

Eco Creditz – Major Report:

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Abstract:

This report is focused upon endeavoring to meet our everyday unsustainable behavior processes, which are prevalent in our world at present, such as, unhealthy eating habits, fossil fuel reliance and development disparities etc. This is because; if this challenge is not met in the future, then the outlook for humanity is grim indeed, in regards to sustainability concerns in many contexts. As a result, this report is focused upon meeting some of those challenges, specifically in the area of physical activity, sustainability and transport options. Consequently this report investigated if 10 individuals within a limited demographic scope could modify / change their everyday physical activity behavior of walking running and cycling, over a 2 month period, into a healthy / sustainable behavior process. This was done by implementing, a one month weekly incentive / reward program, which rewarded individuals when they met, set physical activity targets. While in the 2nd month there was no weekly incentive / reward process. It was found that in the 1st month of the pilot project, 60% of the participants achieved the set weekly target of 35,000 steps per week, which was measured and monitored via a conventional pedometer / cyclemeter process. While in the 2nd month, 40% of the participants achieved the set weekly target of 35,000 steps per week. It was also found that in the 1st month, 60% of the participants, on average achieved around 42,000 steps per week, while in the 2nd month, 40% of the participants, on average, achieved around 38,000 steps per week. Consequently as these weekly, physical activity target findings and monthly step averages indicate, an incentive / reward program in the 1st month of the pilot project, encouraged participants to achieve the set physical activity targets and gain their reward. Thus these results confirm that incentives and rewards can encourage behaviour change, over a 2-month period. Indeed in the context of this report, it can be assumed, that it is possible for individuals to change their everyday physical activity behaviour processes, over the short term initially, so that they can engage a healthy and sustainable lifestyle process.

Introduction:

This report has focused upon analyzing information / data on how and an individual can change their everyday behavior patterns. Why? Because if we continue to engage our present unsustainable everyday behavior processes, such as, unhealthy eating habits, fossil fuel reliance and development disparities, to name a few, we will continue to decimate our environment and societies (UNEP, 2011, p.19) (League of American Bicyclists, 2011, pp.1-34). Indeed it has been indicated, that if we continue on an unsustainable everyday behavior processes, it will only enhance many climate change concerns we have in the world at present (Angell, 1991, p.245). Moreover I would suggest the crux, of most of these unsustainable everyday behavior processes, which are being constantly perpetuated within our civilized and natural environments, are both behavioral and ethical dilemmas of how we live within our world *now* (Harka, 1993, p.29). As a result, the question is; Should we ignore the challenge of how we live within our world *now* and instead continue reassure ourselves, with the security of our present worldview paradigm and unsustainable behavior patterns? (Partridge, 1995, pp.2-4). Or do we as a human species meet the challenge, of how we behave / live within our world *now* and ask ourselves; “survival” at what cost? (Pul`e, 2008, pp.1-8). As a result, I will argue that if individuals can modify / change their everyday behavior patterns, in regards to physical activity, transport options and personal behavioral processes. It is possible that individuals can then become holistic orientated in their behavior and thus in turn, make the world a healthy and sustainable place to live in. Indeed I would suggest that this can be done by initiating incentive programs, that reward individuals for physical activity processes, such as walking running and

cycling, etc, which are measured and monitored by human motion, sensor detector processes (Solomon, 1999, pp.7, 11-13). Such as a by the use of; conventional, or Mobil device, pedometer / cyclometers (Pedometer.com, 2005, pp.1-2). In this way, it is possible that an individual can deny their reliance upon the fossil fuel resources, implicit within many conventional transport / energy options, at present (Goulet, 1995, pp. 186-193). While also enhancing, the prospect of a healthy lifestyle (Benrham, 2003, P. 132) (Miles, 1999, ch-13, pp. 418-420) (Fox, 1999, pp. 411-418). Thus an individual can then become sustainable and holistic orientated in their everyday behavior processes (Turner, 2005, ch-12, pp.13-17) (Kung, 2003, Pp.152-153). As a result this report has as its proposed future focus, a view of implementing behavior changing processes, which could be initiated within a broad demographic scope, encompassing a diversity of ethnicity, gender and ages. However for this specific project it has been implemented within a limited demographic geographic scope, which is in the outer suburbs of the Perth metropolitan region, with an age demographic of the participants between 30 – 70 years old. The pilot project, literature / survey review process, reviewed in total, around 200 books, journal articles and other relevant literature, with the focus predominately upon kinesiology, behavioral / cognitive psychology, sustainability, physical activity, motion sensor detector information and social ecology research papers and discourses.

Aim of the Report:

The persistent aim of this report is to inform and present findings, in regards to an individual's everyday behavior, both within a case study / pilot project format and through a literature / survey review process. It asked the questions of how and why, can an individual modify / change their everyday behavior patterns, in regards to their physical activity, transport options and personal behavioral processes, so that an individual can become holistic orientated, in their everyday behavior patterns. Indeed the essential aim of this report tends to focus upon an individuals cognitive dissonance behavior process. And thus brings to our attention, how all our behaviors can / have become hypercritical at times, through a cognitive dissonance, behavior processes and it is only by envisioning / engaging certain behaviors, that you we are then really able to change / rectify those behaviors (Festinger, Calsmith, 1959, pp.183-191).

Method of the Report:

This report has relied heavily upon two central themes, encompassing a decimation of data incorporated within a case study - pilot project and a pilot project literature / survey review process.

Initial Findings:

- It was found that in regards to pilot project, that in the 1st month, of the pilot project 60% of the participants achieved the set weekly target of 35,000 steps per week, which was measured and monitored via a conventional pedometer / cyclometer process. While in the 2nd month 40% of the participants achieved the set weekly target of 35,000 steps per week.
- It was found that in the 1st month, 60% of the participants, on average achieved around 42,000 steps per week, it was also found that that in the 2nd month, 40% of the participants, on average achieved around 38,000 steps per week.

- It was found that for future physical activity measure / monitoring processes, a Mobil device being of either; a generic - Smart Phone, Google - Android 2.1 phone, or an Apple - I-Phone, which has a 3-axial pedometer / cyclemeter / accelerometer Mobil device application built into it, would be a better option, in regards to reliability and accuracy concerns, of physical activity measure / monitoring processes.
- It was found that, in regards to the pilot project literature survey review, that literature pertaining to incentive / reward and motivational processes and pedometer /cyclemeter measure / monitoring processes, was the best source of research martial to analyze / critique the pilot project survey results.

Case Study - Pilot Project:

Aim of the Pilot Project:

The aim of the pilot project was to find out if there were *any* benefits for individuals, if they participate in an incentive / reward process, which engaged physical exercise processes, such as, walking, running and cycling.

Method of the Pilot Project:

The case study critique of the pilot project, consisted off analyzing the pilot project data and asking survey questions, in relation to motivational and behavioral changing process and also in relation to the how and why, there was a need to initiate the pilot project itself?

The incentive / reward, methodological process of this pilot project, was structured so that the participants did some physical activity process, such as, walking, running and cycling, while having attached either a conventional, or Mobil device; pedometer / cyclemeter, to record their physical exercise process. Participants were asked to record the pedometer / cyclemeter data into a conventional diary, or computer web based diary format. This recorded data was then received, vie land mail, or email by the pilot project coordinator. Who subsequently, allocated the participants rewards to them, which was based upon participants achieving a specific set of weekly physical activity targets, which consisted off:

Participants achieving, 5,000 steps / 5 klm per day, over a 4 week period, or achieving 35,000 steps / 35 klm – per week, over a 4 week period. However there was also a small incentive/ reward process in month 2, which consisted off participants achieving an overall total of 180,000 steps / 180-klm, for the entire 2 month period. Participates in this study were asked to complete the following tasks:

- Participants engaged in a physical exercise process, walking, running, and cycling, at their own leisure, while having attached a pedometer / cyclemeter, to record their physical exercise process.
- At the end of each physical activity session process, participants recorded the motion data / steps done within, either a conventional diary, or computer web based diary format.
- When participants achieved a set physical activity target, they were eligible to receive a reward.
- The pilot study involved two stages; Month 1 had weekly incentive and rewards, while month 2 did not have weekly incentives and rewards.
- Participants gave feedback and answered questions, in weeks 4 / 8

Pilot Project - Background:

The 1st stage of the pilot project consisted of approaching, around 8 local Belmont businesses, to inform them of the pilot project and to ask if they could supply an incentive for the participants to engage in physical activity processes. As a result, 5 local businesses offered some form of service or product, as an incentive for the participant's physical activity process, these incentives consisted off:

- Gift vouchers – Kmart –Gift Vouchers.
- Movie tickets – Reading Cinemas / Belmont
- Discounts on bicycle products – Bicycle Entrepreneur /Belmont
- Free coffee – Miss Maude`s / Belmont
- Discount on gym health club usage -Belmont Oasis gym / Health club.

There were 10 participants required for this pilot project; this was done by placing and advertisement / article in the local Belmont Community Newspaper, asking for 10 adult volunteers within a diversity of gender, age and physical demographics. Indicating that participants should be of average to good physical health and be able to moderately walk, or cycle on a daily basis. Participants were also asked, to have if possible a mobile device, such as, I-phone, I-pod, or smart phone concept, which was capable of incorporating, Android -2.1 Mobil device applications, or generic I-Phone Mobil device applications. While conventional pedometers / cyclemeters and I-Phone / Android – free pedometer / cyclemeter GPS applications, were to be supplied to participants. (Fig-14-15-16).

The article / add was specifically designed to requite participants from within the Belmont region. The reasoning behind this was, to engage a specific local community in scope, for communication and logistical reasons, rather than having a broad, participant engagement scope, which would have been hard for one person to manage. For instance, many of the incentives / rewards for participants were supplied from local Belmont business, which of course, was practical and convenient for many participants within the Belmont area. Infact in reality, it is probably best that any similar projects, be implemented within a high-density urban region, which has easily accessible pedestrian / cycle and public transport infrastructure already established.

The pilot project was launched form the local Belmont Library on 13/08/2011, whereby all participants attended and gained knowledge / information on the project and what their role would be in the project. Packages containing pedometers / cyclemeters, participant diaries and other relevant martial were given to each participant.

The average age of the participants was around 40 years old, with 4 males and 6 females taking part in the pilot project over a 2 month period, between 01/09/2011 – 27/10/2011. However for this sort of project to function effectively and to be of best benefit to those most in need, in reality, it is probably best, to encompass an age demographic of between 20 – 70 years old. The income demographics, for the majority of participants within the pilot project, were in middle to low income bracket. The overall physical

activity characteristics, of many of the participants in the pilot project, would be between mild to medium physical activity processes, before the pilot project was implemented. Many of the participants, had an average body mass weight of around 90-kg, at the start of the pilot project.

All the participants in the pilot project used a small, moderately accurate, SVS-Pharmacy - conventional pedometer and a Repco manufactured, conventional cyclometer, no Mobil devices with pedometer / cyclometer applications were used at all.

Communication between the pilot project coordinator and participants was done via land mail / telephone, or face to face contact. While participant's rewards, were distributed via land mail process, in all circumstances.

Participant's weekly measurement data was received each week and thus recorded on the pilot projects web page within an Exel spread sheet format. (Fig -1). The pilot project coordinator, initiated a monthly measurement data process, to analyze and correlate with the participants received data. (Fig-2-3-4). The pilot project coordinator, distributed rewards when participants had met the required physical activity targets.

Participant's physical activity targets were based upon participants achieving 5,000 steps / 5 klm per day or 35,000 steps / 35 klm per week. Which entailed a physical activity process off; 45 Minute walk / 30 Minute run - per day, or 15 Minute Cycle ride per day.

Participants were then rewarded, when they reached the set physical activity targets off:

- 35,000 steps / 35 klm- at the end of week 1 = \$5.00 K-Mart - Gift Voucher
- 70,000 steps / 70 klm – at the end of week 2 = 10% Discount on a Bicycle Product.
- 105,000 steps / 105 klm – at the end week 3 = Free Coffee Voucher
- 140,000 steps / 140 klm - at the end week 4 = Free Movie Ticket
- 180,000 steps / 180 klm – at the end of week 8 = \$10.00 K-Mart - Gift Voucher *

* It has to be noted that the \$10.00 – K-Mart gift voucher, which was rewarded to all those participants that completed 180,000 steps, at the end of week 8 of the pilot project, was independent of the 1st month's weekly incentive / reward based process. As it was an end of project bonus reward, rewarded to participants if they continued with their physical activity processes into the 2nd month. Indeed for a participant to accumulate the 180,00 steps by end of week 8, a participant had to only walk an extra 40,000 steps over an entire month period. Rather than doing the weekly, 35,000 / 40,000 steps needed in month ones, incentive / reward process. Thus the extra 40,000 steps a participant did in month 2, to gain their end of project month 2 bonus rewards, was only 25% of the physical activity process as engaged month 1. However it could still be classed as an incentive / reward process for participants, but on a much smaller scale than was implemented in month ones incentive / reward process.

Infact all of the above, weekly / end of project set rewards / targets, for participants physical activity processes, were only a guide: For instance, if a participant took 3-4 weeks to achieve an overall 70,000 steps / 70 klm, by the end of weeks 4 / 8, they were still entitled to the reward of; a 10% discount on a bicycle product.

An ongoing monthly survey was conducted and the end of weeks 4/8, consisting of 15 questions in each survey, encouraging participants to circle either; yes / no / other responses. As a result, 80 % of the weeks 4 and 8 surveys were returned from the participants, by 04/11/2011.

Results of the Pilot Project:

Fig - 2 Participants Measurement Data – Month -1

month -1	Walk	Run	Ride	Total steps-M-1	Total steps-klm-M-1	Total Ride-M-1	Total Time-M-1	Overall Total steps-M-1
Participant 1	X			160,000	N/A		N/A	160,000
Participant 2	X		X	209,000	181-klm	28-klm	100h-45min	237,000
Participant 3	X		X	30,800	18.5-klm	21.2-klm	4h-45min	52,000
Participant 4	X			179,268	151.9-klm		N/A	179,268
Participant 5	X		X	38,000	38-klm	173-klm	31h	211,000
Participant 6	X		X	198,500	N/A	25.5-klm	23h	224,000
Participant 7	X	X		187,092	205.1-klm		27h-40min	187,092
Participant 8	X			132,200	93.8klm		14h	132,200
Participant 9	X			92,804	79.3-klm		15h-50min	92,804
Participant 10	X			50,809	43.2-klm		7h-10min	50,809

Participants Measurement Data – Month -1: P-1/10 = Participants Number / T-Steps-M-1 = Total Steps – Month-1 / T -S-klm -M-1 = Total Steps Kilometers – Month-1 / T – Ride-M-1 = Total Cycle / Ride - Kilometers – Month-1 / T-Time -M-1 –Total Time - Month-1 / Overall Total Steps-M-1 = Overall Total Steps – Month-1.

From the above monthly measurement data it can be ascertained that 60% of the participants in month 1 achieved the weekly target of 35,000 steps per week, or 140,000 steps for the month to gain their rewards. The average amount of total steps per week in month 1 for 9 participants, was around 42,000 steps per week, while 1 participant average around 58,000 steps per week. The average amount of step klm per week in month 1 for 7 participants was 20.2 klm per week, while for 1 participant it was 45 klm per week. The average amount of cycle / ride klm per week in month 1 for 4 participants, was 7-klm per week for 3 participants, while one participant averaged around 43-klm per week. The average amount of time that 8 participants spent doing physical activity processes per week in month 1, was for 2 participants – 2 hours per week, for 5 participants – 6 hours per week and for 1 participant – 25 hours per week.

Fig - 3

Participants Measurement Data - Month 2

Month -2	weeks-5-8							
Month -2	Walk	Run	Ride	Total steps-M-2	Total steps-klm-M-2	Total Ride-M-2	Total Time-M-2	Overall Total steps-M-2
Participant 1	X			187,000	N/A		N/A	187,000
Participant 2	X		X	330,000	330-klm	45.5-klm	239h	375,500
Participant 3					N/A		N/A	N/A
Participant 4					N/A		N/A	N/A
Participant 5	X		X	10,000	10-klm	50-klm	7h-40min	60,000
Participant 6	X		X	167,000	N/A	25.9-klm	25h	192,900
Participant 7	X		X	160,200	84-klm	45-klm	20h-20min	205,200
Participant 8				N/A	N/A		N/A	N/A
Participant 9	X			131,846	103.6-klm		21h-35min	131,846
Participant 10	X			129,664	109-klm		22h-10min	129,664

Participants Measurement Data - Month - 2: P-1/10 = Participants Number / T-Steps-M-2 = Total Steps – Month-2 / T -S-klm -M-2 = Total Steps Kilometers – Month-2 / T – Ride-M-2 = Total Cycle / Ride - Kilometers – Month-2 / T-Time -M-2 –Total Time - Month-2 / Overall Total Steps-M-2 = Overall Total Steps – Month - 2.

From the above monthly measurement data, it can be ascertained that 40% of the participants in month 2, continued to achieved the weekly target of 35,000 steps per week, or 140,000 steps in a month, without to gaining any weekly rewards. However there was a \$10.00 – K-Mart gift voucher rewarded, to all those participants that completed 180,000 steps, over the entire 2-month period.

The average amount of total steps per week, in month 2 for 6 participants, was around 38,000 steps per week, while 1 participant average around 93,000 steps per week. The average amount of step klm per week in month 2 for 7 participants was 20.2 klm per week, while for 1 participant it was around 77 klm per week. The average amount of cycle / ride klm per week in month 2 for 4 participants was 10-klm per week. The average amount of time that 6 participants spent doing physical activity processes per week in month 2, was for 1 participant –1.2 hours per week, for 4 participants – 5 hours per week and for 1 participant – 55 hours per week.

Fig - 4 Participants Overall Total Measurement Data – Months 1-2

Month-1-2	Walk	Run	Ride	Total steps-M-1-2	Total steps-klm-M-1-2	Total Ride-M-1-2	Total Time-M-1-2	Overall Total Steps-M-1-2
Participant 1	X			347,000	N/A		N/A	347,000
Participant 2	X	X	X	539,000	511-klm	73.5-klm	612h-50min	612,500
Participant 3	X		X	30,800	18.5-klm	21.2-klm	4h-45min	52,000
Participant 4	X			179,268	151.9-klm		N/A	179,268
Participant 5	X		X	48,000	48-klm	223-klm	38h-40min	271,000
Participant 6	X		X	365,500	N/A	51-klm	51h	416,900
Participant 7	X	X	X	347,292	289-klm	45-klm	48h	392,292
Participant 8	X			132,200	93-klm		14h	132,200
Participant 9	X			182,651	155.4-klm		37h-30min	182,651
Participant 10	X			201,557	144.6-klm		29h-20min	201,557

Participants overall total measurement data – months 1 - 2: $P-1/10 = \text{Participants Number} / T\text{-Steps} - M-1-2 = \text{Total Steps} - \text{Month-1 and Month-2} / T\text{-S-klm} - M-1-2 = \text{Total Steps Kilometers} - \text{Month-1 and Month-2} / T - \text{Ride} - M-1-2 = \text{Total Cycle / Ride} - \text{Kilometers} - \text{Month-1 and Month-2} / T\text{-Time} - M-1-2 = \text{Total Time} - \text{Month-1 and Month-2} / \text{Overall Total Steps} - M-1-2 = \text{Overall Total Steps} - \text{Month-1 and Month-2}$.

From the above overall total measurement data, over the 2 month period, it can be ascertained that 70% of the participants achieved over 180,000 steps over the entire 2-month period. Thus 70% of the participants archived the set target of 35,000 steps per week within the 1st month, while also achieving extra 40,000 steps within month 2. Indeed the overall total measurement data, indicates that target of 180,000 steps by end of week 8, was reached with and without, participants gaining weekly rewards over the entire 2-month period, for their physical activity processes.

The average amount of total steps per week, over the 2 month period, for 9 participants was around 39,500 steps per week, while for 1 participant it was around 65,000 steps per week. The average amount of step klm, per week, over the 2-month period, for 9 participants was 21-klm per week, while for 1 participant it was 65 klm per week. The average amount of cycle / ride klm per week, over the 2 month period, was for 4 participants 8.5 klm per week, while 1 participant it was 50 klm per week. The average amount of time that 10 participants spent doing physical activity processes over the 2 month period was for 4 participants –2 hours per week, for 5 participants – 7 hours per week and for 1 participant it was 40 hours per week.

Summary of the Results of the Pilot Project:

In regards to the participant's month 1 measurement data process, the indication is that because 60% of the participants achieved the set weekly target of 35,000 steps per week, or 140,000 steps for the 4 weeks. It is possible therefore to assume that the incentive process initiated within this 1st month of the pilot project, encouraged participants to achieve these set physical activity targets and gain their reward?

In regards to the participant's month 2-measurement data process, the indication is that because only 40% of the participants achieved the set weekly target of 35,000 steps per week, as requested in month 1. It is possible that because there was no weekly set target -incentive / reward process initiated within this 2nd month of the pilot project, it discouraged many of the participants to achieve a weekly set physical activity target?

However as there was an end of project incentive / reward, which encouraged 70% participants, to achieve an extra 40,000 steps in month 2, on top of their already achieved 140,000 steps they had already achieved in month 1. It can be implied that there was an incentive / reward process in month 2 as well, but on a much a much smaller scale than was implemented in month ones, incentive / reward process. Thus months twos smaller incentive / reward process may have come into play as a motivating force, for the 70% of participants, who achieved the overall total of 180,000 steps for the entire 2 month period?

However it can also be argued that because 70% of the participants achieved the overall target of 180,000 steps, for the entire 2-month period, with and without gaining any weekly rewards, for their physical activity process. That it is then possible, that this set physical activity target of 180,000 steps over 2 months, intrinsically- in-itself propelled some of the participants to reach this set physical activity target. This could be due to participants personal competition motivational dynamics evolving, rather than an incentive / reward based motivational dynamics encouraging participants to reach the set physical activity target of 180,000 steps over the 2 months (Le-Boeuf, 1985, pp.47-53). It must be noted however that 2 of the participants started 2/3 weeks late into the pilot project and may have possibly made up for lost time / physical activity in month 1, by doing more physical activity in month 2?

Indeed whatever the case, weather an invective / reward, or a personal competition motivation dynamic, the pilot project encouraged 70% of the participants to reach the set target of 180,000 steps over the entire 2 months. This with the findings that 60% of the participants achieved the set weekly target of 35,000 steps per week for 1st - 4 weeks, while only 40% of the participants achieved the set weekly target of 35,000 steps per week in the 2nd month. This tends to indicate that some form of physical activity, behaviour change process has occurred over the entire 2-month period.

Results of the Participants - Pilot Project Surveys:

A monthly survey was conducted at the end of weeks 4-8, consisting of 15 questions in each monthly survey, encouraging participants to circle either, yes / no / other responses. There was an 80% participant response, to the month 1 survey, while there was an 80 % participant response to month's 2 survey. All the surveys were received by 04/11/2011. The results of both surveys are included in the appendix of this report. (Appendix - Fig - 5).

Pilot Project - Literature / Survey Review:

Aim of the Pilot Project - Literature / Survey Review:

The aim of the pilot project literature / survey review process was to analyse the participant's response from the monthly survey questions against previous, current and relevant literature discourses. Investigating how and why an incentive / reward based motivation processes, can determine an individuals behavioral lifestyle process. Specifically focusing upon how and why incentive / reward based motivation processes can enhance a healthy / active and / or sustainable lifestyle processes? Or whether other intrinsic based motivations are more relevant in determining certain behavioral process for an individual? While also investigating if any benefits / concerns were enhanced by the participants in the pilot project and also investigating the pedometer / cyclometer measure / monitoring process.

Method of the Pilot Project - Literature / Survey Review:

Much of the literature sourced for this pilot project literature / survey review, was within the kinesiology, behavioral / cognitive psychology, sustainability, physical activity, motion sensor detector information and social ecology discourses. All these literature discourses, were compared and contrasted against, the analyzed data from the participants monthly surveys.

Pilot Project - Literature / Survey Review:

In regards to the survey question; did participants think an extremely reliable / accurate pedometer /cyclometer could have made them engage in more physical activities? 60 % of the participants – indicated an extremely reliable / accurate pedometer /cyclometer would not have made them engage in more physical activities. This tends to confirm, Fenton, Basset and Teare suggestion that an individual can be / is quite happy to engage in a manual physical activity step, cycle klm, base line approach of monitoring / measuring a physical activity processes. For instance, this is done via walking running and cycling, for say a week, at a set pace and in set area. (E.g.- counting steps, klm, or via land marks within a set area). Because it is through this process, that an individual can gain an alternative option, in regards to a pedometer / cyclometer monitoring / measuring techniques. Whereby a manual physical activity step / cycle klm base line approach of monitoring / measuring, can be contrasted and correlated against a mechanical / electronic pedometer / cyclometer data, for any discrepancies and the like (Fenton, Basset, Teare, 2006, pp.10-15). However according to the computer scientist, Fahd Khalaf Albinali, he suggests that a reliable / accurate pedometer /cyclometer, enables context-aware motion activities to be relevant and beneficial in real time. For instance, it has been indicted.” That with one good reliable 3-axial accelerometer at the hip, it is possible to detect up to 10 motion-based activities with 90% accuracy.” P.32 (Albinali, 2008, pp. 31-34,119). Infact 50% of the participants indicated that if there was some form of practical workshop, or information based process, at start of the pilot project, this may have helped them better understand the pedometer / cyclometer process. This in turn, may have helped them, gain better accuracy, in regards to their pedometer / cyclometer measurements. Indeed according to Albinali, if a pedometer / cyclometer / accelerometer is reliable and accurate in its functions, then further activity recognition systems, with an emphasis on data quality and interaction processes, can be researched and

developed. In the knowledge that there will be no inaccuracies within the accelerometers data, so that in turn, any possible future failures within either health or lifestyle functions / activities become eliminated (Ibid, pp.13-117, 119).

In regards to the survey question; did participants find the incentive of using a weekly reward voucher process a good motivational factor, in engaging them to do physical activities? 60 % of the participants indicated, that the incentive of using a reward voucher process was a good motivational factor, in engaging them to do physical activities. Indeed 40% of the participants indicated that if a weekly reward voucher process, continued in the 2nd month, this would have engaged them to do more physical activities in the 2nd month. This tends to confirm Le-Boeufs suggestion that if you reward individuals for specific behaviors, it enhances that behavior and you will more than likely get the results that are wanted (Le-Boeuf, 1985, pp.23-25). For instance, many management principles use incentive reward processes to gain the results they want within their business processes (Ibid, pp. 15-39). Indeed it is indicated that money and recognition are the best rewards to motivate an individual (Ibid, pp.102-104). However according to Kollmuss and Agyeman, it is suggested that in reality there may be barriers in place, that can limit an individuals ability to engage a physical activity incentive / reward processes and environmental behavior, such as, time / work, etc. Thus it becomes very difficult, for an individual to move / change from a limiting environment to another option, even though there are incentives / rewards in place to initiate a change in behavior, physical or otherwise (Kollmuss, Agyeman, 2002, pp.239-260). Indeed this is an obvious from the surveys, as 60% of the participant's thought there were barriers for them to engage fully in the pilot project, and 60% of the participants indicated that both time and work were the barriers for them to engage in physical activities.

40 % of the participants indicated that personal monetary gain was the main motivational factor for them. This tends to confirm Professor John Strang, of the United Kingdom National Addiction Agency, implication that monetary incentives can limit / stop mild to extremely addictive behaviors. Indeed Strang, has indicated that with the use of monetary incentives, it is possible to change addictive behaviors and reduce a drug addicts recidivism / fail rate by 50% (BBC-News, 26-Oct-2010, pp.1-3) (Eunson, 1987, pp.35-36). However, according to the physiologist Reber, he would suggest that because intrinsic motivational processes satisfy individual's physiological needs and desires. Such as, engaging in motion / walking, (which in turn gives an individual the feeling of satisfaction / fulfillment), the need for any extrinsic motivation, such as money is unnecessary as a motivational / incentive process for an individual (Reber, 1985, pp. 373,454-455).

40 % of the participants indicated that a general motivational process was the main motivational factor for them. This tends to confirm what many behavioral theorists imply, when they suggest that behavior, either physical activity or cognitive oriented, is a learned process and that individuals are motivated to do certain behaviors, e.g. physical activities, because off their own psychologically, motivational / learned behavioral processes (Eunson, 1987, pp.73-95). Yet according to Felinglass, Lee, Semanik, Song, Dunlop and Chang, they suggest that weather conditions and other unknown environmental internal / external factors, come into play with an individual determining, if they are motivated to do any physical activities (Felinglass, Lee, Semanik, Song, Dunlop, Chang, 2010, pp.934-943). For instance, it has been indicated that weather conditions, account for 38.3% of the motivation factor as to why individuals do physical activity processes (Ibid, p.1).

50 % of the participants indicated that community process was the main motivational factor for them. This tends to confirm the Psychologists Asch / Triandis proposition, that many activities within western cultures are biased towards individualistic orientations of conformity and that, for instance, physical activity processes within a western culture, tend to be individualistic in their outlook. Which is counter too much of an eastern collectivist cultural conformity approach to activities, which includes physical activity, processes (Asch, S, E, 1955, pp.295-300. For instance, in China the physical activity of ti chi is performed within all demographic scopes and on a mass population scale (Jahnke, 2010, pp.1-2). However according to the Western Australian Transport Minister, Troy Buswell: “Any physical activity process, which is situated within the community, (Western culture / Community that is), would benefit, the wider western culture / community, by encouraging healthy lifestyles, reduce congestion on roads, and increase security and safety around school regions and the wider community in general. “P.1 (O’Leary, 2011, p.1). Indeed it has been indicated that only 50 % of West Australian schoolchildren, get only 1 hour of physical activity a day, this is due to the majority of school children engaging in screen based toys and games (Ibid, p. 1-2).

In regards to the survey question; what sort of incentive / reward, would be more relevant for an individual to engage in physical activities and change their behavior in the long term? 70 % of the participants indicated that monetary incentives / rewards, such as, discounts on the price of; utility bills, consumable products and transport etc, could be more relevant for them as an incentive / reward for their physical activity processes. This tends to confirm Bartik, suggestion that if an individual’s physical activity process can initiate some form of economical development incentive / reward process within a holistic economical development context, then it is possible to gain positive outcomes within an individuals / communities economical development processes (Bartik, 1996, pp.1-2). For instance, the *Grameen Bank* concept, gives its clients an incentive to develop by rewarding its clients, who do many physical activity processes, such as, farming, fishing etc, with small cash loans that have very low interest payments. So that the clients can afford to pay back the loan, without having to endure extreme hardships, such as, paying for expensive utility bills, consumable products and transport, etc, and thus concentrate on developing their own small business (Grameen-info.org / What is Micro Credit, 2011, p.2) (Grameen-info.org / About Us, 2011, p.1). However according to the social Scientist Frey he suggests that: “Financial incentive / rewards / discounts, encouraging physical activities and the like, can crowd out intrinsic motivations, especially if they are perceived as controlling an individual. “P.9 (Jochelson, 2007, p.9) (Frey, 2001, pp. 589 – 611).

50 % of the participants indicated that environmental incentives / rewards, such as, discounts on the price of; organic veggies, water tanks, and solar panels, etc, could be more relevant for them as an incentive / reward for their physical activity processes. This tend to confirm the Anthropologist Holdgates view, that environmental incentives, used to reward individuals when they achieve set targets, in either industry / ecosystem services and / or for physical activity processes, are not new concepts (Holdgate, 1997, pp.223-243). For instance, many indigenous cultures have engaged such processes, (*worked with nature so to speak, via*, hunter gathering processes, growing organic veggies, etc), to achieve a happy, healthy and *sustainable*, environmental and economical development processes for millennia’s (Stroud, 2003, pp.75-81). Though according to Meadows it is possible, that extensive environmental incentives used to reward individuals for a specific tasks, in either industry, time, work or physical activity processes, can, impeding expediential, growth orientated, development processes from evolving (Meadows, 1972, pp.88-129). For

instance, within an industry / work case, the employees / employers can become too focused upon environmental incentive rewards, rather than on practical incentive / reward processes and thus the industry / work suffers as a result (Ibid, pp. 120-129). Or according to the psychologists Winter and Koger, if an individual is too passionate / focussed upon environmental incentives / rewards, for achieving set physical activity targets, it is possible, that the practicalities of an individual's day to day living may suffer as a result (Winter, Koger, 2004, pp.213, 217,219). For instance, an individual's physical / mental health may deteriorate, because they become physically and mentally over exhausted endeavoring to achieve their passion of gaining environmental rewards, *at any cost*, for their physical activity process (ibid, p. 219).

50 % of the participants indicated that intrinsic incentives / rewards, such as discounts on the price of; holidays, art, and health, etc, could be more relevant for them as an incentive / reward for their physical activity processes. This tends to confirm Le-Boeuf, suggestion that incentives / rewards, tend to enhance an individual's concept of ownership. Thus if an individual achieves a sense of ownership of something, be that of art, their health, etc, they tend to want to keep that ownership concept active / in place (Le-Boeuf, 1985, pp.47-53, 71-78, 98). For instance, within a business context the intrinsic incentives / rewards of offering an employee holidays once a contract / job has been completed, has been used for quite a while now (Ibid, pp. 97-98). Indeed this is obvious in the survey, as 50% of the participants indicated that if rewards were offered as an incentive to get them to do physical activities on an ongoing basis; this could lead to taking the intrinsic enjoyment out of their walking / running and cycling? However according to the psychologist Campbell, he suggests that if an even if awareness campaigns, e.g. art / health campaigns endeavor to enlighten individuals, intrinsically, to certain issues, such as, obesity, and climate change processes, in an effort to change an individual's behavior. It may not solve the problem, as awareness itself, may not become an incentive / motivational concept. Thus he argues, as an individual's behavior is determined by an individual's psychological behavioral process, intrinsic incentives / motivations are irrelevant in changing an individual's behavior (Campbell, 1995, pp.3, 100).

In regards to the survey question; did participants you have any specific and overall benefits enhanced, by in engaging in the pilot project; such as; mental / physical health, monetary, emotional, conservation, sense of place and community benefits, etc? 50% - 60% of the participants indicated that there were some specific and overall benefits enhanced, by them in engaging in the pilot project. This tends to confirm the medical / health researchers, Hammer and Bouthcher suggestion that any physical exercise can benefit an individual by reducing the risks of chronic stress exposure, immune / cardiovascular reactivity times, and help lower cholesterol levels (Hammer, Bouthcher, 2007, pp.71- 93). Indeed 60 % of the participants in the survey indicated that they also gained a sense of place, of their local area region, due to their physical activity process? As a result it is possible that because a sense of place is enhanced, this in turn, can encourage individuals within a community to also enhance and improve access to areas, which are of importance to them. Which in turn, can also increase physical activity processes within that region, by individuals wanting to appreciate 1st hand, via walking, running and cycling, the aesthetic values of that / their place (The Community Guide, 2010, p.1). However according to Jochelson he suggests that some incentives are short lived in action and do not benefit an individual's behavior in the long term, which in turn, is not a sustainable behavior process (Jochelson, 2007, pp. 4-7). For instance, it has been indicated that when a physical activity incentive program was removed from a 1993 weight watchers program, many individuals once again put on weight (ibid p.5).

In regards to the survey question; did participants think that if they stuck at a similar project, like this pilot project in the long term, did they think that this could make a difference to their behavior, so that they may become more healthy and sustainable in their behavior? 70% of the participants indicated that yes, this would happen. This tends to confirm Professor Dingle's suggestion that if the barriers to physical activity are removed, (e.g.- time / lack of motivation), then an individual can have both short and long term behavior change, which will benefit both their health and societies sustainability concerns (Dingle, 2007, pp.287-291). Indeed 50 % of the participants, indicated that a month of rewards was enough incentive to change their physical activity behavior. This result tends to confirm the social scientists; Chan, Ryan, Tudor-Locke and Albrechts suggestion, that any physical activity process is a good option in the short-term, to change an individuals behavior, from sedentary to healthy behavior (Chan, Ryan, Tudor-Locke, 2004, pp.1215-1222) (Albrecht, 2008, pp.57-63). Yet according to the medical / health researchers Leaf, Deitrick and Harada, they imply that there are many barriers in place that can limit an individual's inclusion into physical activity process, some these are; the willingness, ability and adherence of an individual to a physical activity process. Thus the ability of an individual to have sustained, long term healthy and sustainable lifestyle, can be limited by these internal / external barriers (Leaf, Deitrick, Harada, 2007, pp.106-109).

Conclusion:

In conclusion as I stated out the outset of this report, it is possible for us to meet the challenge of confronting / changing our everyday unsustainable behavior processes, which is prevalent in our world at present, such as, unhealthy eating habits, fossil fuel reliance and development disparities, etc (Henson, 2006, pp.35-38). Because if we can't / don't, we will continue on our unsustainable behavior path and limit our enjoyment / access to natural resources and continue to decimate our civilization (Danielson, 1993, pp. 86). Moreover I would also tend to agree with Vonnegut when he mentions: "One day fairly soon, if we don't get it together, we will all go belly up like guppies in a fishbowl. I suggest an epitaph for the whole planet: "We could have saved it, but we were just too darn cheap and lazy."p. 211(winter, Koger, 2004, p.211). Indeed as I have argued throughout this report, we can modify / change our everyday behavior patterns into a holistic sustainable behavior process, by initiating incentive programs within broad and limited demographic scopes that reward individuals for measured and monitored physical activity processes, such as, walking running and cycling, etc. And that it is via such a process, that we can overcome the daunting challenge of unsustainable behaviours, impacting upon our environments and societies. Otherwise if we can't meet this challenge of changing our unsustainable everyday behaviors, we will continue to deny our ethical / sustainable responsibilities to our future generations. I am not sure this is something I want live with: What about you?

Recommendations:

- It is recommend that literature pertaining to; kinesiology, sustainable development, Mobil device technology, behavioral psychology, social, cultural and ecological discourses be sourced as relevant research material in the future.

- It is recommended that extensive research is needed, in regards to, motivation / incentive and rewards processes and how they impact upon behavior change processes within a physical activity context.
- It is recommended that in regards to behavior change within a physical activity context, that all barriers limiting physical activity processes be investigated and understood, in future research processes.
- It is recommend that communities enhance and improve access to areas that are of importance to them, as this can increase physical activity processes within that region, by individuals wanting to appreciate 1st hand, via walking, running and cycling, the aesthetic values of that / their place.
- It is recommend that individuals use a step, cycle klm, base line approach of monitoring / measuring a physical activity processes, such as, walking running and cycling, for say a week, at a set pace and in set area, to ensure reliabilities and accuracy's within physical activity measuring / monitoring techniques.
- It is recommended that there be some form of practical workshop, or information-based process, at early stages of any similar project developments. So as to educate individuals, on the workings of a pedometer / cyclemeter measure / motoring process. Thus helping to give an individual better accuracy, in regards to their pedometers / cylcometers measure / motoring process.
- It is recommended that in future, retailers / supporters provide a % discount upon consumable products / services within their premises, so as to reward individuals for their physical activity processes.
- It is recommended that in future, retailers / supporters provide % discount upon on the price of; utility bills, consumable products and transport etc, as an investive for individuals to engage in physical activity processes.
- It is recommended that in future, retailers / supporters provide % discount upon on the price of; organic veggies, water tanks, and solar panels, etc, as an investive for individuals to engage in physical activity processes
- It is recommended that in future, retailers / supporters provide % discount upon on the price of; holidays, art, and health, etc, as an investive for individuals to engage in physical activity processes
- It is recommend that for future physical activity measure / monitoring processes, a Mobil device being of either; a generic - Smart Phone, Google - Android 2.1 phone, or an Apple - I-Phone has a 3-axial pedometer / cyclemeter / accelerometer Mobil device application built into it.

- It is recommended that for future, start up, physical activity measure / monitoring processes, an Android 2.1 phone, incorporating the Mobil device application, *Smart Trainer* and the Apple - I-Phone Mobil device incorporating the Mobil device application, *Runtsatic Light*; be sourced as the physical activity measure / monitoring process.
- It is recommended that any future reward distribution process, entail individuals, upload, via the Internet, their measured and monitored physical activity dairy data, to a project coordinators web site diary.
- It is recommended that any future reward process encompass Mobil device and Internet technology processes, similar in concept to either; effpos / smart card transactions, or the UK - Voucher cloud transactions process.

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Appendix:

Figure-1

Example of participant's Physical activity weekly diary log sheet:

Figure-2

Participants Measurement Data – Month -1

Figure-3

Participants Measurement Data - Month 2

Figure-4

Participants Overall Total Measurement Data – Months 1-2

Figure-5

Results of Participants - Pilot Project Surveys: 1 - 2

Figure-6 – Eco Creditz - web site

Eco Creditz – web site info

Figure-7 - Australia 2020 Summit, 2008, p.6

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Figure-9 - An example of other Physical activity incentive programs

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Figure-10- Behaviour changing diagram

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Figure- 11 – Reiss, 2004, p.187

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Figure-12- Jochelson, 2007,p. 14

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Figure-13- winter, 2009, p. 53

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Figure-14-

Android (Google) Smart trainer mobile device pedometer / cyclometer application

Figure-15-

I phone - run-mate lite mobile device pedometer / cyclometer application

Figure-16-

Other options for Mobil device pedometer / cyclometer applications