

Expanding Dynamic Capabilities: Affordances of a Learning Management System in a Small-Medium Enterprise

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Introduction

This paper uses a Dynamic Capability View (DCV) to analyse the introduction of a learning management system (LMS) into a SME. The analysis offers an understanding of how resources, capabilities, competencies and dynamic capabilities can be managed to create opportunities for the organisation to develop an efficient and unique resource base that could provide a competitive advantage. The study also considers problems related to strategy development and implementation at the nexus of vision and daily working process.

Context

The Company

The company I work for is a small enterprise that provides virtual learning environments for primary, secondary and tertiary education, and corporate sectors. There are around 150 employees located mainly in the UK, but with a significant presence in an Eastern European office, a nascent presence in the USA and several employees scattered around the world. Aside from generic competencies in finance and HR, there are core competences in sales, marketing, software development, and IT infrastructure delivery and administration.

There are three Strategic Business Units (SBU) Primary, Secondary and Corporate, servicing different markets, each of which have core products (proprietary and enhanced open source LMS) and customer support services. This has led to a specialisation and optimisation of resources in each SBU, and operationalization happens in different ways in each division. This has started to cause problems as products from one SBU are being sold and delivered in another but without the resources to service the customer. There is a disagreement at management level about sharing resources as revenue is appropriated by the SBU which sold the product, and there is no internal market for resources so SBUs don't support each other formally due to costs not being recuperated. This has led to a situation where day to day customer service problems such as technical support are resolved informally between staff.

There has been strong growth since inception 10 years ago and consequently there have been rapid changes to working practices and resources. Staff turnover could be considered high. The company

expects employees to be flexible in their roles and there are regular changes of the physical office layout, creation, reconfiguration and deletion of work units, and redeployment of staff into new or different roles.

LMS: Drivers of Change, Intended Effects

The new head of HR is a key stakeholder in developing the LMS project, and based it on experience she gained at another company. She can see the benefits of an LMS to increase the efficiency of onboarding new staff, which is taking up considerable time due to high turnover, as well as talent management and other similar HR activities which are currently not being done.

The project's formal requirements and outcomes were written and approved by senior management. The main outcomes are to deliver a system that can make onboarding more efficient, create and deliver online or blended courses that align with skills matrices and learning goals, report learning progress and course completion, and track employees' training in compliance knowledge (induction, health and safety etc).

Although the policy document contained clear requirements, there was no description of how they were to be achieved. In fact, the document could not be readily identified as a strategy as "the prevailing model for formulation and implementation of strategy, from the RBV, is a rational stepwise progression through perception of opportunity, evaluation of existing resources and capabilities, then expansion of the stock of resources so as to build those capabilities and competencies" (Sims, Powell & Vidgen, nd:3-4).

When senior management were asked about an e-learning strategy, the reply was that there isn't one! Jones (1998:415) quoting Eisenhardt and Zbaracki, reports that chance matters when formulating strategy. Fortunately, the initiation of this project coincided with the start of the E-learning policy and strategy course enabling me to apply ideas and use the project as a case study. Similarly, Clegg et al (2011:26) quote Lindblom (1959) and Cohen, March and Olsen (1972) who characterise strategy making as fragmented temporally and spatially among various participants who are involved in informal processes of negotiation, and serial and incremental decisions, and where randomness plays a part in developing the solution. This is certainly the position I have found myself in: random conversations and chance events have conspired to bring together a project team who are responsible for developing and introducing the system, and while there is no formal strategy document, the vision is clear enough from the requirements.

In summary a need for an effective LMS that supports HR and learning processes within the company has been identified, but no formal strategic plan or vision has been created. The following section covers how the organisation's resources are being adjusted to incorporate the system, and what issues lie ahead for its development and implementation.

Dynamic Capability View: Analysis of Capabilities

Resources and processes, which form the core competencies of a company that enable it to generate rents, need to be continually adjusted in order to maintain their utility (Güttel, & Konlechner, 2007:358-359; Grant, 1991). Strategy can be defined as a plan or vision which guides an organisation on how to best utilise its resources to develop or maintain a competitive advantage. Resource Based View (RBV), of which the VRIN analysis is a key component, has been criticised as being a static description of a firm's capabilities, inappropriate to a dynamic market environment (Bowman & Ambrosini, 2003; Den Hertog, 2010:132-133; Wang & Ahmed, 2007).

Dynamic capability view (DCV) seeks to explain how organisations can maintain resource base relevance and value in a fluctuating environment. There is a distinction between the resource base, which are the assets and staff of the company, and dynamic capabilities which are the organisation's ability to "alter the resource base by creating, integrating, recombining and releasing resources" (Bowman and Ambrosini,

2003:292; see also Schilke, nd:4-6; Bowman & Ambrosini & Collier, 2009; Güttel & Konlechner, 2007:359, Wang & Ahmed, 2007:13-18).

Bowman et. al. (2003, 2009) argue there are four main dynamic capabilities: reconfiguration, leveraging, learning and integration. Reconfiguration enables resources to absorb and recombine such as after a take over. Leveraging extends or adapts a resource into a new area such as applying a brand to new products or replicating a successful system. Learning gives scope for experimentation and research. Integration refers to how resources are connected to work together.

Bowman and Ambrosini also identify a three level hierarchy that modifies the resource base (Figure 1): incremental (also known as first order dynamic: optimizing resource base processes), renewing (second order: sustain resources by adjusting them according to an existing dynamic capability) and regenerative (third order: applying different dynamic capabilities to the whole system). They argue that organisations need to add additional capabilities to utilise their resource base more effectively, for example adding a learning capability allows for experimentation and research into how the resource base can be used differently leading to the creation of new brands or products. The combination of learning and leveraging create different value from the resource base, and the extra capability has changed the whole system by introducing different types of processes, for example a Research and Development team (Bowman, Ambrosini & Collier, 2009:13-20).

At the incremental level my company is heavily focused on refining processes. A recently hired project manager has introduced systems and formal process to enhance efficiency that has brought some order out of chaos. On a renewal level I would argue that we are leveraging the brand by creating products that complement and support our core offerings, as well as investing heavily in marketing in new regions. From my experience so far, the capabilities such as integration and learning happen informally between staff in order to solve problems presented in day to day operations. It is clear that a capability other than leveraging is needed to solve the problems created by the SBU structure, and this would have to be introduced at the regenerative level. Although the processes of the integration dynamic capability are happening informally, by systemising them with a formal routine should make them more effective and add value to the resource base because new ways of working which are more efficient, and potentially different products or resources will be generated from it.

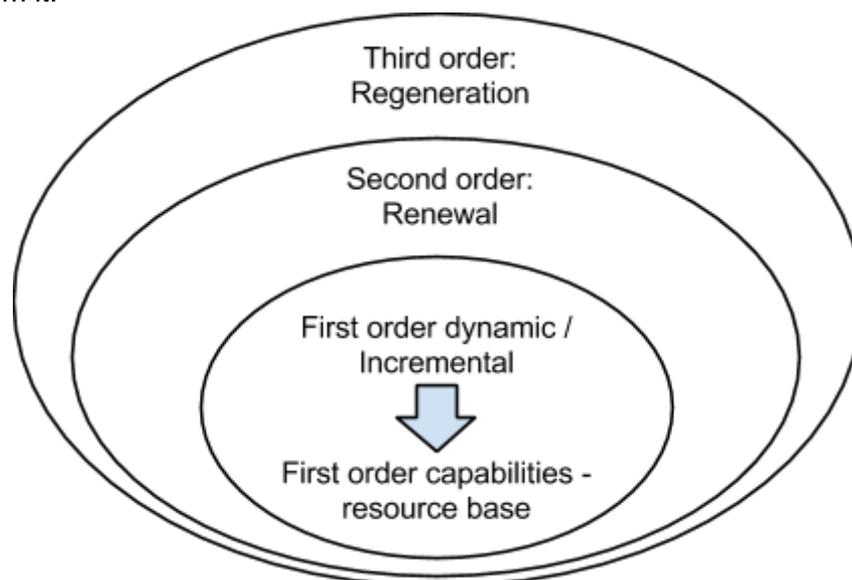


Figure 1: The hierarchy of capabilities (Bowman and Ambrosini, 2003, 2009)

LMS and Regeneration

The company LMS (Moodle) is primarily a channel for communication. It can be configured to transmit knowledge and practices or engage staff in learning activities, and therefore it can facilitate different capabilities through its affordances. For example it could be used to encourage a learning capability by acting as a space where staff members can share ideas and understanding resulting in experiments or new perspectives. Alternatively it can facilitate integration by “encouraging SBUs to pool their skills and resources with those of other SBUs teams” (Bowman and Ambrosini, 2003:292-296). Although perhaps these capabilities have similar descriptions, the outcomes for each are different as learning results in new understanding of products and markets, while integration results in better, more efficient, working practices within and between organisations.

The next section elaborates on the utility of the LMS as a resource, and considers the ways it can be used strategically to create new capabilities.

LMS, the Resource Base and Change Management

The LMS project presents three problems: First, generating appropriate resources at the resource base level; second managing organisational change; third using the resource effectively to facilitate new dynamic capabilities. To answer the first point, introducing a LMS resource should not be too taxing as it is one of the the company’s core products (questions about why it is now only being introduced are left for another time!).

Secondly, merely introducing a LMS will not accomplish anything unless there is a commitment at different levels of the company hierarchy and sufficient resources have been allocated to change working practices. Without management it is likely that the project will stall and be abandoned (Oakland and Tanner, 2007). The LMS will not be introduced into a vacuum and path dependencies will likely influence decisions about how it is introduced and used, and how it will be made sense of (Brunninge & Melander, 2010; Gash & Orlikowski, 1994; Clegg, Stewart et al., 2011:29). In this case, integration is being developed which involves a transfer of knowledge and closer working practices between diverse SBU. In order to make sense of this change, staff are labeled as mentors or students. By using an preexisting common narrative (mentoring) staff will hopefully be able to identify themselves in relation to the system more readily and take up subject positions that enable them to either teach or learn, and see it as beneficial and worthwhile and so hopefully reducing resistance to participation. This nomination can be used in different contexts and could equally apply to areas such as marketing or sales.

Thirdly, utilising the LMS requires an understanding of its affordances and pedagogy so that appropriate materials and activities are produced that align with the strategic goals, in this case adding an integration capability.

Integration and the LMS: Technical Support

As already mentioned there is a problem with sharing competencies between SBUs, in this case Secondary SBU product technical support knowledge is required by the Primary division. Although this sharing sometimes happens informally, “ad-hoc problem solving can not be considered as a dynamic capability, as it exhibits no routinised quality.” (Güttel & Konlechner, 2007:359). The integration capability can help solve this problem, and the LMS can help formalise and embed this capability as a path within the company by acting as a resource for integration processes. However, the activities and routines that support the integration of technical support need to be considered in relation to what the LMS can do and how staff can be encouraged to teach and learn from each other.

Technical support is often about troubleshooting and solving problems. Jonassen (2000), quoting Pokorny, Hall, Gallaway, & Dibble, explains “Troubleshooting skill requires system knowledge (how the system works), procedural knowledge (how to perform problem-solving procedures and test activities), and strategic knowledge (strategies such as search-and-replace, serial elimination, and space splitting)”

(Jonassen, 2000:78). Starting from this point, an integration capability LMS activity would require learners to increase their knowledge of the system, or schema, while developing troubleshooting and testing strategies.

This task is to create a curriculum with learning outcomes that Primary SBU support staff can use to become self sufficient in supporting a product outside of their normal competency. The competency is defined as: "Sufficient secondary SBU product knowledge and understanding of troubleshooting strategies to solve requests for technical support at the level of daily customer use (programming or infrastructure support is out of scope)"

To this end, the learning activities need to cover:

- System knowledge
- Learning and applying problem solving/troubleshooting strategies
- Where to find relevant knowledge to answer questions
- Solving and applying technical problems

The teaching and learning materials and activities are divided into two parts. First is a self study approach where general information about the system and how it works normally is done on a self access basis without any mentor interaction. This involves following instruction manuals and producing work that can be done by following the instructions for assessment.

The second part involves learning and teaching activities that takes the form of a mentor/mentee relationship. The process would be: A mentor, a member of the secondary SBU support team, would select a problem from current helpdesk tickets and post it on the LMS, perhaps with some resources or hints about the issue to scaffold the learners. Mentees would then try to solve the problem by applying problem solving strategies as well as documenting their learning process by posting what resources they have found and what their understanding of the system is and how the solution would work. This report would then be assessed by the mentor and feedback given to clear up misunderstandings as well as assessing the the applied problem solving strategies. The interaction could take place on the LMS within a forum or blog, as well as face to face. This is an active type of learning as students are encouraged to reflect on and document their learning, which also provides material for assessment and feedback. Several screenshots of the course can be seen in appendix one.

This kind of ill structured problem solving is designed to go beyond the algorithmic problem solving that schools and corporate training usually provide (Jonassen, 2000), and hopefully acts as a method to increase not only the competences of the staff but formalises the integration capability by providing a routinised method for sharing knowledge. The potential outcome is higher than simple procedural knowledge as it incorporates explicit learning about metacognitive and troubleshooting strategies. This is designed to develop the staff member beyond a repository of simple question and answer responses, instead they will learn an analytical approach to problem solving which might be applied to different domains (Jonassen, 2000; Gick, 1986).

This integration capability is not without its problems though. As already mentioned, introducing a new capability requires commitment from all levels of the organisation and has to be planned and monitored carefully to ensure that the practices staff engage in are aligned with the strategic vision. In this instance, unless mentors are taught how to setup and assess learners' output the learning outcomes might be weaker than desired. Mentors would need some special consideration and perhaps take some form of teacher training program to help them understand the importance and methods of assessment and feedback. Secondly, this kind of learning is not so easily and quickly quantifiable which might not meet with managers' expectations of tightly defined targets for learning. Thirdly, this kind of learning program requires a more significant investment in time and resources than a simple training program designed to deliver information, and this might be resisted at an operational level as resources are diverted to learning and

away from core activity. Lastly, learners might not be at a level where they can take advantage of this kind of learning due to a lack of ability or exposure to ill defined problem solving, and might resist having to put in the hard work required by active reflective learning. Some of these problems can be overcome through processes like project management which monitors and plans delivery at a higher level (by getting the system in place and usable), but others such as learner engagement requires scrutiny at the learning activity, and implies more management at the learner/mentor level.

In summary, the LMS can be utilised as a method to enable a capability but problems exist with its implementation and adoption within an organisation.

Dynamic capabilities: formalising the ad hoc

During the LMS project I have found the distinctions between the four dynamic capabilities useful as a way to understand how to develop a formal system that would facilitate better working practices, in this case integration to solve a knowledge sharing problem. However, during the process I have also had to experiment with the system and how it could be introduced which are aspects of the learning capability, and, as already mentioned, it seems there is already an informal integration process of knowledge sharing. Although there is no formal learning capability, its processes were required in order to produce the integration capability and so to some degree the processes are interdependent. This might have implications for how a capability is finally used as assumptions about processes from different capabilities might be built into the routines but without being made explicit. For example, in the LMS project, the strategic goal is integration of knowledge and the LMS system has been designed to support that, but the actual activities required to complete this require aspects of learning (experimentation, sharing knowledge). Therefore it seems that capabilities can be embedded with each other even though they are not formally identified as such, or even part of the conscious strategic plan.

The three stage hierarchical structure of how dynamic capabilities modify the resource base does not seem to take into account how each capability seems to be working interdependently. An alternative model which takes into account the observations from this experience is shown in figure two. This is a single plane where capabilities are in a relationship with each other and are tied into the resource base in a more direct way. Unfortunately space prevents further discussion, but this might be an area for future research.

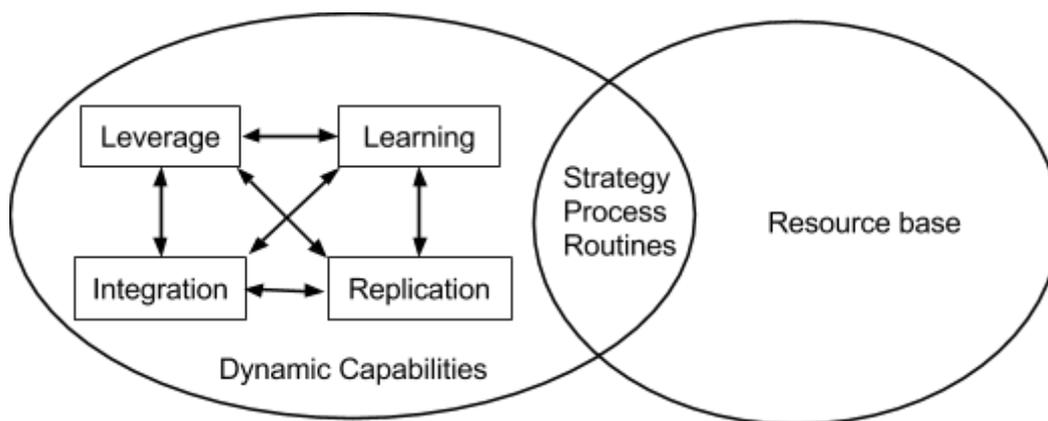


Figure 2: Interdependent dynamic capabilities and how they interact to produce new strategies, processes and routines on the Resource base

Conclusion

This case study has shown how a dynamic capability analysis of a company can show strategic weaknesses and offer options to resolve them. In this case, an SME has a leveraging capability, but has problems sharing information among SBU which is causing problems for customers. While integration seems to be happening informally at the resource base level this is not a solution as ad hoc problem solving does not create a stable system of routines that can be used strategically to improve the resource

base's competencies. By introducing a new resource, the LMS, which has the potential to formalise the integration capability through its affordances, the company can consciously create a new set of routines that staff can use to develop their competencies by sharing knowledge and skills across SBU, and therefore hopefully resolve problems caused by SBU structure. In order to accomplish a new dynamic capability resources might have to be added and allocated or reallocated and there should be a commitment to incorporating the new routines throughout the management and organisational structure. Without any formal changes to routines, the new capability might be taken up only haphazardly or despite a surge of initial enthusiasm get forgotten and the old ways might return. Therefore a new capability has to be planned for in terms of resources, and also how it is integrated into the organisation in terms of changes to routines.

The hierarchical DCV model has also been reconsidered to take into account how capabilities seem to work "on the shop floor" and it has been redesigned to show how capability processes seem to be more interactive. This might have consequences for how dynamic capabilities are implemented as a more thorough investigation of what processes are already being used informally could benefit how the capability is implemented because it would take into account what staff are already doing. This might reduce resistance to new processes.

Appendix One Screenshots from the Moodle for Tech Support Course

Main course screen with parts of the course listed.

Part 1 Problem Solving



Please read pages 1 and 2 and follow the instructions about writing in the forum. Then read page 3 and complete the "5 steps" task.

First meeting for technical support team Week Commencing 13th Jan. Please complete all Part 1 activities by then.

 Page 1 Introduction Problem Solving and Technical Support

 Page 2 Getting Started - General Problem Solving

 Page 3 Creating a problem solving system

Restricted:

- Not available until the activity **Page 2 Getting Started - General Problem Solving** is marked complete.
- Not available until the activity **Forum for discussions on Problem Solving** is marked complete.

 Forum for discussions on Problem Solving

Part 2 Moodle Knowledge for Teachers



Read Page One Introduction and Goals and view the screencasts. Then move on to Part 3 Moodle Hands On.

 Page 1 Introduction and Goals

 Introduction to moodle - General overview

 How to Demo Moodle MIS Integration

 How to Create and Manage Moodle Courses

 Introduction to the course screen

 Introduction to Courses in Moodle - course settings, topics and grid format

 An overview of the course with grid format

 Overview of the question bank and adding a multiple choice question

 Addings a quiz and questions from the question bank

Part 3 Moodle for Teachers Hands On

In this section you will use moodle as a teacher and work through the teacher's training course.

Read page 1 and complete the tasks. If you have problems then apply a troubleshooting system and write about it in the forum. **These will be assessed and reviewed in the team meeting.**

 Page 1 Assignment Details

 Problem Solving and Solutions

Restricted: Not available until the activity **Page 1 Assignment Details** is marked complete.

Part 4 Moodle for Administrators

In this section you will learn some basic functions for moodle administrators. Read page 1 and follow the instructions.

 Page 1 Moodle for Administrators Knowledge

Part 5 Moodle Troubleshooting and Problem Solving

In this section we'll start to look at helpdesk tickets and figure out

Page 1 Introduction Problem Solving and Technical Support

Introduction

This area is where we will work together to develop moodle knowledge and problem solving abilities so that you can solve first line technical support tickets from moodle customers.

We will be using a structured problem solving method to systematically work through moodle technical support issues. This means that you will have a set of tools to work with on tickets, and also increase your moodle knowledge so that over time you will become more independent in technical support.

How the course works

We will be developing moodle knowledge and applying problem solving techniques together.

There are several mentors who will be selecting real tickets and using them in this course to help you learn more about moodle. Your task is to learn about the problem, apply troubleshooting strategies and write your answers,

The mentors will give feedback on your answers and troubleshooting process.

An important feature of the course is that you help colleagues by sharing knowledge and by giving feedback. This will help you become a better problem solver.

Learning Outcomes

- To reflect on your problem solving abilities and improve them
- Ability to solve some first line technical support tickets
- Find where to look for help in solving the problem
- How to use the helpdesk system, and how to respond to customers
- Be able to explain your problem solving, and what you have learnt about moodle

The process is

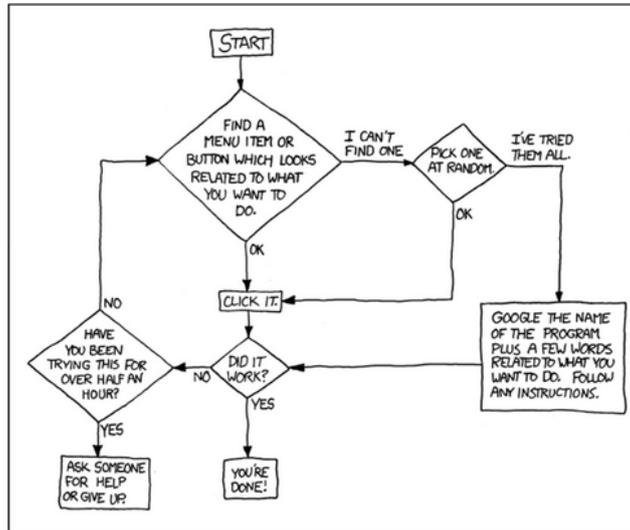
- Work with a mentor from support who will set problems and help you learn
- Build a knowledge base of your and others' understanding of how moodle works and how to solve problems

Page 2 Getting Started - General Problem Solving

How to solve a software problem?

DEAR VARIOUS PARENTS, GRANDPARENTS, CO-WORKERS,
AND OTHER "NOT COMPUTER PEOPLE."

WE DON'T MAGICALLY KNOW HOW TO DO EVERYTHING IN EVERY
PROGRAM. WHEN WE HELP YOU, WE'RE USUALLY JUST DOING THIS:



PLEASE PRINT THIS FLOWCHART OUT AND TAPE IT NEAR YOUR SCREEN.
CONGRATULATIONS; YOU'RE NOW THE LOCAL COMPUTER EXPERT!

There are a lot of different ways to solve problems. In this section we will consider what problem solving is, and what methods or strategies can be applied in for technical support.

The most efficient way to solve problems is to work through them methodically. A structured problem solving approach can help you analyse a problem, find out where you need to learn more and then create solutions.

Five step strategy #1

Here is a five step problem solving process written by [Craig Cochran](#)

1. Define the problem. In the clearest and most succinct terms possible, what exactly is the problem? Provide the details of who, what, where and when. "The customer states that the parts won't run right," is an almost-worthless problem definition. Get specific. Keep in mind that carefully defining the problem will provide the raw material for successfully identifying its root cause. (Appropriate tools include brainstorming, Pareto charts, check sheets and histograms.)
2. Determine the root cause. Identifying a root cause proceeds directly from defining the problem itself. The typical obstacle at this step is mistaking a symptom for the root cause. Often the so-called "root cause" is nothing more than a restatement of the problem definition. Before team members are asked to participate in problem solving, they should receive training in how to distinguish symptoms from root causes. (Appropriate tools include interviewing, brainstorming, cause-and-effect diagrams, and voting.)
3. Generate possible solutions and choose the most likely one. This step works very well in a team setting, where it's possible to generate a large number of alternative solutions. The trick is to cast a wide net, then narrow the possibilities to those solutions that satisfy the following criteria: They have a strong chance of being successfully implemented, they will be accepted by all relevant stakeholders and they truly address the root cause identified in the previous step. Then agree upon a solution, either by group consensus or through executive decree. (Appropriate tools include brainstorming, Pareto charts and voting.)

Forums where students post results of their thinking and experience, and mentors can assess and feedback.

Start a new discussion

Discussion	Started by	Posts	Unread	Last post
My troubleshooting steps	 Keith Taynton	1	0	2/01/14, 08:25 Keith Taynton
What do you think about Structured Problem Solving?	 Keith Taynton	2	0	31/12/13, 16:27 Jonathan Hutchinson
Your research on Structured Problem Solving	 Keith Taynton	1	0	31/12/13, 16:08 Keith Taynton
My experience of troubleshooting and support	 Keith Taynton	2	0	31/12/13, 15:37 Keith Taynton

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