Research Mid-Plains Community College.

4. Fink, Mark L. (2002). Rethinking Faculty Support Services, Syllabus, February, 27-29.

5. Morgan, Brian. (2000). Is Distance Learning Worth It? Helping to Determine the Costs of Online Courses, Report, http://www.marshall.edu/distance/

6. Moscato, Donald R. (2001). Compensation Models for Faculty Teaching Online Courses, Issues in Information Systems, Volume II, 316-322.

7. Moscato, Donald R. (2002) A Simulation-Based Approach to the Development of Compensation Models for Distance Learning, Issues in Information Systems, Volume III, 434-440.

8. National Education Association. (2000). Confronting the Future of Distance Learning-Placing Quality in Reach, http://www.nea.org/nr/nr000614.html, June 14.

9. Schifter, Catherine. (2000). Compensation Models in Distance Education, http://www.westga.edu/~distance/schifter31.html, Online Journal of Distance Learning Administration, Volume III, Number 1, Spring.

10. Turoff, Murray. (1997). Alternative Futures for Distance Learning: The Force and the Darkside, http://eies.njit.edu/~turoff/Papers/darkaln.html, April.