THE DOUBLE HEURISTIC METHOD (DHM) – PERSPECTIVES ON HOW TEACHERS DEAL WITH AN ALTERNATIVE MODEL FOR TEACHING IN THE VET SECTOR

Homi Azemikhah
The University of Adelaide

Abstract

This paper reports on a PhD research project that is designed to investigate the perspectives of VET practitioners on the application of Double Heuristic Method (DHM) (Azemikhah, 2005b) for the teaching of the Units of Competency of the Training Packages. A qualitative approach within the Interpretivism Paradigm is used. While the epistemology informing the research project is that of Constructionism, the focus on how VET teachers deal with DHM necessitated the use of a hybrid form of Grounded Theory as the methodology that is shaped by the conceptual framework of Symbolic Interactionism (Blumer, 1969). During 2009, a professional development (PD) program, for the participant VET teachers, was designed and delivered. This PD program engaged participating teachers in the development of relevant heuristics for the unit of competency of their choice.

Semi-structured interviewing has been used as the method of data collection. While the data collection is still in progress, the analysis of data has commenced. Research findings, so far, support the DHM framework as a necessary component of teaching in the Training Packages context. The data analysis, so far, confirms DHM as a robust pedagogical approach that is appropriate for inclusion in Certificate IV in Training and Assessment. Whilst experienced teachers are reporting that they are using DHM for a particular purpose, they recommend its use as an important component of learning for the beginning teachers who are engaged in the study of Certificate IV in Training and Assessment (TAA). It is anticipated that further data collection and analysis will reveal significant pedagogical findings for the vocational sector, in the context of Training Packages.

Introduction

This research project which is at the data collection and analysis stage is being undertaken at the Faculty of Professions, School of Education of the University of Adelaide. The research findings confirm that in order to facilitate the competency development process, a vigorous theoretical framework is required with a centreing device that acts as a map to guide both teachers and learners in their quest for teaching and learning. The paper provides a summary of the literature review, methodology, data collection and analysis, as well as findings of the research so far.

Literature Review

Training Packages (TP) are regarded, as Gonczi (2004) has noted, as a culmination of a way of thinking that has been evident within new reforms in Australia, that of ensuring that what a VET system delivers is what industry actually demands. Prior to TP's there was agreement that all VET delivery would be competency based and there would be an industry led system (Schofield & McDonald, 2003:2). To date, no mechanism for ensuring its implementation has been identified. In the training sector, the shift from a provider-led to the industry-led system has resulted in the New Vocationalism that responds to the needs of the learner (Chappell 2003). Training Packages as "industry endorsed vehicles that connect work and learning" (Chappell, 2003:8) represent significant complexities to serve the needs of the new vocational practitioner (NVP). In the environment of New Vocationalism (NV) this "requires pedagogical approaches and strategies that vary from those traditionally used in the VET sector" (Chappell 2003b: viii). These pedagogical strategies require a new theoretical framework that is based on the concept of competence. At the outset, it is important to establish a clear definition of competence as the foundation stone upon which the theoretical framework can be constructed.

Initially, in 1990, the National Training Board (NTB) defined competency as, "the ability to perform the activities within an occupation or function to the level expected in employment" (Higgins, 1996:18). Given that competence is broader than 'ability to perform' (ANTA 2004), the existing definition is deemed to be too narrow. In 1991, NTB redefined competency as, "specification of knowledge and skills and application of that knowledge and skills within an occupation or industry level to the standard of performance required in employment". While, the NTB's second definition is more refined, by including skill in the definition and application of it to performance, it is, however, not broad enough to include all the constituents of competence, such as attitudes or attributes, as well as the context in which competency operates.

In 1992, the definition of competency was even further broadened by the Mayer Committee, (1992, p 4) as "performance is underpinned not only by skill but also by knowledge and understanding, and that competence involves both the ability to perform in a given context and the capacity to transfer knowledge and skills to new tasks and situations." Hence the Mayer committee introduced into the definition both, "ability to perform in a given context" and "capacity to transfer knowledge and skills to new tasks and situations". While the Mayer Committee's definition is again broadened by including context and the transfer of knowledge and skills to new tasks, it is still reductionist. It is argued here that this definition does not include all the constituents of competence, such as attitudes or attributes.

Given that, in 2004, High Level Review (HLR) concluded that competency is a broader concept than the ability to perform workplace tasks and that in defining competence it is necessary to clearly distinguish between work performance, as the physical component, as well as the constituents of competence, as the conceptual component.

On this basis, in 2005, Azemikhah (2005b:4) redefined competence in line with the orientation taken by the High Level Review as "a quality that needs to be developed by the learners both conceptually and physically. It needs to be conceptually developed in the minds of the learner based on the constituents of competence (underpinnings and attributes), and physically developed and perfected by performance (based on performance criteria) resulting in a balanced hands-and-minds equilibrium." This is the definition of competence that is adopted for this research.

The significance of this definition is that competence is not only an ability or a capacity but a quality "character and capacity" in line with the Mayer definition (1992). In addition, "a personal attribute, a trait, a feature of a person's character, an accomplishment and attainment of a skill" collectively are also part of the constituents of competence. This definition goes one step further by linking the conceptual development, or intellectual development, the (Mind) to physical development, the (Hands) that neither of the definitions by NTB and Mayer Committee has referred to in earlier definitions.

Double Heuristic Method

The linking of the conceptual development, or intellectual development, the (Mind) to physical development, the (Hands) are further utilised in the Double Heuristic Method (DHM). DHM diagram is a centreing device that facilitates the analysis of competency events (activities, tutorials, assessments) as a formative process leading to learner's competence. By involving in competency events (activities, tutorials, assessments) the teachers and learners share their experience to bring about change in meaning. DHM supports analysis and understanding of the structure of competency. DHM is an approach designed to aid teachers in session planning and assessments in their teaching programs. DHM diagram unlocks the structure of knowledge embedded in the competency events. The Double Heuristic Method (DHM) is comprised of two heuristics.

The First Heuristic

The purpose of the first heuristic is to construct the competency diagram (Figure 1). A competency diagram has a 'V' shape comprised of three elements and two processes. The focus of the First Heuristic is to integrate the problem to the unit of competency.

Figure 1 - The First Heuristic
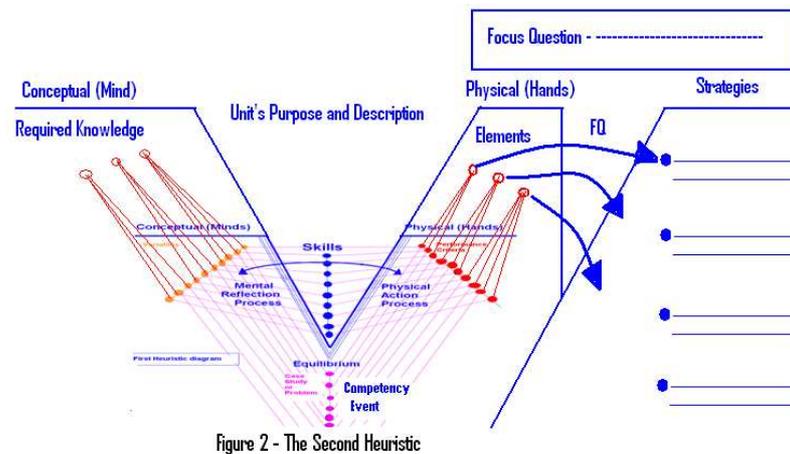
The Second Heuristic

Figure 2 - The Second Heuristic

The work on second heuristic commences by embedding the first heuristic at the foot of the 'W' diagram (Figure 2). The construction of knowledge is continued by selecting strategies or methodologies, for example, as prescribed by (Candy, 1991). If the competency event is an assessment, then assessment strategies, assessment instruments, together with critical aspects and expected evidence are listed in this section of DHM diagram. In this way, the second heuristic is used as a constructivist tool to extend the first heuristic further by linking it to the selected strategies or methodologies. Then the second heuristic extends in all the three dimensions of DHM. For example, it extends into the conceptual side by identifying relevant knowledge, theories and philosophies. It also extends into the physical side of the study by identifying and linking to the relevant elements of competency. Finally, the heuristic is connected to the strategical dimension by arrowing to the selected strategies (Candy, 1991). The unit's title, descriptor and purpose are listed in the big notch of the 'W', while the topic's focus question is entered in the small notch.

The significance of this research is to test and evaluate the DHM model for its flexibility and integrative capability, in order to formulate a set of recommendations that guide the development of new pedagogical principles, for the integrated and flexible teaching and learning of the units of competency of the Training Packages.

Methodology

As this thesis is centred on the perspectives of VET practitioners on the application of DHM for the teaching of the Units of Competency of the Training Packages, a qualitative approach within the Interpretivism Paradigm is the most appropriate. While the epistemology informing the research is that of Constructionism, the focus on how VET teachers deal with DHM necessitates the use of Grounded Theory for the analysis of data that is shaped by the conceptual framework of Symbolic Interactionism.

The central research question is consistent with this perspective, through which the collecting of data will be sought to yield verifiable knowledge (Blumer, 1969:21). The methodological framework will be based on an interpretivist perspective (Crotty 1996), i. e., the grounding of theory in data about the perspectives on how VET teachers, in this

instance, deal with DHM. This is consistent with Cohen and Mannion's (1989:39) arguments that 'sociological theories should be grounded in data that are generated by the act of research.'

The focus of the research, principally, is on the competency development process managed by practitioners to identify how they benefit from application of the Double Heuristic Method (DHM) to their practice and how their learners are assessed on this basis. In the course of their work, practitioners will identify the requirements of the units of competency in the Training Packages; using the DHM. They then formulate the required heuristics for each session and assessment to facilitate the learning process. In developing session plans and assessment tools, they are guided by DHM. In other words, while practitioners perform in the context of Double Heuristic Method, based on the requirements of the relevant unit of competency, their perspectives are sought. As practitioners perform in such a context, they are asked to communicate their perspectives on how they integrate required knowledge and skills into the learning plan, using DHM in the context of the unit of competency of their choosing.

Data Collection and Analysis

The data collection and data analysis are interwoven from the beginning (Miles and Huberman 1990:49) in this research project. Participating teachers are a mix of experienced and new teachers. This was required to ensure a differentiated community of participants and to open an opportunity to elicit the broadest range of perspectives from participants. The study has utilised the grounded theory methods of data collection and analysis. Semi-structured interviewing has been used to collect data. These methods that are consistent with symbolic Interactionism involve three major types of coding.

Open coding involves a process in which the collected raw data will be broken down, compared, and conceptualised, resulting in categorised data (Strauss and Corbin 1990:61). Then, the concepts are examined for similarities and differences to be classified into categories (Glaser, 1992:39). The aim is to identify categories of data, their properties and dimensions. Through the process of open coding, one's own and others' assumptions are analysed, questioned or explored, leading to new findings (Strauss & Corbin, 1990:62).

The aim of the second stage of data analysis is to connect each of the identified categories in an attempt to build a dense texture of relationships around the axis (Strauss 1987). This phase of analysis has, so far, revealed that the axis of these categories relate to the two main concepts of Clarifying and Confirmatory (roles) of the DHM. The research is at the Axial Coding stage and further analysis is planned. In this process, further hypotheses will be generated about the relationships of each concept or category by re-examining the data previously gathered and by analysing further new data that will be collected during 2010.

In the final stage of data analysis that is planned to take place during the second half of 2010, the categories that were generated and developed will be integrated into a theory about how teachers deal with DHM.

The following categories have emerged, so far, in the first round of data collection and analysis.

Improving Performance

One of the goals of AQTF is continuous improvements in teaching strategies (Australian Government AQTF, 2007a) . The data collected in this research indicates that the DHM framework has been used by participating teachers as an approach to improve their teaching strategies. One of the participants, when asked what your intentions in using DHM were, has pointed out that, "my intention was to improve my teaching strategy". Another participant referred to the point that his intention was to improve performance and when this is achieved the learners will also benefit". It can be concluded that teachers are looking for ways and means to improve their performance and that DHM is seen to be helpful in this regard.

Communicate effectively

The data collected so far establishes that DHM has been identified by participants as a means of improving teaching effectiveness. In other words, DHM has been identified as an approach that allows teachers to communicate knowledge more effectively to their students. For example one of the participants has emphasized that the role of teachers is to communicate knowledge effectively. Having said that this participant has stated that DHM approach, in particular the first heuristic of DHM, helps teachers to achieve this teaching objective.

Confirmatory

Many participants referred to the fact that the use of the DHM is confirmatory at the levels of planning and implementation of learning experiences. For example one participant, expressed that, "DHM allows me to check that what I have been doing is correct". Another participant added that , "by using this DHM method, you know the path that you are walking and where you are going, whereas the other ones, you're just going somewhere you do not know, you are in the darkness" so my intention was to confirm what I am doing is right. A third teacher, also, mentioned that, "DHM probably confirmed what I am doing is right". The DHM tool is clearly useful in assisting teachers reflect on their practice and building confidence.

Guiding

It is the perspectives of the participants that DHM acts as a guideline for planning and teaching. For example one of the participants stated that "it makes a lot of difference as I said before. The difference is by using this method, DHM, you know the path that you walk and where you are going whereas using others, you're just going somewhere you do not know, you are in the darkness." In other words, "the learners as well as the teachers have got the guidelines. Another participant stated that, "when we do this plan, the outcome would be in line with the requirements by National Training and Information Service (NTIS), so if we follow DHM as a guideline, I believe we are on the right track. Hence, DHM has been referred to as a guideline that enables both teachers and assessors to teach and assess the students work within the scope of the requirements of the national regulatory body.

Defining Relationships

It seems that for the teachers, particularly the new ones, the links between or integration of the components of the units of competency are important. According to some of the participating teachers NTIS does not provide the relationships of various components of the units of competency. In other words, NTIS does not provide the picture. Without establishing the relationships of these components, it is impossible to draw the picture. Without defined relationships it is not clear what the relationships are. For example one of the participants while using DHM explained and pointed out that, "it is the connectedness of the components that make sense in DHM".

Managing

DHM is referred to by participants as an approach to manage both assessment and teaching. In other words DHM is identified as a useful approach to manage the delivery. It is also referred to, by some participants, as a tool to monitor whether the students are on the right track in order to accomplish the tasks prescribed by the elements of competency within the unit of competency that the teacher is delivering. In other words, using DHM, the teacher can monitor and keep the students on the track leading to a better result. Managing involves both planning and implementation and DHM provides both, according to the perspectives of the participants. One participant pointed out that DHM is "not only useful in the planning, but also in measuring the outcome with the plan, the intention and the goals." Another participant stated that, "setting goals and aims and achieving them is part of managing; hence, I suppose, plan all your sessions and DHM will actually supports that process".

Clarifying

DHM approach has been identified by participants as a vehicle that removes 'Fuzziness' in VET teaching practices. This finding is aligned with comments such as 'it brings more clarity', 'it is more clear',' very clear', 'clearer', 'more accurate', 'DHM has made it clear', 'clearly'. For example one of the participants pointed out that by introducing DHM the 'fuzziness', is removed from teaching in the context of Training Packages. Another applicant explained that, "DHM allows me to see things more clearly". Even a third participant mentioned that, "if the students use this as well then obviously it defines for the students more clearly what in actual fact expectations are."

Validity

This category further supports DHM to be confirmatory as participants validate their approach. The participants were always looking for something that can validate their approach and to ensure that what they are following is correct and that they are on the right track. One of the participants was referring to the fact that he was looking to validate his approach and his way of teaching and whether they are including all the requirements as specified by Australian Qualification Training Framework (AQTF). This participant pointed out that, "My intention was to improve my teaching strategy. That was the intention and to look into a new approach and apply it." His initial intentions were to improve his approach and to confirm that his approach is in line with the requirements. His aim was to ensure that he is on the right track. This supports DHM as the means for validation.

Precision

The DHM approach has been identified by some participants as a vehicle for teaching that is precise and exact. Thus, it introduces precision and exactness into the practice of teaching in the context of Training Packages. One participant purported that, "you are removing the 'fuzziness' from it and putting more 'precision' to the whole process." Another participant stated that, "DHM would allow me as a teacher, instead of being 80 per cent correct, to be 99% correct. And if I go through that process I'm going to be able to be more precise, in most instances. I will be more correct by using this. It is very hard to miss anything if you follow this process. It is hard for you to miss any part of it. I would be more correct using this model.

Appropriateness

DHM model is used by some teachers to maintain an appropriate balance between practical and theoretical aspects of delivery regarding the unit for which they are responsible. In other words, in the context of Training Packages teachers see the importance of being able to find the balance between the theoretical aspect of delivery and the practical aspect of delivery. It is the perspectives of one of the participants that,

"DHM framework allows me, and in my decision whether it is going to be practical or theory I would be more correct using this model" and further, " DHM helps me to learn the theory that is necessary to walk in the classroom and deliver it".

Seeing the Picture

Some participants referred to the point that the DHM diagram has provided a picture of what they thought they knew or what they think they were doing. For others, it was a clear picture of what they need to do. In other words, they have seen all components in one place that are linked in a pedagogical way. This picture that they have seen helped them to have more confidence in what they are doing. One participant stated that "DHM aligns with my beliefs, and aligns with my approach and most importantly gives me the opportunity seeing as a big picture what I have been doing". Another participant described that, "DHM gives us a clear picture whether the students have missed this part or whether they have completed the tasks according to the requirements."

Constructiveness

As one of the participants pointed out, "not even I thought about the important point that all these 'bits and pieces' are provided, but there is no structure to it." Another participant elaborated that using DHM new teachers will get a structure that they can work with. A third participant stated that NTIS has provided a number of components without clearly defining the relationships of these components. Therefore, no picture can be visualised while, by applying DHM, a picture can be easily visualised or created for the assessments or sessions for that matter, because DHM defines these relationships. The defined relationships of these bits and pieces provide the clarity and understanding.

This view was confirmed by one of the participants who pointed out that, "this bridge is essential from the point of view that you know the concepts that you are going to deal with and you know that what performance is going to be at the end. But to achieve that performance, to achieve that competency, what sort of skills do you need? Without the skills you can't achieve competency." Understanding these relationships not only clarifies but also has been important for participants understanding and functions as teachers. Another participant has explained that, " I cannot just assess the student by my own conception, I have to base on something, While NTIS only lists the required skills, this heuristic approach gives me the summary linking up and bridging all the elements together".

Articulating

In response to the question, what effect, if any, do you think using DHM has had on your practice, one of the participants responded: "DHM allows me to articulate my application". Yes, my thinking, and my application to some extent. It is the framework for explaining." In other words, DHM was referred to as a framework for explaining the complexity of the relationships of components and the process. And, again, by asking the

question that what improvements in your practice have resulted from application of first and second heuristics, this participant has elaborated: "DHM allowed me to articulate better".

Conclusion

This paper argues that, firstly, there has been a need for a centreing device to clarify the relationships of the many and varied components in the competency based training packages approach and, secondly, that the application of such a device be tested by the act of research. The data collected, so far, confirms that DHM is a robust framework. A majority of the participants have emphasized the importance of inclusion of DHM framework in Certificate IV for Training and Assessment. Some participants highlighted issues of engagement in the Vocational Education and Training (VET) such as there being lots of 'bits and pieces' to do and comply with, but there is no structure to facilitate the process of compliance These participants see that DHM framework fulfils this role because it has a process, it has a structure, it has the relevant templates, and it is based on sound pedagogical underpinnings.

Bibliography

ANTA. (2004a). *Moving on (Phase 3)...: report of the high level review of training packages / [Kaye Schofield and Rod McDonald].* Brisbane: ANTA Australian National Training Authority.

Australian Government AQTF. (2007a). *AQTF Excellence Criteria - Users Guide.* Retrieved 15/10/2007, from http://www.training.com.au/documents/aqtf2k7_users-guide_draft-1705.pdf

Azemikhah. (2005a). *The design of competency based learning resources for VET training packages using learner centred, work centred and attribute focused simulation strategies.* Paper presented at the AVETRA 8th Annual Conference - Emerging Futures, Sofitel, Brisbane , Australia.

Azemikhah. (2005b). *The Balanced Hands and Minds Equilibrium: A Pedagogical approach for developing Vocational Competence ©.* Paper presented at the 13th Annual International Conference on Post-Compulsory Education and Training, Surfers Paradise, Qld., Australia.

Azemikhah. (2006, 19-21 April 2006). *The 21th Century, the Competency Era and Competency Theory.* Paper presented at the AVETRA 9th Annual Conference - Global VET Challenges at the Global, National and Local Levels, University of Wollongong, New South Wales, Australia.

Azemikhah. (2007). *Competency Intelligence.* Paper presented at the 10th AVETRA Conference, Evolution, Revolution or Status Quo, The new Context for VET, Victoria University Footscray Park, Melbourne, Victoria, Australia.

Azemikhah. (2008). The question of Competency Certainty, Moving from quality to excellence in Vocational Education, 11th AVETRA Conference, Adelaide Holiday Inn, Adelaide, SA, Australia

Azemikhah (2009). *Aiming at higher completion rates in VET.* Paper presented at the 12th Auatralian Vocational Education and Training Research Association.

Blumer. (1969). *Symbolic Interactionism, Perspective and Method.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

Bowman et al, B. C., Andrea Bateman, Brian Knight, Peter Thomson, Jo Hargreaves, Kaaren Blom, Marilyn Enders (2003). *Recognition of prior learning in the vocational education and training sector* Retrieved 9/3/2008, 2008, from http://www.ncver.edu.au/publications/1342.html

Candy, P. C. (1991). *Self-Direction for LIfelong Learning, A Comprehensive Guide to Theory and Practice.* Wisconsin: Jossey - Bass Publishers.

Chappell, C., Hawke, G., Rhodes, C. & Solomon, N.,. (2003). *High Level Review of Training Packages (Phase 1 Report)* (No. 1877057347). Brisbane: ANTA.

Glaser. (1992). *Basics of Grounded Theory Analysis: Emergence vs Forcing.* Mills Valley, CA: Sage Publications.

Gonczi A. (2004). The new professional and vocational education. In F. Griff (Ed.), *Dimensions of adult learning*: Allen Unwin.

Higgins. (1996). *The use of Self-pased Learning in the context of Competency-based Training in TAFE.*

Miles and Huberman. (1990). *QUALITATIVE DATA ANALYSIS* (Tenth Edition ed.). New Park, California: sage pUBLICATIONS.

Schofield & McDonald. (2003). *High Level Review of Training Packages, Working Paper 2, Training Packages today*: ANTA.

Smith L 2004. (AAPDP0705 30052007). *Valuing recognition of prior learning Selected case studies of Australian private providers of training*, from http://www.ncver.edu.au/research/proj/nr2030.pdf

Strauss, G. (1987). *Qualitative Analysis for Social Sciences, *. Cambridge: Cambridge University Pres

Strauss & Corbin. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, CA: Sage Publications.