Growth and Development of the EDGE at George Mason University

SYST 699: SEOR MS Capstone Project

5/6/2016

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Background

The EDGE program at George Mason University (GMU) is a hands-on learning experience that fosters groups and individuals in building trust, improving teamwork, shaping leadership, and cultivating valuable communication skills. The EDGE offers a variety of programs and activities that empower its participants to excel as high-functioning teams by using collaborative decision-making and problem solving amongst various activities. The EDGE program is a subsidiary of GMU's Recreation department, Mason Recreation, and is currently located at the Science and Technology (S&T) campus in Manassas, VA. GMU students, private corporations, government entities, non-profit organizations, neighboring universities and public schools are all examples of participants that have utilized the EDGE's formatted and customized services in order to further build strong and cohesive teams.

The EDGE program initially began at Hemlock Overlook in the 1970s. In 2009, the program moved to its current location at the S&T campus. Following its transition to the S&T campus, the EDGE remained a self-supporting program, meaning the program's revenue is used to cover operation expenses, staff salaries, and any additional expenditures acquired. The program did not become part of Mason Recreation until July 2013, at which point the department amassed the programs unpaid debt. In additional years, Mason Recreation has continued to pay off all remaining EDGE expenses at the end of each year but the program still remains the only self-supporting program under Mason Recreation. Accordingly, the EDGE program has only obtained a break-even budget during one fiscal year since its transition from Hemlock Overlook.

Currently, the EDGE employs 4 full-time staff members and approximately 15-20 facilitators, consisting of both student and non-student personnel. These personnel operate primarily out of the S&T campus and the Freedom Aquatic Center. At present, George Mason University has tentative plans for the expansion of some of the academic facilities at the S&T campus. Space is limited on this campus, so it is assumed that once this expansion takes place the EDGE will lose some existing land. The EDGE is evaluating a potential transition of some of its components to the Fairfax campus, but with the transition timeline undetermined, the scope of the transition and its effects have not be fully evaluated.

Outdoor Experiential Learning Program Outreach and Literature Review

The EDGE is one of many outdoor experiential training programs housed within Universities throughout the country. Within Virginia, similar programs have been founded at the University of Virginia and James Madison University. Unlike The EDGE these programs receive funding through their respective universities and do not have the direct need to generate revenue to support their programs or staff salaries. Outreach has been conducted with both universities to retrieve information related to understanding the structure of their programs. The primary focus of this information is to provide insight as to what items, structures or ventures might make The EDGE a better program.

Literature has been written and obtained on the value provided on the objectives of experiential programming and the values elicited from these programs at the University level. In its on right, experiential learning is a philosophy and methodology that looks at teaching as an experience that engages learners during the actions of a direct experience. Most commonly, experiential leaning is describes as "learning by doing". The purpose of outdoor experiential training (OET) is to utilize a direct

experience within nature or its elements to develop skills, increase knowledge and clarify values (The Effect of Adventure / Experiential Learning Programs, 2013).

A skill component addressed throughout numerous OET programs in college and university settings is leadership. Between 1990 and 1998 the W.K. Kellogg Foundation funded 31 projects that focused on leadership development in collegiate adults. In 2000, the foundation published their findings. While OET programs did not comprise the entirety of all programs reviewed, they were a subset of programs included. With respect to leadership education, outdoor activities were inclusive of physical challenges, team-building exercises and opportunities for individual and group reflection (Kathleen Simmerman-Oster, 2000).

Within the collegiate program leadership review report, the authors highlighted elements that make up the context of an exemplary leadership project. These elements included (1) a strong connection between the mission of the institution and the mission of the leadership program, (2) the program's approach supported throughout the institution, (3) the program is ground within and outside of academics; inclusive of academic and student affairs, and (4) Strong leadership provided by the program (Kathleen Simmerman-Oster, 2000). The incorporation of these 4 contextual elements into the program are the center point of the exploration into the plan for growth and development of the EDGE program.

Problem Statement

Given the EDGE's current budget structure and anticipated growth and development of the S&T campus, Mason Recreation's EDGE program is in need of a 10-year plan that facilitates a break-even budget while increasing the number of student participants within its programs. In order to meet these objectives, the following areas were considered to be within scope:

- Evaluation of current EDGE program pricing structure
- Cost-benefit analysis of variations on the pricing structure
- Compare the impact of focusing the EDGE on increasing revenue or increasing student participation
- Integrating EDGE into university courses to increase EDGE presence at GMU

This 10-year plan is subject to the development and funding constraints of the university and as such will need to be evaluated on an annual basis.

Survey

In order to collect some base data, a survey was conducted across the GMU community. The sample population for the survey consisted primarily of university students (92.45%), as well as university community members (7.55%). The survey was structured with three primary objectives:

- Gain a base understanding of how known the EDGE program is on the Fairfax campus
- Gauge interest in the activities the EDGE program has to offer at present, and if there is an increased interest should be available on the Fairfax campus
- Obtain an estimated price range that potential participants would be willing to spend and evaluate the price range against the current pricing structure of the EDGE

Data Collection

The survey was conducted over a period of approximately two weeks. A total of 53 unique respondents were collected. The following is a breakdown of the participants:

- 33 male ; 19 female
- 49 GMU students ; 4 GMU community members
- 21 respondents that live on Fairfax campus ; 32 respondents that live off-campus
- 41 respondents that live more than 10 miles away from the S&T campus ; 12 respondents that live within 10 miles of the S&T campus

The remaining three sections that follow describe the results obtained from the survey.

Exposure

The first set of questions focused on estimating and gauging the exposure of the program and its participant usage. The findings indicated an approximately even split between the people that have previously heard of the program (52.83%) and the people that had not (47.17%) heard of the program prior to the survey (Figure 1).

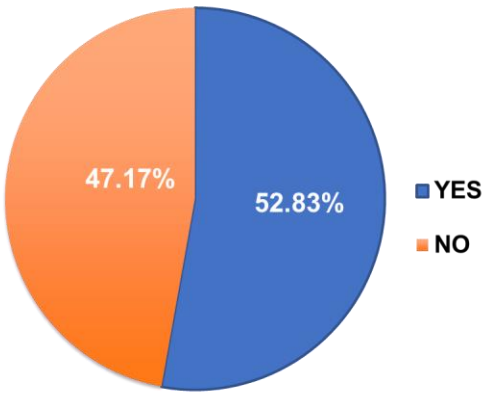

Figure 1: Familiarity with the EDGE – ***Prior to today, were you familiar with the EDGE program under Mason Recreation?***

However, despite the moderate familiarity with the program, the results indicated that a significantly high percentage of those surveyed had not participated in EDGE activities (88.68%) compared to those who had (11.32%), as shown in Figure 2.

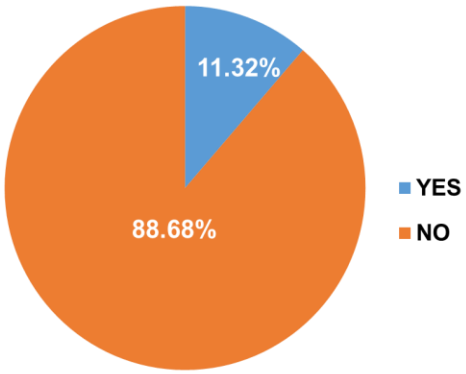

Figure 2: Prior EDGE Participation – ***Have you ever participated in an EDGE program?***

Potential Participation

One of the primary hypotheses behind the survey was the potential rise in student participation were the program activities to transition to the Fairfax campus. In order to obtain data for this hypothesis, respondents were asked two questions: their willingness to participate in the program at its current location (Figure 3), and ones increase in willingness to participate in the program were it to be located at the Fairfax campus (Figure 4).

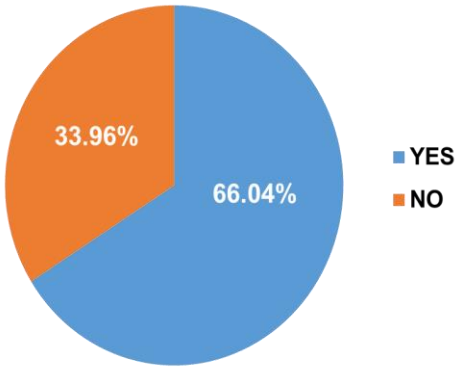

Figure 3: Willingness to Participate at Present Location (S&T) – ***Would you willing to participate in activities provided by the EDGE program, at present?***

Results indicated a 66.04% willingness and a 33.96% unwillingness to participate in the program given the EDGE's current location. Accordingly, 84.91% were more willing to participate were the program to be located at the Fairfax campus. Of those surveyed, 15.09% did not change their position on willingness to participate relative to its locations.

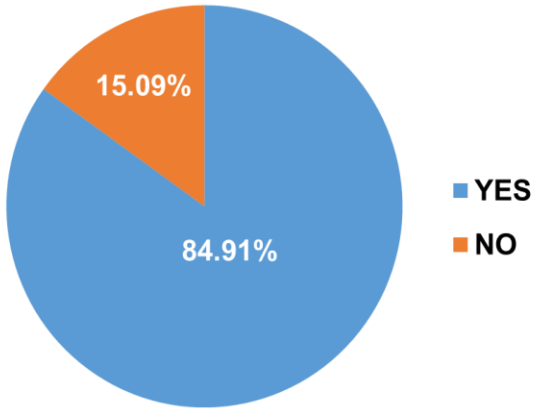

Figure 4: Willingness to Participate at the Fairfax Campus – ***Would you be more willing to participate in activities provide by the EDGE program, if they were available on the Fairfax Campus?***

It is important to note the approximate 19% increase in the willingness to participate once the program has relocated to the Fairfax campus.

Pricing

Since one of the major goals is to evaluate an potentially propose a revised pricing structure for the EDGE program, one of the main objectives of the survey was to obtain a pricing range in which, potential what potential participants would be willing to pay. Survey results were as follows:

- 26.67% willing to spend up to $10
- 55.56% willing to spend up to $20
- 13.33% willing to spend up to $30
- 4.44% willing to spend up to $40

Figure 5: EDGE Program - Program Fee Options – ***How much would you be willing to pay to participate (assume the activities last 4 hours)?***

Observing this data, approximately 73% of the population surveyed indicated a willingness to pay a price of more than $10. Therefore, the value chosen to model budget restructuring and value hierarchy scenarios is $15 as a fixed student fee. This $15 student fee is the mid-range for the $10-$20 option given within the survey. Additionally it is the fee students pay alongside the University grant funded to the EDGE program annually, following the conclusion of the grant money, the student fee is set at $65.

Value Hierarchy

In order to express and evaluate the most important attributes and values associated with the growth and development of the EDGE, a value hierarchy was created. A value hierarchy is comprised of a set of evaluation considerations, objectives, or measures used to formulate a decision analysis (Sage & Rouse, 2009). The attributes within the value hierarchy, shown in Figure 6, were derived from professional staff members within the EDGE at Mason. The attributes, or values, used were chosen using the SMART method, such that they were Specific, Measurable, Attainable, Realistic and Time-Related. The independent weights for each value were elicited through the ordinal method and can be found below each value in Figure 6. These weights were verified through two members of the EDGE professional staff.

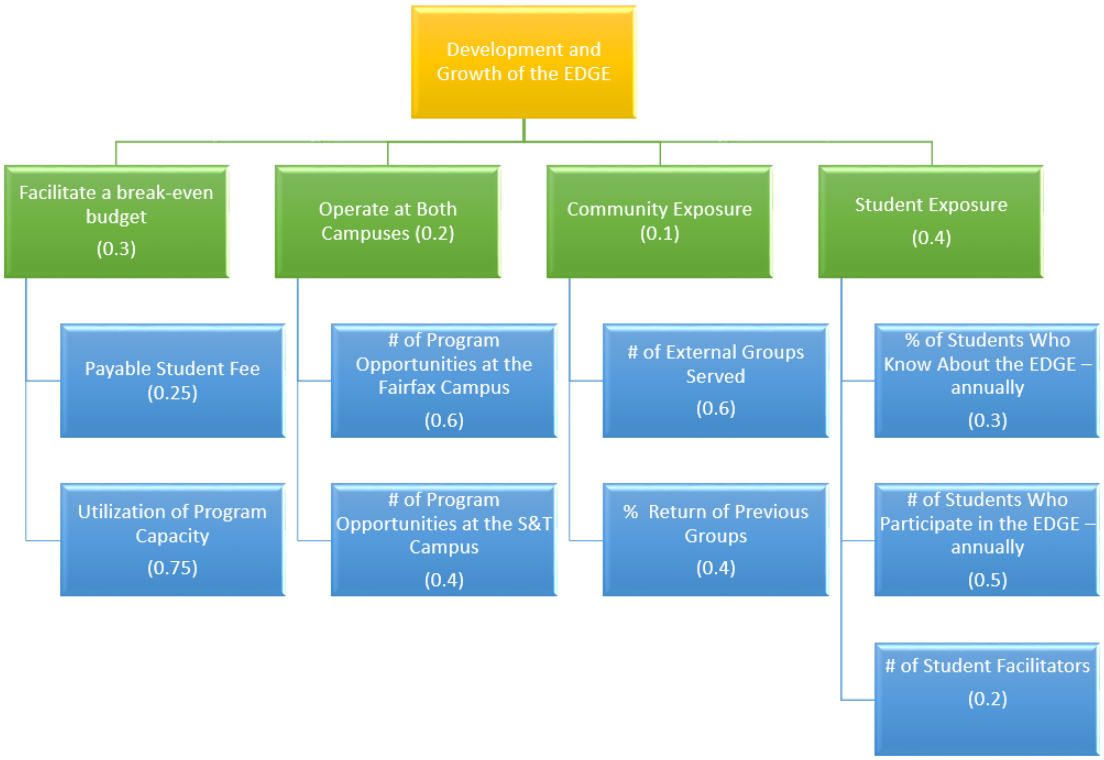

Figure 6: Initial EDGE Value Hierarchy (Spring 2016)

The four high level attributes relate to the highest level of values associated with the growth and development of the EDGE. These attributes included facilitating a break-even budget, operating at both the Science and Technology campus and the Fairfax campus, exposure of the program within the community, and exposure of the program with the University/student realm. Underneath each of these

attributes are subcategories or values that allow for the measurement of the high level value. These values are measured numerically and provide areas of comparison when looking at multiple scenarios.

In order to conduct decision analysis on the EDGE values that are currently being measured and were readily available, the value hierarchy was restructured. This restructuring included removal of values related to the EDGE campus location, as the relocation component of the program as not yet been completed or planned; and the community exposure attribute because community exposure remained outside of the scope for current analysis of the program. Accordingly, the values associated with 'Operate at Both Campuses' and 'Community Exposure' were removed. Additionally, '# of Student Facilitators' was removed because the numbers needed to evaluate this objective have not yet been determined. Weights for the remaining values were updated given the relative weights of other remaining values within their level. With the removal of the aforementioned values, the value hierarchy structure and weights were updated to be as follows in Figure 7.

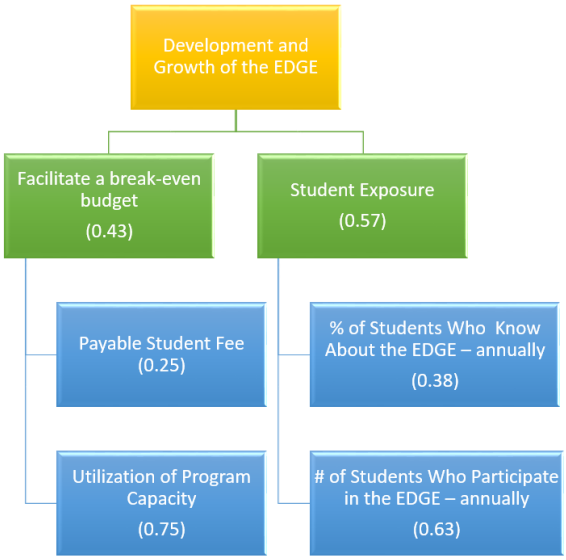

Figure 7: Restructured EDGE Value Hierarchy (Spring 2016)

Using this derived value hierarchy a decision analysis was conducted utilizing three variant scenarios. The first scenario, titled 'FY15/Current' evaluated all of the valued using the FY15 and current numbers associated with the attributes given in the value hierarchy at the EDGE's current values. The second scenario, titled 'Low Student Fee' addressed what the attribute values would be projected to be if the student program fee were to be reduced. The third and final scenario analyzed, titled 'Elevated Student Participation' looked at the value derived from reducing the student fee and elevating the student participation to twice its current level. A more in-depth for each of the values associated with each attribute in the three scenarios is explained below in Table 1 through Table 3.

Table 1: Scenario 1 Input Values

Attribute	***Scenario 1: FY 15 / Current***	
Student Fee	\$65	*Determined by the EDGE's current student fee (excluding Grant assistance)*
Program Capacity	14%	*Estimate based on the number of total hours in which people were served divided by the number of hours in which the program can operate*
% Known - Students	52%	*Estimate based on survey data.*
# Who Participate - Students	1800	*Based on the approximate number of students who participated in the program during FY 15.*

Table 2: Scenario 2 Input Values

Attribute	***Scenario 2: Low Student Fee***	
Student Fee	\$15	*Student fee based on survey data that elicited a fee students are willing to pay for program services*
Program Capacity	24%	*Estimate based on the number of total hours in which people were served divided by the number of hours in which the program can operate. Correlated to the number of students who participate*
% Known - Students	89%	*Estimate based on survey data. Correlated to the number of students who participate*
# Who Participate - Students	3100	*Based on the number of students estimated to have participated in the program during FY 15.*

Table 3: Scenario 3 Input Values

Attribute	***Scenario 3: Elevated Student Participation***	
Student Fee	\$15	*Student fee based on survey data that elicited a fee students are willing to pay for program services*
Program Capacity	28%	*Estimate based on the number of total hours in which people were served divided by the number of hours in which the program can operate. Correlated to number of students who participate.*
% Known - Students	100%	*Estimate based on survey data. Correlated to the number of students who participate.*
# Who Participate - Students	3600	*Based on the doubling of the number of students who participated in the program during FY15, as it was shared*

		that the majority of students served, were served in the Fall semester. This value assumes the same could be served during the Spring semester.

The scaled score for each of the attributes, in each of the scenarios, is calculated as follows:

$$(x - worst) \,/\, (best - worst) = s$$

, where *s* is the scaled score, *x* is the scenarios specified value, *worst* is the least favored outcome for that attribute (of the 3), and *best* is the most favored outcome for that attribute (of the 3).

Given the scaled scores, each scenario's value score is then determined by the following equation:

$$v = \sum_{i=1}^{n} w_i \, s_i$$

, where *v* is the value score, *i* is an attribute, *n* is the total number of attributes within any given scenario, w_i is the total weight of an attribute (top level weight times attribute weight), and s_i is the scale scored for the given attribute.

Using the aforementioned equations the values for each scenario are as follows in Table 4:

Table 4: Scenario Value Scores

Scenario	Value Score
FY15 / Current	0.11
Low Student Fee	0.65
Elevated Student Participation	0.89

From Table 4 we can see that the 'FY15 / Current' scenario had the lowest value score, suggesting the current values of the program do not provide the greatest value in terms of growth and development of the EDGE. Additionally a lower student fee, indicated in both the 2nd and 3rd scenario, provides significantly more value to the growth and development of the EDGE program.

The shortcoming of this analysis lies in the correlation between 3 of the 4 attributes used to evaluate each scenario. In actuality these attributes may have additional unaccounted dependencies that make these values more unique. However, due to the information used to determine these values and their link to the conducted survey and FY 15 data, there is a direct linear correlation between program capacity, the number of students who know about the program and the number of students who participate in the program. In order to better evaluate these scenarios, it is recommended additional annual data be evaluated and utilized to model or project a more accurate representation of the values, independent from one another. Additionally, it may be valuable to run additional scenarios with values that are not subject to only the FY15 data and conducted survey data.

Budget Analysis

Detailed budget data was provided for fiscal year 2015, while high-level data was provided for fiscal year 2010 through fiscal year 2014. The provided budget data was then analyzed and used for projecting future

budget outcomes for the next ten years. The budget analysis was primarily focused on the student expenses and values, as student exposure and payable student fees were determined to be among the EDGE program's top priorities in the value hierarchy.

Budget Data

Professional staff from within the EDGE, provided budget data for fiscal years 2010 through 2015. Budget data for each year included specific details about both revenues and expenditures. The annual revenue included a grant from the university at the beginning of the fiscal year (used to reduce student fees), team development course revenue, summer camp revenue, program admission fees, gift shop sales, auxiliary enterprise revenue from university departments, and other unspecified revenue. The expenditures included labor costs, fringe benefits and other direct expenses. Labor costs are further broken down into faculty administrative salaries, classified wages, student and non-student hourly wages, and overtime wages. Table 5 below shows the consolidated budget data for fiscal years 2010 through 2015.

Table 5: Historical Budget Data

Revenue Accounts	FY15	FY14	FY13	FY12	FY11	FY10
Reserve Transfer Fees	-$ 2,400.00				-$ 30,000.00	
Transfer Fee Revenue to AE	$ 86,000.00	$ 90,000.00	$ 90,000.00	$ 90,000.00	$ 60,000.00	$ 36,480.31
Other Revenue	$ 2,500.00	$ 364.00	$ -	$ -		$ -
Team Development Course Revenue	$359,734.90	$285,450.68	$312,618.48	$251,929.37	$201,213.00	$120,199.00
Summer Camp Revenue	$ 56.00	$ 20,696.90	$ 17,154.00	$ 25,801.50	$ 6,636.50	$ -
Admission Fees	$ -	$ -	$ -	$ -	$ -	$ -
Gift Shop Sales	$ 2,148.50	$ -	$ -	$ -	$ -	$ -
AE Rev from Univ Depts	$ 53,110.16	$ 52,456.80	$ 64,646.42	$ 52,592.48	$ 56,224.50	$ 10,185.00
Total	**$501,149.56**	**$448,968.38**	**$484,418.90**	**$420,323.35**	**$294,074.00**	**$166,864.31**
Labor						
Faculty Salary-Administrative	$ 81,327.10	$ 77,055.29	$ 75,854.59	$ 74,728.80	$ 73,789.28	$104,633.21
Classified	$147,360.44	$144,865.47	$125,962.44	$132,504.14	$129,631.09	$ 84,758.90
Budget Pool-Wages	$ -	$ -	$ -	$ -	$ -	$ -
Wages	$121,837.04	$126,754.86	$152,608.85	$142,006.99	$ 97,916.47	$ 89,563.95
Wages- Student Hourly	$ 18,255.92	$ 21,486.17	$ 7,863.11	$ 4,543.96	$ 13,874.18	$ 5,507.07
Overtime- Wages	$ -	$ 979.43	$ 1,490.63	$ 1,239.74	$ 849.24	$ 2,688.74
Total	**$368,780.50**	**$371,141.22**	**$363,779.62**	**$355,023.63**	**$316,060.26**	**$287,151.87**
Fringe Benefit Rate	$100,207.85	$ 92,448.51	$ 73,860.89	$ 67,883.57	$ 78,352.70	$ 67,577.30
Total	**$100,207.85**	**$ 92,448.51**	**$ 73,860.89**	**$ 67,883.57**	**$ 78,352.70**	**$ 67,577.30**
Direct Expenditure Budge Pool	$ 62,913.76	$ 76,083.24	$ 37,772.80	$ 93,393.60	$ 44,647.60	$ 40,142.40
Total	**$ 62,913.76**	**$ 76,083.24**	**$ 37,772.80**	**$ 93,393.60**	**$ 44,647.60**	**$ 40,142.40**
Total Labor & Direct Expenditures	$531,902.11	$539,672.97	$475,413.31	$516,300.80	$439,060.56	$394,871.57
Net	**-$ 30,752.55**	**-$ 90,704.59**	**$ 9,005.59**	**-$ 95,977.45**	**-$144,986.56**	**-$228,007.26**
	-$ 81,891.00					
	-$112,643.55					

Program Pricing Structure Data

Additional data was used in the budget forecasting models was the EDGE's Program Pricing Structure. This data pertained to the fees associated with each of the EDGE's programs. The fees for each of the programs varied depending on the client type. Table 6 below shows the EDGE Program Price Schedule for 2015 fiscal year.

Table 6: EDGE Program Pricing Structure

THE EDGE PROGRAM PRICE SCHEDULE 2015							
PROGRAMS	DESCRIPTION	YOUTH GRADE 5 - 12	UNIVERSITY STUDENTS	SFA MASON STUDENTS	ADULT	PROF	GOV/NP
Team Development Course (TDC) 4Hrs or 6Hrs/PP	Average Team = 12	45.00	65.00	15.00	65.00		
Advanced Team Development Course (ATDC) 4Hrs or 6Hrs/PP	High level challenges for groups of 12 +	45.00	65.00	15.00	65.00		
The "Winning EDGE" (TWE) 4Hrs or 6Hrs/PP	Focus is core values essential to success of a Sports Team	45.00	65.00	15.00	65.00		
Advanced Team Development Course (ATDC) w/ TTCI 6 Hrs/PP OR Total Team Challenge (TTC)™ 6 Hrs/PP	Team Size = 8 - 15	1250.00	1250.00	570.00	1250.00		
	Team Size = 16 - 20	1500.00	1500.00	800.00	1500.00		
	Team Size = 21 - 28	2000.00	2000.00	1008.00	2000.00		
	Team Size = 29 - 36	2500.00	2500.00	1260.00	2500.00		
Teacher Team (TTDC) Development Course Staff – Specialists	Group Size = 8 - 150				65.00		

Administrators 4Hrs 6Hrs							
Leading EDGE 4Hrs 6Hrs	Team Size = 8 - 12					1980.00 165.00/PP	1020.00 85.00/PP
Learning EDGE 4Hrs 6Hrs	Team Size = 8 - 12					2280.00 185.00/PP	1260.00 105.00/PP
Custom EDGE	Team Size = 8 - 12						

The data from the Program Pricing Structure was used for calculating the revenue from each of the programs. Refer to Supplementary Analytics – Return On Investment Analysis, for a full return on investment breakdown for each of the programs.

Budget Models

In order to analyze the alternative fee structures, two different budget forecasts were constructed for review over the next ten years. As mentioned above, each year the EDGE receives a grant for approximately $90,000, from the university. This grant is used to reduce the fee for Mason students participating in the EDGE, from $65 to $15. By covering $50 of the student fee, it was estimated that approximately 1,800 students benefit from this grant ($\frac{\$90{,}000}{\frac{\$50}{student}} = 1{,}800\ students$). After the first 1,800 Mason students are served, the student fee reverts back to $65 per student. The estimated historical budget data for 2010 to 2014 and the actual budget data for 2015 showed that over the course of the past 5 years, the EDGE has only served, on average, of approximately 1,800 students. Furthermore, the survey data also indicated that 95% of students were not willing to pay over $40 to participate in the EDGE programs.

Using these observations and derivations, two budget forecast models were constructed. The first budget model assumed a $65 student fee, and the second assumed a $15 student fee. Each model had three different scenarios that varied depending on the labor costs. Since the EDGE runs the majority of its programs for either four or six hours and student facilitators are paid between $10 and $15 an hour, the following scenarios were generated for both models:

- Conservative – uses the highest labor expense ($15 * 6 hours)
- Moderate – uses the average labor expense ($15 * 4 hours, $10 * 6 hours)
- Optimistic – uses the lowest labor expense ($10 * 4 hours)

In each model, the number of student participants is the independent variable and the EDGE's net profit is the dependent variable. The remaining variables in the model were assumed constant. In order to forecast future budget data for the next ten years, the revenue and expenses were broken down into different subcategories with various growth projections. Some categories were excluded from the models due to minimal impact on the overall projections. The breakdowns are as follows:

- Revenue:
    - Transfer Revenue Fee to AE: this is the $90,000 grant that the EDGE receives from the University. This variable remained a constant $90,000 for the next ten years.

    - Team Development Course Revenue – Non Students: used historical budget data to find the average growth in dollars per year. This amounted to an average growth rate of $35,989.59 each year.
    - Team Development Course Revenue – Students: this variable represents the revenue that is generated from Mason students. This variable is dependent on the number of students that participate in the EDGE's programs and is varied in the two models.
    - Gift Shop Sales: this value remained fixed at $2,000 each year in accordance with the 2015 budget data.
    - AE Revenue from University Departments: used historical budget data to find the difference in growth between 2014 and 2015. This amounted to an average growth rate of 1.25% each year.
- Expenses:
    - Labor:
        - Faculty Salary-Administrative: this variable represents the salary of one full-time employee of the EDGE. Historical budget data was used to find the average increase in the faculty salary per year. This amounted to an average increase of 2.48% per year.
        - Classified: this variable represents the salaries of the three full-time employees of the EDGE. Historical budget data was used to determine an average increase of 3.5% in this variable each year.
        - Wages: this variable represents the total cost of labor for the EDGE's hourly non-student employees. Historical budget data was used to determine an average increase of $6,454.62 each year.
        - Wages – Student Hourly: this variable represents the total cost of labor for the EDGE's hourly student employees. This variable was varied in each models' three different scenarios.
        - Fringe Benefit Rate: used historical budget data to calculate an average increase of $6,526.11 each year.
    - Direct Expenditure Budget Pool: this variable represents the EDGE's direct expenses outside of labor. Historical budget data was used to determine an average increase of $4,554.27 each year.

The following sections discuss each of the models and corresponding results in greater detail:

Model 1: Current Student Fee Structure Forecast

Model 1 forecasts the EDGE's budget using the current student fee structure, meaning that Mason students pay $15 for the EDGE's programs while the grant exists, and $65 afterwards. Since the historical EDGE budget data is indicative of a significant decrease in student participants after the grant is depleted, the number of students in this model remains constant at 1,800. This is the exact number of students that can be served through $90,000 grant. Additionally, the budget data indicated that each year approximately 1,800 students participated in the EDGE. Using the number of students participating in the EDGE, the revenue and labor costs of running programs for students were determined for the next ten years. The labor costs varied in each of the three scenarios, as described in the above sections. The other revenue and expense variables in the budget were projected as described in the previous section. The

following results were found for each of the three scenarios in the current student fee structure forecast model:

Conservative:

Year	2016	2017	2018	2019	2020
Profit	-$51,913.34	-$40,191.64	-$28,699.63	-$17,455.02	-$6,435.77

Year	2021	2022	2023	2024	2025
Profit	$4,319.89	$14,813.44	$25,036.09	$34,978.75	$44,632.02

Moderate:

Year	2016	2017	2018	2019	2020
Profit	-$48,313.34	-$36,591.64	-$25,099.63	-$13,845.02	-$2,835.77

Year	2021	2022	2023	2024	2025
Profit	$7,919.89	$18,413.44	$28,636.09	$38,578.75	$48,232.02

Optimistic:

Year	2016	2017	2018	2019	2020
Profit	-$45,913.34	-$34,191.64	-$22,699.63	-$11,445.02	-$435.77

Year	2021	2022	2023	2024	2025
Profit	$10,319.89	$20,813.44	$31,036.09	$40,978.75	$50,632.02

Based on these projections, it was determined that the EDGE will achieve a breakeven budget by 2021 and likely make a profit in the following years.

Model 2: Adjusted Student Fee Structure Forecast

Model 2 forecasts the EDGE's budget using an adjusted student fee structure, meaning that Mason students pay $15 for the EDGE's programs regardless of the $90,000 grant. The $15 was determined using the survey data, which indicated that 55.56% of students were willing to participate in the EDGE if the student fee was between $10 and $20. Since more students were willing to participate if the fee were lower, the number of students participating was gradually increased each year in this model. In this model, it was assumed that as the total number of Mason students grows, the number of students participating in the EDGE will grow as well.

Revenue breakdown data for 2015 provided by the sponsor was used to determine the amounts and percentages of revenue that came from the different clients of the EDGE. The various clients served by the EDGE include youth and adult community groups, government customers, professional groups,

school groups, people Mason community members and Mason students. The following table shows the breakdown of the revenue by client type:

Table 7: Revenue Breakdown by Client Type

Revenue Source	Amount	Percentage
Community	$27,500	8.61%
Consulting	$1450	0.45%
Government – NP	$16,110	5.04%
Mason Non-Student	$13109	4.1%
Professional	$69,929.25	21.89%
School	$104,190.50	32.61%
U/Comm/School	$56,190	17.59%
Mason Students	$30,601.66	9.58%

From this data, it was concluded that Mason students contributed to 9.58% of the total revenue and the other groups contributed to 90.42% of the total revenue. The following table depicts actual data for 2015.

Table 8: 2015 Revenue Data

	Year 2015	Percent of Total
Total Revenue	$319,493.25	100.00%
Revenue from Non-Students	$288,891.59	90.42%
Revenue from Mason Students	$30,601.66	9.58%
# of Students Using EDGE	1789	
Total # of GMU Students	34112	
Percentage of Mason Students Using EDGE	5.24%	

This information was then used to retroactively estimate the revenue generated by students in the years 2010 through 2014, since there was no breakdown of revenue by client type available for these years. For each year from 2010 to 2014, it was assumed that students accounted for 9.58% of the total revenue each year. Based on that assumption, the following values were derived for revenue generated by students for fiscal years 2010 to 2014.

Table 9: Estimated Revenue Data 2010-2014

	Year 2014	Year 2013	Year 2012	Year 2011	Year 2010
Total Revenue	$285,450.68	$312,618.48	$251,929.37	$201,213.00	$120,199.00
Revenue from Non-Students	$258,109.68	$282,675.30	$227,799.10	$181,940.44	$108,686.12
Revenue from Mason Students	$27,341.00	$29,943.18	$24,130.27	$19,272.56	$11,512.88
# of Students Using EDGE	1,823	1,996	1,609	1,285	768
Total # of GMU Students	33,791	33,917	32,961	33,320	32,562
Percentage of Mason Students Using EDGE	5.39%	5.89%	4.88%	3.86%	2.36%

Next, the number of students using the EDGE was estimated using the following equation:

$$\#\ of\ Students\ Using\ EDGE = \frac{Revenue\ from\ Mason\ Students}{\$15}$$

The revenue from Mason students was divided by $15 because that is the cost of the program for Mason students. Once the number of Mason students using the EDGE was determined, the percentage of Mason students using EDGE was determined using the following formula:

$$Percentage\ of\ Students\ Using\ EDGE = \frac{\#\ of\ Students\ Using\ EDGE}{Total\ \#\ of\ GMU\ Students} * 100$$

In order to project the percentage of Mason students that will use the EDGE in the next ten years, an average of the yearly percent increases in student participation between 2010 and 2015 was calculated. This average was then used to project the percentage of students that will use the EDGE in the next ten years. These percentages were then used to calculate the number of students using the EDGE each year based on the total number of Mason students. The total number of Mason students in each of the next ten years was also projected using historical student growth data. The percentages and number of students using the EDGE in the next ten years were calculated as follows:

Table 10: Projected Student Growth and Participation

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Projected # of Mason Students	34,607	35,108	35,617	35,134	36,658	37,189	37,729	38,276	38,831	39,394
Projected % of Students Using the EDGE	5.82%	6.40%	6.98%	7.55%	8.13%	8.71%	9.28%	9.86%	10.44%	11.02%
Projected # of Students Using the EDGE	2,015	2,247	2,485	2,729	2,980	3,238	3,503	3,775	4,054	4,340

Using the number of students participating in the EDGE, the number of facilitators and associated labor costs were determined for each of the next ten years. The labor costs varied in each of the three scenarios, as described in the above sections. The other revenue and expense variables in the budget were projected as described in the previous section. The following results were found for each of the three scenarios in the adjusted student fee structure forecast model:

Conservative:

Year	2016	2017	2018	2019	2020
Profit	-$49,981.19	-$36,172.81	-$22,537.43	-$9,081.54	$4188.13

Year	2021	2022	2023	2024	2025
Profit	$17,264.59	$30,140.61	$42,808.69	$55,261.07	$67,489.70

Moderate:

Year	2016	2017	2018	2019	2020
Profit	-$45,951.82	-$31,679.74	-$17,568.05	-$3,622.99	$10,149.00

Year	2021	2022	2023	2024	2025
Profit	$23,741.19	$37,146.64	$50,358.15	$63,368.25	$76,169.18

Optimistic:

Year	2016	2017	2018	2019	2020
Profit	-$43,265.57	-$28,684.36	-$14,255.13	$16.05	$14,112.91

Year	2021	2022	2023	2024	2025
Profit	$28,058.92	$41,817.33	$55,391.13	$68,773.04	$81,955.50

Based on these projections, it was determined that the EDGE will achieve a breakeven budget between 2019 and 2020 and likely make a profit in the following years, as well as observe a steady increase in the number of students participating in the program.

Recommendations

Student Fee Restructuring

In accordance with the results obtained from the value hierarchy analysis and the budget models discussed in the previous sections, the first recommendation as part of the 10-year plan for the EDGE program is to revise the student fee structure and maintain the $15 student fee throughout the fiscal year, regardless of the university grant. The historical budget data has shown that student participation decreases drastically when the student fee transitions from $15 to $65, and the total number of students participating over the past few years has averaged to about 1800 students, which is approximately the number of students that are served before the university grant is depleted. The model results showed that this change will lead to an increased number of students participating in the program, and as a result, assist in achieving a breakeven budget. The return on investment analysis has shown that a $15 student fee will still allow the various EDGE programs to operate at a profit, since the program expenses are still covered from the program's revenue.

University Integration

Given the reduced student fee structure, the next step is to attract more students by increasing the EDGE's presence at the university. As discovered in the external literature research, the true catalyst for a successful university experiential learning program is the integration into the academics and culture of the university. While the EDGE's current university presence is strong, there are several opportunities available to pursue in order to extend the program's outreach and serve more students. The first recommendation for further university integration is to expand the EDGE's presence during fall semester orientation and welcome week. This will give the EDGE an opportunity to imprint on the incoming students early on and allow for more exposure across a high number of students. The second recommendation is for EDGE to use the existing partnership with UNIV Courses and Programs department as a blueprint in order to reach out and partner with different university organizations and departments where experiential learning and EDGE values can be of use to the students. The UNIV partnership with EDGE has proven to be very successful, with 22 of the 37 sections of the UNIV 100 course currently participating with EDGE every year. UNIV Associate Director Jackie Nash stated that they have tremendously enjoyed their working relationship with the EDGE program, citing specific praise for Sue Czarnetzky and Dave Heath, and felt very positively that other departments can benefit greatly from the EDGE's services the same way the UNIV department has. Programs such as GMU MILE, INTO MASON, ROTC, and Patriot Experience were identified as good candidates for potential partnerships with EDGE.

Supplementary Analytics – Return On Investment Analysis

One method to evaluate the financial effectiveness of a program is to determine the return on investment (ROI). The result from the ROI will provide the EDGE program's decision makers a quick, high-level

look at the program to ensure costs are not negating the potential profitability. ROI is the percentage of profit to cost returns.

Methodology

The first step is to calculate the profit:

$$Net\ Profit\ =\ Total\ Revenue\ -\ Total\ Expenditures$$

The resulting profit will be used to determine the ROI by the following equation:

$$ROI\ =\ (Net\ Profit\ /\ Total\ Expenditures) * 100$$

To begin the calculating the ROI of the different EDGE programs, the cost break down for each program was evaluated. The data from the pricing structure provides the total revenue that each program will generate based on the number of participants.

The facilitator cost is the only expenditure that will impact the ROI of each program. The facilitator cost has two components that must be considered for the analysis:

- Number of Facilitator (based on number of participant)
- Facilitator Wages

The first component is the number of facilitators required. Based on current policy, there must be one facilitator for every fifteen participants. The only exception to this rule is the elementary students programs where one facilitator is required for every twelve students. If the number of participants exceeds the ratio, one additional facilitator will be added until the ratio(s) is satisfied.

The second component is the facilitator hourly wage. Currently the facilitator wage ranges from $10/hour to $15/hour. The programs usually run four to six hours per, so the labor rates can range from $40/facilitator to $90/facilitator.

An Excel document was created to allow modifiable variables to evaluate current ROI of each program and potential modifications to the revenue and expenditures. The Excel file is broken into two interface sections and two result sections:

- Customer Size and Facilitator Average Hourly Wage (interface)
- Pricing Structure (interface)
- Net Profit (result)
- ROI (result)

An example of the ROI Excel document is:

For the example, assume the customer size is fifteen people with an average facilitator rate of $10/hr.

Table 11: Interface One

Size (# of People)	Average Facilitator Rate ($/hr)
15	10

The pricing structure will not change as listed above in Table 11.

Table 12: Interface Two

Program Price ($)	Size	Youth	University Students	SFA Mason Students	Adult	Prof	GOV/NP
TDC 4Hrs		45	65	15	65		
TDC 6Hrs		45	65	15	65		
ATDC 4Hrs		45	65	15	65		
ATDC 6Hrs		45	65	15	65		
TWE 4Hrs		45	65	15	65		
TWE 6Hrs		45	65	15	65		
ATDC w/ TTCI 6Hrs	8-12	1250	1250	570	1250		
ATDC w/ TTCI 6Hrs	13-15	1250	1250	570	1250		
ATDC w/ TTCI 6Hrs	16-20	1500	1500	800	1500		
ATDC w/ TTCI 6Hrs	21-24	2000	2000	1008	2000		
ATDC w/ TTCI 6Hrs	25-28	2000	2000	1008	2000		
ATDC w/ TTCI 6Hrs	29	2500	2500	1260	2500		
ATDC w/ TTCI 6Hrs	30-36	2500	2500	1260	2500		
TTC 6Hrs	8-12	1250	1250	570	1250		
TTC 6Hrs	13-15	1250	1250	570	1250		
TTC 6Hrs	16-20	1500	1500	800	1500		
TTC 6Hrs	21-24	2000	2000	1008	2000		

TTC 6Hrs	25-28	2000	2000	1008	2000		
TTC 6Hrs	29	2500	2500	1260	2500		
TTC 6Hrs	30-36	2500	2500	1260	2500		
TTDC 4Hrs					65		
TTDC 8Hrs					65		
Leading EDGE 4Hrs						165	85
Leading EDGE 6Hrs						165	85
Learning EDGE 4Hrs						185	105
Learning EDGE 6Hrs						185	105

The profit for each program is:

Table 13: Program Profits

Profit ($)	Size	Youth	University Students	SFA Mason Students*	Adult	Prof	GOV/NP**
TDC 4Hrs		595	935	185	935		
TDC 6Hrs		555	915	165	915		
ATDC 4Hrs		595	935	185	935		
ATDC 6Hrs		555	915	165	915		
TWE 4Hrs		595	935	185	935		
TWE 6Hrs		555	915	165	915		
ATDC w/ TTCI 6Hrs	8-12	1190	1190	510	1190		
ATDC w/ TTCI 6Hrs	13-15	1130	1190	510	1190		
ATDC w/ TTCI 6Hrs	16-20	1380	1380	680	1380		
ATDC w/ TTCI 6Hrs	21-24	1880	1880	888	1880		
ATDC w/ TTCI 6Hrs	25-28	1820	1880	888	1880		

ATDC w/ TTCI 6Hrs	29	2320	2380	1140	2380		
ATDC w/ TTCI 6Hrs	30-36	2320	2320	1080	2320		
TTC 6Hrs	8-12	1190	1190	510	1190		
TTC 6Hrs	13-15	1130	1190	510	1190		
TTC 6Hrs	16-20	1380	1380	680	1380		
TTC 6Hrs	21-24	1880	1880	888	1880		
TTC 6Hrs	25-28	1820	1880	888	1880		
TTC 6Hrs	29	2320	2380	1140	2380		
TTC 6Hrs	30-36	2320	2320	1080	2320		
TTDC 4Hrs					935		
TTDC 6Hrs					915		
Leading EDGE 4Hrs						2275	1075
Leading EDGE 6Hrs						2175	975
Learning EDGE 4Hrs						2575	1375
Learning EDGE 6Hrs						2475	1275

Table 14 shows the ROI for each program:

Table 14: Program ROI

ROI (%)	Size	Youth	University Students	SFA Mason Students*	Adult	Prof	GOV/NP**
TDC 4Hrs		743.75%	2337.50%	462.50%	2337.50%		
TDC 6Hrs		462.50%	1525.00%	275.00%	1525.00%		
ATDC 4Hrs		743.75%	2337.50%	462.50%	2337.50%		
ATDC 6Hrs		462.50%	1525.00%	275.00%	1525.00%		

TWE 4Hrs		743.75%	2337.50%	462.50%	2337.50%		
TWE 6Hrs		462.50%	1525.00%	275.00%	1525.00%		
ATDC w/ TTCI 6Hrs	8-12	1983.33%	1983.33%	850.00%	1983.33%		
ATDC w/ TTCI 6Hrs	13-15	941.67%	1983.33%	850.00%	1983.33%		
ATDC w/ TTCI 6Hrs	16-20	1150.00%	1150.00%	566.67%	1150.00%		
ATDC w/ TTCI 6Hrs	21-24	1566.67%	1566.67%	740.00%	1566.67%		
ATDC w/ TTCI 6Hrs	25-28	1011.11%	1566.67%	740.00%	1566.67%		
ATDC w/ TTCI 6Hrs	29	1288.89%	1983.33%	950.00%	1983.33%		
ATDC w/ TTCI 6Hrs	30-36	1288.89%	1288.89%	600.00%	1288.89%		
TTC 6Hrs	8-12	1983.33%	1983.33%	850.00%	1983.33%		
TTC 6Hrs	13-15	941.67%	1983.33%	850.00%	1983.33%		
TTC 6Hrs	16-20	1150.00%	1150.00%	566.67%	1150.00%		
TTC 6Hrs	21-24	1566.67%	1566.67%	740.00%	1566.67%		
TTC 6Hrs	25-28	1011.11%	1566.67%	740.00%	1566.67%		
TTC 6Hrs	29	1288.89%	1983.33%	950.00%	1983.33%		
TTC 6Hrs	30-36	1288.89%	1288.89%	600.00%	1288.89%		
TTDC 4Hrs					2337.50%		
TTDC 8Hrs					1525.00%		
Leading EDGE 4Hrs						1137.50%	537.50%
Leading EDGE 6Hrs						725.00%	325.00%
Learning EDGE 4Hrs						1287.50%	687.50%
Learning EDGE 6Hrs						825.00%	425.00%

Results

For this sample run the best ROI (2337.50%) are for programs that run for four hours and cost $65 per person. The rationale for this result is due to a few factors. First, the higher costs per person generate more revenue but since the cost is a flat fee, the six hour programs make less per hour then the four hour programs. Second, the $65/person programs also require a 1:15 facilitator to customer ratio. Finally, by keeping the program run time to four hours the expenditures are kept lower for the facilitator.

Another important note of the ROI results is that the facilitator to customer ratio matters when looking to maximize profit. Take another example when the customer size differs for TDC 4Hrs course, assuming consistent facilitator hourly rate and both the Youth program costs the same as for University Students:

Table 15: Youth/University Analysis

Cost ($)	Size	Youth Profit ($)	Youth ROI	University Student Profit ($)	University Student ROI
65	10	610	1520.00%	610	1525.00%
65	11	675	1687.50%	675	1687.50%
65	12	740	1850.00%	740	1850.00%
65	13	765	856.25%	805	2012.50%
65	14	830	1037.50%	870	2175.00%
65	15	895	1118.75%	935	2337.50%
65	16	960	1200.00%	960	1200.00%
65	17	1025	1281.25%	1025	1281.25%
65	18	1090	1362.50%	1090	1362.50%
65	19	1155	1443.75%	1155	1443.75%
65	20	1220	1525.00%	1220	1525.00%
65	21	1285	1606.25%	1285	1606.25%
65	22	1350	1687.50%	1350	1687.50%
65	23	1415	1768.75%	1415	1768.75%
65	24	1480	1850.00%	1480	1850.00%

As shown above, when all other factors are consistent the ratio will keep the Youth programs to a ROI cap of 1850% return rate, while the University Student programs will cap at 2337.5%. Both of these caps are at the ratio rates (one in twelve and one in fifteen) which indicate that to maximize the ratio when possible.

So with the current pricing structure the EDGE programs return at minimum 275% profit to expenditure. Some trade space exists to adjust customer pricing and/or facilitator hourly rates and the programs would still return a profit. It should be stated that the numbers listed above do not account for any expenditures outside of running a program, so day to day administrative salaries and other miscellaneous fees/costs are not accounted for within the ROI modeling.

10 Year Plan

In addition to the analysis provided above, feedback for neighboring university OET programs and literature review content were utilized to develop a bulleted 10 year plan for growth and development of the EDGE.

Initial Updates and Review – Years 1-3

Year 1

- Adjust pricing structure for student programs – Reduce student fee to no less than $15
- Review GMU courses, and organizations for additional outreach – leverage aforementioned groups and organizations
- Discuss potential in-house marketing with other Mason Recreation programs to leverage additional student facilitators and gain buy-in from current Mason Recreation student employees
- Collect all data required to facilitate usage of the value hierarchy, to its greatest extent
- Implement annual surveys to gauge student/community interest, as well as expose the program at minimal cost
- Retrieve all detailed data for years of operation since the EDGE was moved to S&T campus (2009 onward)
- Experiment with targeted outreach – looking at incoming students only (freshmen, graduate students, etc.)

Year 2

- Develop outreach model for initial contact with potential groups and organizations for long-term partnership
- Review student facilitator training techniques to allow for student facilitation of professional groups
- Conduct and review value scoring given data FY 16 and FY 17 data
- Review and update evaluation procedures, surveys, etc. – How are you making sure you are meeting your objectives and client objectives within your programming?

Year 3

- Implement updated evaluation procedures, programs, etc.

- Implement update training techniques for student facilitation
- Develop pitch for University funding of the EDGE through Mason Recreation
    - Include evaluations completed over the past two years and prior year data

Academic Outreach – Years 4-6

- Update value hierarchy, if necessary
- Implement outreach model on target organizations, and academic departments
    - Leverage course with a direct tie to experiential learning
- Readjust pricing structure for student organizations, if necessary – potential for incentives
- Solicit outreach amidst service organizations on campus for maintenance assistance

Continued Assessment of Growth and Expansion – Years 7-10

- Reevaluate pricing structure for non-student programs – Determine if a change in pricing structure for non-students is warranted?
- If any issues, evaluate programming relocation between the Fairfax and S&T campuses – Which programs should be moved, duplicated, or removed from one or both campuses

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