Training for Resource Efficiency

Pitfalls and successes

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TRAINING FOR BUSINESS RESOURCE EFFICIENCY: 
PITFALLS & SUCCESSES

Abstract
This paper describes the impact of critical success factors (CSFs) across all levels of Business Resource Efficiency training and implementation when attempting to enable organisations to internalise business resource efficiency as part of standard business operations. Training for, and implementation of Business Resource Efficiency is often punctuated by pitfalls and successes. This discussion is based on a Christchurch case study of the original Target Zero Cleaner Production Programme developed in 1997 through to the modern iteration of the course material delivered at CPIT as Business Resource Efficiency 400 (soon to be BBRE102).

The overarching objectives of this paper are to discuss and explore two issues and possible solutions:

1) Keeping a training programme running (CPIT perspective) and gathering the support and information needed to ensure its future; and
2) Ensuring that organisations see the benefits and internalise Business Resource Efficiency (BREF) as part of their standard business operations.

Methodology
The authors brainstormed pitfalls to running the Business Resource Efficiency course at Christchurch Polytechnic Institute of Technology (CPIT) in an attempt to define questions that if answered would ensure the success of future programmes and the successful implementation of resource efficiency programmes into business functionality.

The methodology was to initially review research into similar programmes, critical change factors and develop a model for evaluation of the questions posed.

- The paper reviewed research from
  - NZ Target Zero programmes
  - International sustainability research
  - Organisational change resources

See references for a full list

The assessment also relied on both authors experience running the BREF 400 course at CPIT and working with businesses undertaking resource efficiency programmes.

Once the research was performed it was evaluated to see if any common themes or ideas presented themselves to trial with the next business resource efficiency students in 2007.
A number of pitfalls had been identified with past programmes run at CPIT and the subsequent literary review is aimed at trying to gather some understanding about these issues and possible solutions. The references chosen have been selected as they have direct relationship to resource efficiency, environmental management; sustainability programmes and/or have a strong focus on organisational change.

Question Development
The main questions to answer are seen as

**Question # 1**
- One of the last participants in the BREF 400 course identified between $50,000 - $75,000 of savings possible from a production line
- 1 year down the track they still haven't implemented the project (payback a matter of months)
- Why are organisations so slow to uptake no brainers ?

**Question # 2**
- When it comes to running a course like this it is difficult to keep it running
- And difficult to get businesses involved
- Why is there little demand yet for these types of courses?

**Question # 3**
- Evaluation of Target Zero/ BREF 400 and international programmes show that completion of the projects largely stop when programme finishes
- Why do Programmes like this have no longevity?

Literary review
Copper and Zmud (1990) outline their views on the success of training programmes and a set of critical success factors. “Critical success factors can be viewed as situated exemplars that help extend the boundaries of process improvement, and whose effect is much richer if viewed within the context of their importance in each stage of the implementation process” (Cooper and Zmud,1990: 24).

With regard to ensuring that organisations see the benefits and internalise Business Resource Efficiency as part of their standard business operations, and adapted from Cooper and Zmud (1990), we view the implementation process as consisting of six phases: initiation, adoption, adaptation, acceptance, routinization, and infusion. Among the more important factors are top management support and involvement, the need for a project champion, user training, technological competence, process delineation, project planning, change management, and project management. The success of technological innovations has often been linked to the presence of a champion who performs the crucial functions of transformational leadership and facilitation. Project champions should own the role of change champion for the life of the project and
understand both the technology as well as the business and organizational context. By appointing an executive level individual with extensive knowledge of the organization’s operational processes, senior management can monitor the BREF project implementation, because the champion has direct responsibility for and is held accountable for the project outcome. One advantage of positioning the champion high in the organization is associated with the authority to move large and complicated projects through the transition.

(Kilvington M Allen W 2001) outline that the effectiveness of the target Zero cleaner production teams were limited by the need to have more time for the projects and maintain motivation to complete projects as main limitations, there was also very little time spent on reflection and monitoring to ensure the long term effectiveness of the programmes, also identified was the need to develop good networking skills and processes to establish new goals, the paper goes on to state that the main factors that seem to influence a teams ability to have an impact include careful selection of team members, networking within the organisation and acknowledgement and celebration of the successes achieved, company culture and management support were also prime indicators of performance. For those organisations that undertook reflection and monitored their progress there were good indications that this ability to learn had a positive effect on team performance and the longevity of the projects.

In the paper the model used as part of the evaluation of team performance encompassed three areas of team operation Task, Process and Environment
- Task as it pertains to the team’s ability to complete tasks
- Process as it pertained to their ability continue the process beyond the TZ programme moving from dependence to independence through to interdependence
- And Environment i.e. the context to which the programme is applied this is internal and external to the organisation

The paper outlines the need to balance the dynamics of task achievement with developing the capacity for long term action
Included in this is the need to ensure networking within the organisation and externally
Company attitude or culture was also mentioned as a pitfall and involving those staff closest to identified opportunities was important to ensure project uptake. Future project development was minimised by the teams spending little or no time promoting themselves within the organisations

(Allen, W; Kilvington, M. 2002) This paper discusses Using Participatory and Learning –Based Approaches for Environmental Management to help Achieve Constructive behaviour Change, the paper is characterised by the understanding that individuals make decisions and are motivated to change behaviour according to interpretations of situations and how important it is for people to
meet and create a common understanding or goal, this participatory approach means that individuals are more likely to buy into a process if they have been involved in the development.
For the process to work effectively participation should not be seen as a one off event. Participation should be seen as part of building and maintaining a learning and developing organisation.
This paper goes on to state that it is important to develop social units within organisations as a catalyst for initial change with the overall objective of at some point achieving transformational change where the organisation is self generative with ideas and projects.
The paper discusses a model for behaviour change,

**Behaviour change =** **Knowing what to do + Enabling environment + imperative**

Learning at all stages of the behaviour change model is important, understanding what the mechanics of developing an enabling environment and the dynamics of the imperative to do something are important.
This model is very useful from a conceptual standpoint and is something that could be used to influence the make up and structure of organisations and teams to ensure project longevity
The paper goes on to discuss learning theories with the theme that understanding what the team members culture or pre learning is and what learning or training is needed to allow the team to develop is important to ensure future team development and behaviour change

(Allen, W.; Kilvington, M, Horn C, 2003): Discusses training needs to support environmental sustainability practice in business and identifies that there is very little in the way of training available to organisations looking at environmental or resource efficiency training and also suggests two stages to the path of sustainability the “picking off the low fruit stage and the “top of the tree” stage.
The low fruit stage is the entry level for most organisations and is where resource efficiency training fits in and very few companies shift their thinking enough to develop through to the Top of The Tree sustainability programmes where the organisation considers environmental performance and sustainability as core to their business and decision making. The paper outlines that based on their research organisations need to consider six elements of environmental sustainability, these are a guiding world view, applied philosophy, social processes, ideas and action plans and feedback mechanisms
The paper proposes that if any of these elements are missing environmental sustainability is unlikely to develop and the organisation is unlikely to have a supportive environment for change.
This paper also offers some useful guidance on make up of courses and what other training is needed; the paper identifies that training courses need to be flexible enough to account for differences in organisational starting points given their different structures cultures and knowledge and that there is a need for a
course on organisational change or how to create a learning organisation. Understanding of the social processes and how to influence people at various levels of organisation is important to the future of sustainability. The development of a structure outside the businesses is also suggested as being needed to support change, offer guidance and seed ideas.

The reference material downloadable for the Enviro-wise web site is particularly useful in understanding the dynamics of change within organisations that are undertaking projects that require managing change (all projects) Resource Efficiency and Corporate Responsibility “Managing Change” A guide on how to manage change in an organisation outlines four key elements for success

- **Pressure for change**, the pressure is needed to ensure the programmes have continued driver and are driven from a number of avenues, customers, clients, government agencies and ideally the Market can all have an influence
- **A clear shared vision**, is important so that the organisation doesn’t get sidetracked by other issues or staff not involved sabotage the programme because of a lack of understanding
- **Capacity for change**, is one of the most important factors and is not really measured by programmes to see it’s influence, capacity for change is the organisations adaptability and is contingent on a number of factors including culture, climate, resources, understanding, organisational context and external factors such as market.
- **Action**, action must be driven from the shared vision and communication kept in place for it to continue.

The paper suggests that to help with the shared vision champions within organisations need to be able to sell the ideas and projects and basic sales theory should be come part of the mix

Another useful tool is the suggestion of using organisational archaeology to uncover patterns within the organisation and pitfalls that may need to be re-engineered.

(Stone L 2005), Limitations of Cleaner production programmes as organisational change agents. I. Achieving commitment and ongoing improvement is an important evaluation of the Target Zero programme and outlines a number of failures of the programmes including that guides or tools developed stressed the importance of top level commitment but offer very little in guidance for staff or champions to develop this, one of the main premise that cost benefit analysis will guarantee management support is also floored as a number of projects didn’t run even though the numbers said they should Identified team members in the organisations were initially chosen because of technical or production background and as such lacked the skills and understanding to be an effective change agent and champion of the programme within the organisations
The existence of external drivers for resource efficiency is also questioned as the businesses that participated have little or no evidence that this has provided any competitive or market advantage. There is an understanding that all change will meet with resistance and barriers the programmes delivered have very little in the way of coaching or training of the individuals tasked with championing the project.

The understanding of organisational context, frameworks, culture and the human factors of organisational change is identified as a need when it comes to helping organisations to develop in this area.

As mentioned in some of the earlier papers (Stone LJ) discusses the importance of organisations “Learning to Learn”.

(Stone L 2005), Limitations of Cleaner production programmes as organisational change agents. II. Leadership, support, communication, involvement and programme design.

Outlines a framework for the improvement of Cleaner production and pollution prevention programmes

- **Diagnosis and design**, involves the development of background and customisation of the programme
- **Initiation**, development of management support and focus
- **Vision**, development of the combined vision
- **Assessment of status**, setting up initial reviews and monitoring of the ongoing programme
- **Focused Team**, training of the team and development of specific resources to help the process
- **Action**, take action and evaluate progress
- **Strategic application of results**, ensure results are communicated widely and a whole business focus is obtained

This paper also outlines the Importance of the organisational and social context in which the organisation operates

**Model development**

After reading and reviewing the references and based on the background of the authors the problems solutions can be viewed from the following broad models. The spheres of influence within and externally to an organisation or areas that need to be considered as having an influence on an organisation (the process will be in two directions).

If we take a concept model of the individual, groups, society and the world this can be extrapolated to our organisational interaction model.
Model number two is used as a mechanism to evaluate the questions posed at the start of this paper.

This Adjusted concept model and discussion in the paper is based on a three step evaluation looking at Micro structures, Macro structures and Mega structural aspects to organisational change and the dynamics of completion of projects, continuation of courses and organisational change.

Micro = personal, department in direct contact with person process or project.
Macro = Business or organisation wide includes culture business structure
Mega = Outside organisation factors, society, government, external resource drivers
**Analysis**

The three questions posed at the start of the paper are reviewed given the information contained in the readings and the conceptual model

**Question # 1**
- One of the last participants in the BREF 400 course identified between $50,000 - $75,000 of savings possible from a production line
- 1 year down the track they still haven't implemented the project (payback a matter of months)
- Why are organisations so slow to uptake no brainers ?”.

**Micro issues that are core to this issue**

Within the organisation and the department that the project was proposed were characterised by the following,

- The BREF 400 student that developed the tool to minimise waste on the painting production line was external to the department
- The department production leader is fiercely protective of his department
- Only one person in the production line could identify the parts by sight and therefore mistakes happened when they were not available
- The organisational structure didn’t support or help to implement the project
- The site champions didn’t have the necessary organisation change or selling skills to market the project within their organisation

**Macro issues that are core to this issue**

The organisational structure is such that there is no forum to develop new ideas or get support for them

- The site champions for resource efficiency were not in a Management position and therefore lacked the power to affect change
- A number of structural changes within the company had galvanized a large amount of resources and time
- There was no clear vision in the company for resource efficiency even though they had been involved for some time

**Mega issues that are core to this issue**

Other organisations are not promoting resource efficiency

- External drivers didn’t exist
- There was no external communication about the project and other organisations were not aware of it
- The Target Zero cleaner production programme had been without staff for a year (this is being addressed now) and external support was limited
Question # 2

- When it comes to running a course like this it is difficult to keep it running
- And difficult to get businesses involved
- Why is there little demand yet for these type of courses?

Micro issues that are core to this issue

Several issues emerge when applying The Critical Success Factors of initiation, adoption, adaptation, acceptance, ‘routinization’, and infusion (Cooper and Zmud, 1990) to the micro environment level, that of course level. Course initiation was through the School of Science, CPIT and very much reliant on the commitment of one senior staff member. The course was adopted by the School of Business in 2005 and the course fee structure was duly adapted after a viability analysis deemed the course financially non-viable. The combination of 1) a necessary change to the fee structure, resulting in an increase as a stand-alone course that attracted no Ministry of Education Funding, and 2) limited time for marketing support due to a comprehensive approval process left this course with inadequate student numbers for a 2006 occurrence.

Recent funding developments within the Ministry with regard to the funding of short courses have resulted in this course being re-submitted to NZQA for external approval for a 2007 occurrence and a greater acceptance of this course due to improved financial viability.

Macro issues that are core to this issue

With regard to macro issues at institutional level, the Critical Success Factors (Cooper and Zmud, 1990) of adoption and acceptance have been significant as Sustainability is listed as one of CPIT’s strategic goals and core values under Section 1.3 of the CPIT Charter. This has resulted in a move towards greater awareness and due acceptance of this area of education for course development.

Mega issues that are core to this issue

The area of mega issues, those that are external to both the course in itself and the Institution are related to market demand and general public awareness around the significance of resource efficiency education. CPIT is again initiating this course within the Canterbury market in the hope that it will be adopted by businesses as one of their choices for resource efficiency training. Latent demand has been evident to date. It will be interesting to observe the impact of increasing media attention and active raising of public awareness within the area of resource efficiency and sustainable business generally.
**Question # 3**

- Evaluation of Target Zero/ BREF 400 and international programmes show that completion of the projects largely stop when programme finishes
- Why do Programmes like this have no longevity?

**Micro issues that are core to this issue**
Participants are not given the tools to enable them past the timeframes of the training or programme and the programmes themselves are not integrated into the way that organisations operate
Project Champions lose interest or move on as they become disillusioned with continually justifying project and time spent
Understanding the organisational and departmental context before undertaking programmes would allow the training or programme to be targeted and adapted to the organisation and cultural barriers present..

**Macro issues that are core to this issue**
The organisational paradigm is that it is a project and it is not seen as part of an integrated system
Some parts of the organisation see it as a negative as it highlights things they should have been doing anyway (especially if it wasn’t their idea)
There is little time allocated to reflection and planning beyond programme timeframes
The course content and guides contain little information on plan development and integration with standard business systems such as ISO
Networking within the organisation is important as this creates buy in and also keeps everyone informed about what is going on
Celebration is needed as a catalyst for keeping projects on track
Development of tools that create an enabling environment are needed
Developments of tools to create a learning organisation need to be included.
The training programmes need to be flexible to allow for different starting points and differing backgrounds of participants
A measure of capacity for change before the programmes would assist in understanding the organisations needs pre programme as would an organisational archeology tool to enable patterns of organisational behavior to be flagged at the start so training can be targeted.
Training on gaining support from management is important

**Mega issues that are core to this issue**
There is no market created for the programmes they have limited profile
Differentiation within the market place is not happening
The public are not a demand for it
There needs to be some sort of imperative to ensure that programmes are active this could be legislative or market driven.
Conclusions

The way forward for training course is to add to the material available to create a course that enables participants to effectively implement resource efficiency as part of the way businesses operate.

Create a learning course, this needs to be developed from the outset with information gathering about the businesses before the training sessions start to ensure that the tutors understand fully the training needs required and the individual skill set and potential pitfalls so that the training programme can be adapted to fit. All businesses have an internal culture / philosophy this may be articulated or not and could be conducive to change or resistant. The development of courses needs to consider this and include some form of assessment of the ability of the organisation to learn. This information can then be used to design in change management processes to help adapt the training to this need.

The adaptation needs to consider the organisational context, organisational background, the individuals skill set and how far along the process the organisation is. The adaptation process should be an integral part of the training and alternative strategy development tools used when things go wrong.

Include organisational change as a significant part of the training and coach champions to consider the micro, macro and mega aspects of the business. Train the individuals to be able to sell and rehearse internal sellers within the organisation to help champion the project at all levels of the organisation.

Identify all the stakeholders at the start so they can be considered as part of project development. Identify those that are likely to object or be to close to the problem to be objective. Set up mechanisms to engage them in the process.

Communication needs to be strengthened within the businesses so that the whole organisation is aware of the programme and develop external communication processes to create a market and sell the successes. Use communication to navigate the internal politics.

External drivers such as legislation, regional plans and city council services need to be acting as a driver for change and provide resources to show the organisations the benefits. And as they have in the past with awards like the EECA energy wise awards, Environment Canterbury resource efficiency awards and the Christchurch City Council target zero awards.

Extend public awareness of the programmes and try to create some market differentiation for businesses that undertake sustainability programmes.
Provide some sort of support as an ongoing process to allow organisations to not drop the ball once the programme finishes, via CPIT or external agencies like consultancy’s or Christchurch City Councils Target Zero programme.

Milestones and critical points for the implementation of projects need to be developed to ensure the project proposals developed by the courses are adopted by the organisation.

**The final words**

If there is a single philosophy that works in these types of programmes then it is that they need to be adaptive and have this imbedded in all areas of the training materials and the businesses as part of the implementation.

For the ongoing success it is best expressed by Charles Darwin who said,

“It is not the strongest species that survive, nor the most intelligent, but the ones who are most responsive to change”

**References**


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