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Grad Dip Admin, MA PS
Peter John Brenchley Smith, M Ed Admin, B Psych (Hons), Dip Ed,

Their Workplaces
Preparing for Flexible Delivery in Industry: Learners and
Date: 9 August 2000
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DEAKIN UNIVERSITY
colleagues in business enterprises who helped in framing the research and its problem. Furthermore, acknowledgment is made to the many professionals who provided assistance and participated as subjects in the research. The many apprentices who assisted in their research.

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Grateful acknowledgment for the completion of this research and thesis must go to my supervisor, Professor Terry Davies in the Faculty of Education at Deakin University. Has DPhil.
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Developing the strategic space for workplace development.

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THE STUDY OF LEARNER PREFERENCES USES DATA COLLECTED FROM APPRENTICES OVER A PERIOD OF SOME YEARS IN THE FOUR OCCUPATIONAL AREAS COMMONLY THE HIGHEST NUMBER OF

TEST-FOCUSED, EXPLORE DELIVERY.

HIERARCHY OF INDEPENDENT LEARNING AND SELF-DIRECTED LEARNING, AND EXPLORES THE CONCEPT OF

THE THEORETICAL NEEDS AND EXPECTATIONS. THE THEORES ALSO EXAMINES THE

POSSIBILITY THAT THE WIDE RANGE OF MEANINGS ASSOCIATED WITH THE TERM, TESTABLE DELIVERY.

THE CONCEPTUALISATION OF TESTABLE DELIVERY, THAT ARE AVAILABLE IN THE LEARNING, POINTING TO THE

CONCEPTUALISATION OF TESTABLE DELIVERY, THAT ARE AVAILABLE IN THE LEARNING, POINTING TO THE

THEORETICALLY EXAMINES THE ECONOMIC CONTEXT FOR THESE CHANGES TO VET, AND ALSO EXAMINES

THE THEORETICALLY EXAMINES THE ECONOMIC CONTEXT FOR THESE CHANGES TO VET, AND ALSO EXAMINES

OF OTHER LEARNERS OR OTHER WORKPLACES FOR THE DEMANDS OF TESTABLE LEARNING.

GOVERNMENTS AND INDUSTRY ALIKE, THERE HAS BEEN LITTLE ATTEMPT TO IDENTIFY THE PREPARATION

SPEND AWAY FROM THEIR JOBS. ALTHOUGH TESTABLE DELIVERY HAS BEEN CHAMPIONED BY

WORLDS IN WHICH WORKPLACE-BASED LEARNING CAN BE ACCESSSED BY A LARGER NUMBER OF

MAJOR STRENGTHS IN THE NATIONAL REFORMS HAVE BEEN THE ENCOURAGEMENT OF TESTABLE DELIVERY AS

A WORKFORCE THAT WILL ENABLE ENTERPRISE, NATIONAL, AND INFORMATIONAL COMPETENCIES.

AND PROCESSES HAVE UNDERGONE RADICAL CHANGE IN HOW TO DEVELOP SKILLS IN THE

Since the end of the 1990s Australian vocational education and training (VET) structures

THE CONCEPTS WITHIN WHICH THEY LEARN IN THEIR WORKPLACES.

This thesis examines the learning preferences and learning strategies of apprentices, and

ABSTRACT
those associated with the construction of knowledge that is structured and provided by
indicate that the learning strategies most often used by apprentices in the workplace are
drawn from the trades and machinists, electricians, and heavy-trucking trades. The findings
of the work of O'Malley and Chamber (1990) and Billet (1996a), the eight apprentices are
(1992a, 1992b) suggested recall information, and a set of learning strategies derived from
their component of the research uses a modification of the Marland, Pariian, and Pinn
learning strategies they employ while constructing knowledge in the workplace.
Qualitative data also generated through interviewing eight apprentices, and focusing
preferences, indicates apprentices preferring to learn through socially mediated
preferences, indicate apprentices preferring to learn through socially mediated
strategies, in a structured environment. A third factor, self-directed social
described as Strengthen–Connect, with apprentices showing a preference for learning from
with apprentices clearly preferring to learn through non-verbal means. A second factor is
learning preferences. The first factor indicates a Verbal–Non-verbal preference factor.
The data also factor analyzed to indicate three major factors underlying apprentices
preferences. The factor analyses that data generated from one group of apprentices can be
preferences in any one program are much the same over time, providing some confidence
research also shows that the learning preferences displayed by different groups of
other areas for self-directed learning. Some possibilities for their findings are discussed.
Interestingly, the younger apprentices are shown to have a higher preference than the
slightly higher preference for independent learning and goal setting. Females are shown
to have a very low preference for learning through reading, preferring instead to learn
information that are instructor-led, and to have a higher preference for independent
preferences. Apprentices are shown by this analysis to prefer structured programs of
developed to enhance learner and workplace preparation within each of the focus areas. The Sherry Space then provides a coherent and effective strategy associated with development of training polices, training strategies, and transfer skills and knowledge developments. Developmental identified in the Workplace Developmental Space are those of learner preparedness and identified in terms of self-directed learning skills. The Learner Developmental Space then provides for a Learner Developmental Space, a Workplace Developmental Space, and a Learners model of practitioner and workplace preparedness for flexible delivery. The model of open learning for adults, the Usher-Ingerman framework (1995) two-dimensional flexible delivery. Learning as a sequential framework. Learning as a sequential framework (1995) two-dimensional flexible delivery. Learning as a sequential framework. Learning as a sequential framework (1995) two-dimensional flexible delivery. Learning as a sequential framework. Learning as a sequential framework (1995) two-dimensional flexible delivery.

The findings of the present study are perhaps surprising in the workplace, indicating that the learning preferences and learning strategies findings for apprentices, coupled with the findings of previous studies indicating that the workplace training and learning are often more active, seeking understanding of others, more skilled workers.

The qualitative data are comprised of the qualitative data. Additional data are associated with the decision making and hands-on practice. The instructor of learning programs and those that include social mediation of learning.
represented

under skilled workforce and gender and Griffith (1661) observed that this under skilling

of the workforce in 1927 led to a form of post-school qualification, and only 9% held a
the workforce holding post-school qualification. Less than half the people in the

The report also notes that Australia lagged behind other countries in the proportion of
advanced economies such as the USA and Japan. Australia’s retention rate was still low.

1986. Devine and Holbling (1987, p. 6) commented that in comparison with other
been an increase in secondary school retention rates from 36.7% in 1982 to 48.7% in 1997.

Although these had

been an increase in secondary school retention rates from 36.7% in 1982 to 48.7% in 1997.

Economists, Hall and Smith (1996) observed widespread

formation of productive skill. The significance of this formed by economists

in the nation’s systems and processes for vocational education and training, and to the

standards and play an active part in the global economy. Australia would have to be

well prepared. It was clear that if Australia was to remain a country with a high

productivity improvement within which was seen as essential to long term economic

production, it would have to be seen by the Labor Government (Dawkins et al. 1987) as central to

The then Labor Government recognised that Australia had to change, and that

produce and metals fell sharply in 1985-86.

rected high levels of imports were lower compared when the world prices for primary

nature of Australian traded goods and services. The weakness in the economy that

1983-84 showed a rapid increase in import growth resulting from the commencing

opportunities in other areas. The strong economic recovery following the recession of

opportunities in other areas. The strong economic recovery following the recession of

its primary products to generate economic wealth had exposed a need for higher

a country with a high standard of living. The traditional reliance on

adequate price being received for those commodities had meant that Australia had been

national view of Israel. A history of world demand for primary commodity exports of primary

in the mid-1980s Australia experienced some economic weaknesses that changed the

CHAPTER 1: THE RESEARCH PROBLEM

1.1 Changes in Industry and the Demand for Productivity
structured training opportunities for young people was to be broadened. The same policy to be pursued with increased in training and productivity. This is the range of

Secondly, to increase the participation rate in youth education became a

every day. Scotland set to increase the secondary school retention rate in year 12 to 65% by the

universities (Deakin & Holdaway, 1989) see a number of policies and measures. Firstly, a

comprehensively poor performance in training provision, the Federal Government in Skills for

As a result of the need for greater productivity, and the analysis of Australia as a

economic wellbeing inferred as important to developing economies (Diplondefo,

Singapore, and in the relationship between increased education and training and

East Asia (Deacon, 1998) resulted in an interest in the competitiveness of nations such as

Smith & Smith, 1990). Australia's more recent recognition of its position in the

increased industrial competitiveness to prepare for an increasingly globalised economy

revealed some of the responses made in Europe and Asia to these same needs for

changes in Australia. In other work with a colleague, the pressure in another has also

developments in the United Kingdom show comparable similarities with these same

Joseph (1661) has given a comprehensive account of the modifications and the

parallelled each other's initiatives in reforming their education and training provisions.

Development in the United Kingdom and in Australia have been similarly motivated by

(p.66)


economic performance, but what needs to be done to improve the provision of

The prevailing issue is no longer whether education and training is a factor in


required to contribute to the economic progress of the nation. Carter and Gibble

that post-secondary education has come to be viewed as an important issue.


in Australia, have observed that in both nations an apparent priority between

called and Mecollum (1968), in the United Kingdom and Carter and Gibble (1961),

partners in post workforce development (Carter & Gibble, 1991, p.4).

rapid economic change and insufficient attention. Attitudes, by the industry...
Employment, Education and Training set up the Vocational Education, Employment and Training Authority (ANTA) with a brief to determine VET policy for Australia, and to implement its models of education and training. The Australian National Training Authority (ANTA), set up under the Australian National Training Act (1997), provides a coordinated national system of education and training.

### Development of a National Training System

**1.2**

The Australian National Training Authority (ANTA) was developed to respond to the needs of employers to develop and maintain a skilled workforce. It operates under the Australian Education Act (1997) to support the development of skills that complement the existing workforce. The National Training Authority (ANTA) conducts work to provide both employer and employee training needs. A national, comprehensive system of training is supported through the Australian National Training Authority (ANTA). The Australian National Training Authority (ANTA) will provide training opportunities to all sections of the community, focusing on the development of skills that complement the existing workforce.
The principles of the NFROT were designed to ensure multiple entry and exit points.

- Recognition of prior learning
- Assessment of competencies
- Recognition of VTCT providers
- Credit transfer through recognised learning programs
- Accreditation of VTCT courses

To enable a national approach to be taken towards.

Framework was a national agreement for the recognition of skills, accreditation and training (NFROT), which became operational in 1992 (see VTETAC, 1992). This recognition of training was the focus for the national framework for the recognition of training.

Development of a set of national competency standards.

Training officers and outputs (Kerns, 1997). Finally, CBT lends itself to the delivery of being viewed as part of the strategic response to the need for increased classroom setting and learning program length is not expressed in units of time, flexible.

Additionally, since CBT instruction typically does not take place in a group or environment, CBT can also be related to the quality assurance process (Haggart, 1997).

be continued to support development of only those skills required by industries and that have been viewed as part of the strategic response to the need for increased classroom setting and learning program length is not expressed in units of time, flexible.


Process for learning and the time taken to reach a recognised standard of competency.

CBT was seen as an approach to learning and a system for VET, as well as forming the basis for assessment. It emphasizes outcomes and skills and largely ignores the administrative processes.

- Assessment
- Curriculum development
- Recognition of training
- Competency-based training (CBT)

1993. The framework comprised the following components:

Implementation of a Competency-Based Vocational Education and Training System in Training Advisory Council (VTETAC) which published its framework for the
National recognition of training outcomes

Possibility of skills and qualifications

and services

Industry and enterprises are to have access to high quality training products

and industry

to ensure high quality products and services are those required by enterprises

Several purposes:

Apprenticeships and traineeships were put in place during 1997 and 1998, with

Packaged Skills, Recognition of Prior Learning, User Choice, and New

reforms of the NTL comprising the Australian Qualifications Framework (AQF).

The simplification and flexibility among national training and qualification arrangements. The

VET endorsed the National Training Framework (NTF), designed to ensure greater

In 1996 the Ministerial Council comprising Federal, State and Territory Ministers for

the Australian Vocational Training System

the implementation of a standard national entry level training system through

the establishment of an open and competitive training market

continued development through AQF

the development of an Australian Qualifications Framework

the development of national competency standards

the establishment of NORS, associations in each state and territory

National Training System was to be implemented through

requirements for a process to enable challenges to assessments and re-assessment, The

participatory approach to assessment that involved the person to be assessed and the

information to learners on procedures and judging criteria, also to be provided was a

requirement that learners were to be implemented.

Assessment of VET outcomes were addressed through four key features - validity,

documents be produced to address each of the skilled guidelines

structured and professional development guidelines. AQF required that curriculum
wrote the training program and instructional materials, assessment materials, delivery

content selection and other foil learning experiences. Also required

Curriculum development was addressed through the formation of the Australian

Curriculum Development through Curricula (ACVET), which developed guidelines for VET

Australian Qualifications Framework (AQF).

The February 1979, the Australian Vocational Training System

the implementation of a standard national entry level training system throughout

the establishment of an open and competitive training market and

continued development through AQF

the development of an Australian Qualifications Framework

the development of national competency standards

the establishment of NORS, associations in each state and territory.
...
a deeper and more dynamic national skills pool
- reduced waste of government resources and lower costs for consumers;
- more flexibility and responsiveness to changing needs;
- increased quality and quantity of training provision;
- greater choice and diversity for consumers.

Competitive training market:
Each other, the NCVER (1997, p. 3) reviewed and summarised the benefits of a competitive training market with all training providers, and TAFE institutions are also expected to compete with the government owned TAFE sector to improve the quality and efficiency of provision.

However, the government owned TAFE sector is expected to compete in an open market with a larger number of providers, some private, and some government owned. The government funded technical and further education system and open the provision of training to a larger number of providers, some private, and some government owned. The government funded technical and further education system and open the provision of training to a larger number of providers, some private, and some government owned.

The policy has been to remove training from the largest monopolistic provision by the government funded technical and further education system and open the provision of training to a larger number of providers, some private, and some government owned. The government funded technical and further education system and open the provision of training to a larger number of providers, some private, and some government owned.

These new expectations have resulted in training being more critically examined, both by the government and by consumers. Anderson (1997) has reviewed the issues associated with

- contribution to the community;
- securing strategic or constitutional change goals; and
- productivity reforms are important as a result of training?

To encourage reforms or community reforms:
Billet and Cooper (1997) identified four types of reforms in the hierarchy, each resulting in

- learner, but clearly focused on the needs of enterprises and industry.
- individual students and trainers as customers of VET. King (1996) has also observed
- individual students and trainers as customers of VET. King (1996) has also observed
- individual students and trainers as customers of VET. King (1996) has also observed
- individual students and trainers as customers of VET. King (1996) has also observed


Enterprise training needs to secure detailed statements of returns accounting for training the morale of its workers. There is much evidence of interest from

- providing associated with goals of skill development, change, and
- providing associated with goals of skill development, change, and
- providing associated with goals of skill development, change, and
- providing associated with goals of skill development, change, and

The government is more interested in evaluating the impact of its policy.
has shown that training expenditure has increased more rapidly than employee provision.

As compétent personnel are of the importance of training and providing providers or recognisers
training providers attribute growth in the level of training provision to an increase in
meeting their training requirements. Adkinson (1997), in other evidence that commercial
market operation eventually materialises, there is evidence that the training market is

whether or not the claimed advantages of disadvantages of a more competitive
disadvantage.

and, therefore, contributing towards broader social, economic and educational
1993, 1995) have suggested that open competition is reducing the accessibility of VETI
Australia a consequence of market competition. Other writers (e.g., Cook, 1995; Kell, 1994)
have suggested that there may be a dislocation of the training provision in
deliver the range of training products. Writers such as Adkinson (1997) and Bruner

Clearly, there is room to question whether or not a competitive training market will

Furthermore, in the allocation of public and private funds (ANVA)
Training will also be better targeted and delivered more efficiently, and
those requiring training have closer relationships with the training provider.
range of providers across Australia. Students will be removed to ensure that
they receive business will be able to choose quality training firms from a diverse
numbers. The end users of training will have more influence over the training

The benefits of market reform in vocational education and training are

The ANVA (1996a) has identified a range of benefits likely to result from the

Quality assurance accreditation

prise on a commercial basis and earning commercial income and in achieving ISO

responsibility for producing design, becoming important in ensuring organisations are prepared
strongly encouraged and assisted to lower their operating costs, that greater
TVET institutions have a chance to compete. Accordingly, TVET institutions have been
authorities have been active in ensuring that the previously limited government funded
training market. With their particular responsibility for the TVET sector, state
Victoria, have been part of the policy debate towards a more open and competitive
State training authorities, such as the Office of Training and Further Education in

1996a, p.1)

improvements in the allocation of public and private funds (ANVA)
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Victoria, have been part of the policy debate towards a more open and competitive
State training authorities, such as the Office of Training and Further Education in
Package for the Retailer, Clothing, & Apparel Industry (1991), WiLtherm, in
Training Advisory Board Strategic Framework for the Development of a Training
Choice is already available through the Australian Life Long Educating Industry.
Provider networks will exceed diversity and exercise
will deliver their training objectives and contracts, and will choose their preferred training
consumers of training will have a choice of delivery methods and learning resources that
wars, and with motivation to earn a market share. Over companies, in the same line,
Training providers understand the requirements of training packages in new and diverse
The new developments, thought, are likely to result in a greater deal more diversity of

To the consumer, (Lever, 1995, p. 42).

In formal courses, education institutions
training that is specifically directed to achieve the experience of having employees enact

Knowledge of learning and the contexts within which they learn, Chapter 2 deals with learning outcomes and programs designed for independent learning and yet with little input. The research in this thesis is designed to identify strategies for the effective implementation of flexible delivery in the workplace, focusing particularly on strategies 1.4 Research Plan

The research will be conducted in a flexible manner, to offer the client and which training will involve a process in which chains and with the particular workplace. Therefore, choices which providers will be included with the course of how best to provide training for a flexible delivery and up to a point on individual competencies,但 competencies will be delivered and content. Provided national competencies are achieved, courses will be delivered and content in the context of the research in this thesis. In more detail, the increase in the expectations of provider diversity and the widening of choice for various stakeholders.

There is a wide range of competences related to flexible delivery. AS Evans and Sinnott (1996), as shown in the work of others, the industry sector industry training plans of ANITA (1996) in the Retail industry. The report of the National Board for Training and Employment (1996) has identified the need for flexible delivery of training. They have noted the increased drive in Australia towards the flexible delivery of training. The period 1995-1997 has stressed the importance of flexible delivery in the achievement of Training Advisory Board (1997, p.119). The Industry Training Plans produced by each Industry Training Advisory Board for...
The research focuses specifically on apprentices and their learning in the workplace. In

Investigating the delivery of learning in the workplace and in achieving quality training

- The development of strategies to assist workplaces in becoming prepared to support
- Development of strategies to prepare learners to make effective use of e-learning
- The delivery of effective workplace training in industry
- Implementation of the learner and centre variables that are important in the design and

The project undertaken in this thesis aims for the following three integrated outcomes:

1. Further understanding of learners is a priority research requirement
   - Includes understanding about distance education, distance education, and pedagogy.
   - The adoption of VET, development, and broader international levels, based on the
     development of VET and workplace learning as
   - 2000, this divided research on learning environments and workplace learning as
Authority commissioned research in 1996 to examine the learning processes for delivery
this sort of research to inform practice. For example, the Australian National Training
frameworks, with a view to the development of new and new
to enhance the likelihood of effective delivery an a major vehicle throughout which to
provide workplace learning. Recently there has been broader recognition of the need for
workplaces, with a view to the development of new and new
knowledge and a deeper understanding of the characteristics of learners and their
synergistic ways. What appeared to be necessary was a great deal more complex
and research to examine these issues of flexible delivery in a number more thoroughly and
work I had commenced in the 1980s formed a sound position of experience in practice. The
not well equipped and skilled in supporting flexible delivery in the workplace. The
research literature, and according to colleagues in industry, that the purposes were
the research literature, and according to colleagues in industry, that the purposes were
and used effectively by learners in the workplace. It was also becoming evident to me from
dependence on independent and self-directed learning skills, was hence the key to be achieved
and then plans were made: assuming that the word flexible delivery, with this

and second as an issue demanding of more research.

My long-term interest in this problem, first as a management and customer service issue,
The research methods chosen to inform these research objectives are discussed in detail in Chapter 6 of this thesis.

Provided to them in the workplace as they engage in flexible delivery of training, learning preferences and strategies of apprentices learners, and the support that is.
intelligent. We had curricula to work with, and we made educated guesses about how
about what our clients needed, their learning preferences, not how they used our learning
resources to the client. I was committed to teaching. I was never truly concerned that we actually knew very little
development of learning resources. Their stories, their successes, their failures, and the delivery of the
In their college of TAFE, it was my task to manage the process involved with the
those that had initially been associated with distance education
was a discernible convergence of mainstream education and training practices, and
present author and colleague Smith & Kelly, 1987). In that book we argued that there
My recognition of the role that the concepts of distance education and training
occupy in such a way that increasing education and training demands would result
employers and workers, and skills requirements in the Australian economy were
Partially contributing to these observations of mine was the recognition that changes in
post-secondary education systems (Smith, 1987, p. 20)
learning and distance education are two examples. We remain on the fringe of
"that the concepts and methods of resource-based learning of which open

Smith, 1987, p. 19). Additionally I make the observation that it was unlikely
professional continuing education and short development in Industry and Commerce,
attention to the potential for "distance education and resource-based learning in
delivery of education and training. As early as 1987, the present author had drawn
an enabler to institutional learning and the role that technology had to play in the
comprehensive view of what we want, e.g., "etable, deliverable," or resource-based learning
instructors of or engineers. The vision was bold for the early 1980s, and included a quote
possibility of those resources, and the accessibility of them by individual students,
would be responsible for the development of learning resources for students, the
Curtin had been developed early in the 1980s with the then new vision that it
large college of Technology and Further Education (TAFE). TAFE Learning Resource
when I had responsibility for the management of the Learning Resource Centre in a
My interests in the development of research on VET learning styles was kindled in 1985

CHAPTER 2: THE RESEARCH PROBLEM AS A

MANAGEMENT PROBLEM
Learning occurs because personal knowledge is constructed by an active and self-regulated learner who resolves conflicts between ideas and reflects on

successfully by Seels (1981) who observed:

(Person, 1984, p. 207) The essence of the constructivist approach was that students engaged in active construction of meaning, and that the learner is a key player in the process. The constructivist approach provides a framework for understanding how knowledge is constructed and how learning takes place.

In developing the theoretical basis on which to proceed with what was a very applied problem, I was conscious to avoid mechanistic interpretative design outcomes that could result from a purely superficial approach, and which have been more recently criticized.

action learning

and visual representations, and more on discussion, field experiences, and projects. I was interested in a variety of methods of delivery such as lectures and readings by the learner on inservice, which is elementally similar to self-directed learning. New research indicated an important role for self-directed learning, and that it is essential to design learning experiences that are meaningful and meaningful enough to the learner, it is difficult to show how to go about these nuance in order to resolve what I saw then to be a dilemma. At the same time, I was interested in making more informed decisions about how to use what I needed to use, and how to most efficiently spend our money when developing learning resources. We needed to use the information to make more informed decisions about how to serve them at correct, and how our students learned and what their learning preferences were. We really did need to know more about

22 Early Projects to Address the Problems

detailed knowledge of learner characteristics.

experiences to develop learning resources in different formats. Though we had no

competitors' videos, we used videos, or video clips, in making decisions to commit substantial

that we were becoming available for flexible delivery in the early 1980s, such as networked learning resources and develop new delivery through the exchange innovation of online development

use of new research and new body of knowledge. I was also concerned that, on the basis

deal about cognitive styles and learning styles, and a great deal of research had been

do development learning resources and how to deliver them, but these were just educated

in a way that suggested that the essence of the constructivist approach was that students engaged in active construction of meaning, and that the learner was a key player in the process. The constructivist approach provides a framework for understanding how knowledge is constructed and how learning takes place.

In developing the theoretical basis on which to proceed with what was a very applied problem, I was conscious to avoid mechanistic interpretative design outcomes that could result from a purely superficial approach, and which have been more recently criticized. I was interested in a variety of methods of delivery such as lectures and readings by the learner on inservice, which is elementally similar to self-directed learning. New research indicated an important role for self-directed learning, and that it is essential to design learning experiences that are meaningful and meaningful enough to the learner, it is difficult to show how to go about these nuance in order to resolve what I saw then to be a dilemma. At the same time, I was interested in making more informed decisions about how to use what I needed to use, and how to most efficiently spend our money when developing learning resources. We needed to use the information to make more informed decisions about how to serve them at correct, and how our students learned and what their learning preferences were. We really did need to know more about.
Myers-Briggs Personal Style Inventory


Apart from needed new learning materials and increased instructional materials that could help increase learner involvement and learner construction of knowledge through the learning experience and resulted in instructional materials that would include interaction and the learner.

Recognize differences between individual learners' styles and preferences.

The ideas of the constructivists were important in the development of my thinking since

1989, 1:13)

The theories of the constructivists were important in the development of my thinking since they clearly included into any instructional framework the need to consider the role of the teacher's instructional environment, the role of the learner's cognitive processes, and the role of the context in which learning occurs.
account when planning and delivering instruction. The testing project showed that preferences among student groups vary, so that different learning styles are acceptable. This requires the teacher to assess whether or not the teacher and identified student learning styles are compatible. In a wide range of programs at technical and further education colleges, we also found that the CSTL is an easily administered test to assess the very practical instructional

more customized to the clientele and that the learning preferences can be effectively used to construct learning materials.

The testing project was carried out by Smith and Ludlow (1986) to determine which learning styles were more compatible with the learning process. The study took place at a college in a group of students. The results showed that students scored higher on the CSTL than on other measures. The study also indicated that the CSTL was not only a good measure of students' learning styles but also a good measure of students' learning preferences.

The CSTL is an easily administered test to assess the very practical instructional

1. Expectation levels of performance achieved.
2. Mode of learning – your subscale scores preferred measures of achievement.
3. Content – your subscale scores preferred measures of achievement.
4. Instruction – your subscale scores preferred measures of achievement.

Two main subscales under major headings of the CSTL are achieving performance levels of styles. The CSTL provides measures on achievement performance, rather than knowledge of styles. The CSTL provides measures on learning материалы and delivery methods would be better served through knowledge of

validly characterized. I had determined that my interests are in developing goal focused on every one of the learning styles. The CSTL was considered to be an outstanding test in materials. HII's (1976) Classroom Style Inventory was considered to be one of the most valuable learning materials. HII's (1976) Classroom Style Inventory was considered to be one of the most

While recognizing the value of the global personality approach to the

problem.
the results noted in the graphs is provided in detail in Table 6.2 on page 118 of this paper. The similarity in the profiles for the two samples on each occasion, Explanation of
the comparison of the scores for the 1996 sample of participants, and for the 1994 sample of participants, shows that the difference is not significant. Figure 2.3 shows
the comparison of the scores for the two occasions. Figure 2.3 shows

that the study did not investigate age or gender effects.

by the GIST data. The profiles shown by program groups were stable. The test-

ers of data for each program group were in agreement by the degree of similarity shown
one, rather than a research interest. However, through graphical comparison of the two
areas, a pattern could be observed. As a result, my interest was a management and planning

and the decisions made would be very much reduced. The test battery was used to check a
reliability of the characteristics were not reliable. The reliability of the data for institutional

problem, but with different students. The purpose for doing this research was obvious.

As an adjunct to the study, I repeated the testing exercise in 1994 with the same

experience with immediate objects.

included being taught by teachers who were identical in teaching, and for learning through direct

The study also showed differences in learning preferences as a
either control or intervention, they selected look more into accounts in their planning and

CISTL. Additionally, where teachers did not have ideas on student learning preferences,
this, where conditions were sometimes quite at odds with the preferences shown by the

had, then conditions were sometimes quite at odds with the preferences shown by the

influencing the study of people. Technically some students in these cases, and technologies were
different program groups did indeed have identifiable learning preferences and that in

the main, these preferences were those one would intuitively expect. For example, Child

the graph, and 2.2 show examples of the closeness of fit in the profile of preferences

the graphs are provided in detail in Table 6.2 on page 118 of this paper. The similarity in the profiles for the two samples on each occasion, Explanation of
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influencing the study of people. Technically some students in these cases, and technologies were
different program groups did indeed have identifiable learning preferences and that in

the main, these preferences were those one would intuitively expect. For example, Child
preference prior to making the decisions underlying design of resources and
unfiltered learner groups. It is possible to develop reasonable knowledge of learner
and one which can be embued with the knowledge of the characteristics of the
methodologies to support flexible learning is a sophisticated and expensive endeavor.
results have considerable interest. The development of instructional materials and
Both for within institutions and for workplace application to flexible delivery, these

students were reasonably similar.
1980) Werner and Davidson, 1982). In the two projects undertaken, the two samples of
learning preferences and styles (e.g. Fielderian, Pfeffer & Zaleveski, 1985; Holland.
were overwhelmingly taken, since there are age, gender, and culture effects that influence
were originally taken, since there are age, gender, and culture effects that influence
second group of learners is reasonably similar to the group from whom the observations
second group of learners is reasonably similar to the group from whom the observations
area, and in the same learning context, care does need to be taken to ensure that the
area, and in the same learning context, care does need to be taken to ensure that the
and delivery, that will be applicable to another group of learners in the same program
and delivery, that will be applicable to another group of learners in the same program
in the basis of one set of data to yield useful decision and planning for program design.
program, is used to be easily applicable and learner, capable of informing
informing.
The strong relationship between the patterns of CLST shown over time for each program

2.3 Conclusions from the Early Projects

Comparison of subscale means 1996 and 1994

![Comparison of subscale means 1996 and 1994](image-url)
The design of training programs where knowledge of learner's capabilities is available often involves methods such as feedback and preparation. These forms of feedback and preparation may also form an integral part of the design process. The frequency of feedback and the duration of training programs can influence the design choices and their impact on learner performance. Extraordinary, additional feedback may be valuable in providing crucial insights into the learning process. The knowledge of learner preferences and training goals is essential in developing effective strategies for training and instruction. This information can be gathered through surveys and interviews, providing valuable insights into the preferences and needs of learners. The design of training programs must consider these factors to ensure effective learning outcomes.
The development of their products, subject approaches to learning and studying. The development of their programs, subject approaches to learning and studying. The development of their programs, subject approaches to learning and studying.

The personal approach to learning and studying. The personal approach to learning and studying. The personal approach to learning and studying.

...
the new training packages in our industry. Support for this combination has been received.

If the combination of this feature that flexible delivery will be used widely to implement

be a mechanism promoted by the majority of enterprises (ANZA, 1997).

on training packages' flexibility in the workplace will

non-endorsed components. Additionally, the independence of the policy material publishes

delivery can be used in training. Certainly, nothing true is the structure of the endorsed and

additionally, the new training packages, while not necessarily determining that flexible

Board, 1997) specifically refer to flexible delivery as a preferred training method.

Industry Advisory Boards (e.g., Australian Light Manufacturing Industry Advisory

such as the ANZA (1996).

response to industry training needs has become the policy preference of VET authorities

where the development of flexible learning resources and delivery methodologies in

recognition of the need that flexible delivery can play in industry training to the point

productivity and improved competencies. Additionally, these have been widespread

excellencies that express how the need for training can play in developing

the importance that training has assumed in Australian enterprises, and change in the

as described in the previous chapter, since 1986 there has been considerable change in

Informing Practice through this Research

be developed to support the process of:

Instructional decision-making. Further, it encouraged my view that students are important to

supported the view that understanding learners and learning contexts is important to

deploy knowledge and skills is an important one. Based on the evidence of large amount learned (quantitatively) this also how well the learning is used by the learner

produced phase of Bree's model recognized learning outcomes not just in terms of the

acquired skill development in resource-based learning was to be successful. Finally, the

students for self-directed learning and yet on the other hand, a need for development

was also shared with others' findings of an apparent lack of performance arrogance. This

The process of development students from a surface to a deep processing orientation.

way that we have identified features of both learner instructional preferences and context

model recognized the characteristics of learners and of learning contexts in the same

model was encouraging to me working at a very practical level. In the previous phase, the

24
The development of flexible learning has evolved over the years, with strategies being developed to assist both learners and workplaces to engage successfully in flexible delivery. On the basis of their research, it is envisaged that a number of processes and strategies of approaches, and the contexts for learning, that they experience in the workplace, influences the institutional preferences and learning styles of the learners and workplaces. This research will investigate the institutional preferences and learning styles of the learners and workplaces, the research strategies for preparation of learners and workplace, the research.

That is now some fifteen years old, having used their research a research project that can be used to the authors' interest. These new literatures can be a particular research on guided learning (Dibb, 1996a.; Hamilton & Collins 1999a.; and consider the research on guided learning (Dibb, 1996a.; Hamilton & Collins 1999a.; and consider the need for both learner and institutional development to effectively implement open learning, which was explored in this view. (Kember, 1996a.)

The earlier research we had conducted on TAFE students (Smith & Lister, 1996a.) provided a basis for similar research to be carried out to focus on the learner's process. These findings have also been extended to the workplace, (Kember, 1996a.)

individuals' computing the challenge, and the learners' concerns, prevalent in the workplace.

Until data requirements will take into consideration the learning preferences of the workplace, the flexibility of workplace, and the flexibility of the workplace, it is also concerned that the development of these practices to best deliver, whether there is an open learning environment, and the learners' experience of learning, when they showed the workplace delivery is the most preferred learning delivery method of the workplace. Herring & Smith (1996a.) who have observed an increase in interest in
CHAPTER 3:  
LEARNING IN THE WORKPLACE 

3.1  The Development of Workplace Knowledge
They argue that both conceptual and procedural knowledge comprise the acquisition of vocational knowledge and in particular, the relationship between these competencies is provided by Billiter (1991) and Rose (1996). Based on a further conceptualization of the党组 view (1982),

development of procedural and dispositional knowledge is enabled by the acquisition of vocational knowledge and, in particular, the interaction between a more expert and a less expert worker. An induction of the meaning in workplace learning and the essence of workplace learning in the workplace is necessary. The need to address these through the acquisition of human interaction and characteristic of practitioners who need to organize workplace learning activities and learning in the workplace. Key, on the other hand, has taken the view most concerned with workplace learning. The Billiter conceptualization of workplace learning gives us an important insight into the approaches that have been taken by different writers.

These conceptualizations are by no means in conflict, nor mutually exclusive. Each

Workplace Learning: A Social Interaction, conceived and performed by people at all levels of every workplace and success in their organization is needed to help another person. It is one of the most important and influential large set of informal interactions which take place when one

Billiter and Rose have conceptualized workplace learning in terms of the forms

Related components: workplace learning and providing relevant off-the-job learning opportunities.

Institutional model of workplace learning, focusing on its structure and processes, and view of knowledge or skill that represents the outcomes. Levy (1982) has taken an

Communities, 1996, p.6)
constructive way, rather than immediately externally derived knowledge. Accordingly, knowledge that is hidden, otherwise inaccessible and socially mediated, is held as being a salient source of learning. Close interaction between individuals is held as being an essential part of the learning, rather than the instruction, in the interpretative and constructive process of learning. Learning is one conducted by the learner and is an approach that recognises the centrality of learning and knowledge which are outside of the control of, or are not expressed in, the workplace. Knowledge development and some form of conceptual knowledge, which is not observable, is held as being a salient source of learning. The Biller and Rose paper discusses the social constructionists view that knowledge is socially mediated and inaccessible, which is the view that knowledge is socially mediated and inaccessible.

Biller and Rose (1996, p. 204) are quite clear that a strong base of conceptual knowledge is required to provide an excellent means for learning in the workplace. The Biller and Rose paper discusses the social constructionists view that knowledge is socially constructed and inaccessible. However, it is this increase in complexity and use of technology that renders conceptual knowledge accessible and observable. Knowledge that is held inaccessible and socially mediated is held as being a salient source of learning. The Biller and Rose paper discusses the social constructionists view that knowledge is socially mediated and inaccessible.

Biller and Rose (1996, p. 204) are quite clear that a strong base of conceptual knowledge is required to provide an excellent means for learning in the workplace. The Biller and Rose paper discusses the social constructionists view that knowledge is socially constructed and inaccessible.

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results in the degree to which they prefer to be independent learners as opposed to

Program students showed to a stronger dimension along with learners were distributed

reflected learning. A recent empirical study of learners and environmental action

the different forms of learning were presented by learners in the workplace, and that

Primary workplace data from a study by Smith, Ricki, and Brown (1996) lends support to

though there were variations in effectiveness to individual preference and context.

showed that each of the strategies was effective in working conceptual dimension, even

concerning themselves that enabled the use of one strategy over another. The researchers also

the level of preference for each strategy, and these were contextual workplace

The research showed that these were individual differences in learners and learners for

presentation. Once the learner has provided the response the learner can

Each of these strategies involves the learner "other than the proximal guide".

focused on three instructional strategies: assigning didactic roles, student groups and dialogues.

To achieve conceptual change as part of everyday workplace activities, Billing and Rose

Constraints.

Learning requires conceptual change, strategies are needed to make sense of new

interaction in the workplace are required. Billing and Rose (1996) found that when

knowledge in the workplace, especially in more complex and integrated contexts, a lack of

construction of this knowledge. To promote meaningful reflection of this hidden

making accessible knowledge which is remote and can assist the individual’s

hidden. Billing argues that close guidance of a more expert other can assist with

(Billing, 1994). They may not be able to provide access to knowledge which is opaque or

guidance (Vygotsky, 1978), such as observing and listening, provide important guidance

reconstruction individually appropriate understanding. Although more direct forms of

community of practice (Lave & Wenger, 1991). Through the process of meaning

meanings and understandings that they share in activity (Peg, 1999). Through a culture of

Consequently, individualized collaborative composing a common understanding of the other's

join problem solving and the construction of knowledge is progressively realized.

communicable. This proximal guidance (Vygotsky, 1978) may involve the learner in

through social mediation that the construction becomes more complex and

whether initial interpretative construction of knowledge is irreversible, and as

Posner (1992) argues, the application of knowledge is not just the information

this context, communication is more than a one-way transmission and reception (Peg, 1999).

of extremely derived stimuli but rather the individual's construction of these stimuli. In
strategic knowledge of how to decide what to do and when

declarative (domain) knowledge of the object, system or device and

procedural knowledge, which is how to do it, knowledge:

Knowledge (6861) who had argued that the knowledge required for real world tasks involves three

The emphasis formulation of three forms of workplace learning is similar to that of Gun

recipients of information, and hearing opportunities for transformative learning.

Technology-based distance education runs the danger of leaving adults as passive

(6661) P224 Referred to Heekin Learning, Blund and Hargreaves (6661, 1991) in "A Tour

indoors, I say, of an invariant and open to alternative points of view. (Heekin,

through challenging of assumptions and learning new meanings that are more

methods of practice. Heekin conceptualises transformative learning as developmental

become critically receptive by becoming sensitive to why things are being done in a

self and relationships. All three domains of learning are integrated when people

and the need for self-change, involving transformation of the way a person looks at

understanding of oneself in the workplace and power of questions about one’s identity

productive. Dialogue learning involves learning about the individual’s organisation and

inspirational learning focuses on learning aimed at skill development and improving

forms of workplace learning are described by Heekin (6661) and (6661, 1991). While

(6661) and (6661) and Walker (6661), Heekin’s workplace experience of participants in the workplace

and Walker (6661) in "A Tour

the use of action learning to support self-reflection learning and practical support to

process. Heekin’s workplace experience of participants in the workplace

and Walker (6661) in "A Tour

and Walker (6661), Walker (6661) in "A Tour

were strong and important differences between learners in their preference for learning

dependent learners with access to an instructor. It was clear from the research that there
The intellectual dimensions of skills has been identified by Evans (1994) in his use of
acquisition of all the simple of physical skills
understanding disposition, values and emotional maturity are involved in the
little account is taken in skill task of the exam in which such things as

Intellectual dimensions:
activity under the learning of skills, and argues there are some kinds of skills require
also criticized of the behavioral characteristics of a wide range of human
processes and socio-cultural innovation. These views are similarly expressed although
indebted. He has argued that situated learning is co-constructed from cognitive
Marxists, central arguments are grounded in the need for people in modern
Marxists (1986) argues that the behavioral model does not capture
1986), for a review, Marxists (1986) argues that the behavioral model does not capture
learning in the workplace are further supported by Marxists (1986) in her short
These arguments for the importance of social construction of knowledge and effective
Workers and as learners:
outcome. Evans et al (1986) have also noted the lessons for applications, as both
that learning to have occurred with domain and structured knowledge
workplace rather to performing a passive learners on the one hand, while
understanding of processes to a level that would enable them to generate new and
and low level yet, at the same time, workplace learners expect them to have an
expected by their workplace learners to accept without criticism what they were shown
learned by John (1961) and by Watson (1897), He noted that these were
less clear understandings and recognition for the different forms of knowledge as
Robertson (1996) observed the lesson that may exist in the workplace where there is a

Dreyfus (1982) Five Stages of Skill Development
of the Daylight (1982) proposed that for the increase in knowledge and skill learning, an expert level at the learner, pass through a number of sample learning models that provide evidence of expert performance. A number of20 dedicated and effectively constructed learning models enable progression to expert performance, and this learning process can be broken down into progression of information in the field of learning knowledge and learning resources. However, it also requires the role of a teacher, under the guidance of the learner, to provide feedback to the student or learner in the process. This is a typical example of practice and progression is the movement in these three aspects from partial to complete. Evans and Goodwin (1994) concluded in the progression of the skill acquisition phases on the efficient sources of skill - procedural knowledge, declarative knowledge and strategic knowledge.

Consequently, it is recommended that experts are able to coordinate the three.

In the progression of a learner from the level of novice through to expert, it is likely that performance is fluid, flexible, and highly projectile.

Stage 1, novice, characterized by limited, inflexible, rule-governed behaviour;

Stage 2, advanced beginner, where little or no selection of important features of the situation, and which are used.

Stage 3, competent, where the learner sees actions in terms of goals and plans.

Stage 4, proficient, where the best plan of action is selected accurately.

Stage 5, expert, where the performance is inherently from a deep understanding and unconsciousness, and where situations are summed up quickly and plans selected.

At the higher ends of the Daylight (1982) classification, where there is more dominant interaction and cooperation accountable as learning processes and performance increases, discussion with the students who are at a higher level of their learning knowledge and learning resources may move from theory to practice and involve student feedback. The progression is a progression of knowledge from the level of novice through to expert, it is likely that performance is fluid, flexible, and highly projectile.

Stage 1, novice, characterized by limited, inflexible, rule-governed behaviour;

Stage 2, advanced beginner, where little or no selection of important features of the situation, and which are used.

Stage 3, competent, where the learner sees actions in terms of goals and plans.

Stage 4, proficient, where the best plan of action is selected accurately.

Stage 5, expert, where the performance is inherently from a deep understanding and unconsciousness, and where situations are summed up quickly and plans selected.
development proposed by Doyle (1982),
the different forms of knowledge and learning identified with the stages of skill.
Since goals, given the contextual nature of the co-construction of knowledge understood at the goals of the work, the individual's place in the achievement of learning associated with skills, from concept knowledge associated with a wider commonality in these co-construction of, with consistent separation of procedural schema. Table 3.1 is a representation of these co-construction of, There are clear
knowledge in the workplace, before assuming to place them in relation to the Doyle's
It would be valuable at this point to briefly summarize the various co-construction of

and the development of knowledge at each of the three levels identified by Gori (1989).
the setting of learning goals to encourage progression through Doyle's schema, a
flexible learning resource materials and to provide construction, encouragement, and
working at a group. Working together, that group was able to use most effectively the
involving the learner, a fellow worker who was more expert, and a learning secondary
superior knowledge. From this research a learning paradigm was developed within
positive and encouraging feedback was given and then learners were sufficiently engaged
support in conjunction with training materials and training sessions to ensure the
plan procedural and declarative knowledge. It was clearly indicated the need for training
characterised by wide dispersion in skill levels, to hold a considerable amount of in-
showed learners in the five plans to be generally under-condition learners, to be
involving observation of learning processes in the work context. That research
theorems are already borne out in previous research of my own (Smith, 1997).
These observations on the development of procedural, declarative, and strategic
Weizenbaum (1961) and the Goll (1969) formulations are at work, as with both forms of knowledge: clear, at this level all three forms of knowledge in the Biliell (1993a), its, levels of goals and plans, which are used to guide action in the selection of skills and actions in knowledge development. At Duffy’s, competence level, the worker is seeing actions in knowledge is now moving beyond the procedural, and propositional or declarative communication of learning about the important informational aspects of the task. A motor basis required in a particular skill. Duffy’s advanced beginner level suggests a governed behavior necessary to operate a device at a novice level. The problem of learning at this level is, in the limited and rule procedural learning. The focus of learning at this level is on the limited and rule procedural learning. The focus of learning at this level is almost entirely associated with procedural learning.

<table>
<thead>
<tr>
<th>Table 3.1: Summary of conceptions of workplace knowledge</th>
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</thead>
<tbody>
<tr>
<td><strong>Conception</strong></td>
<td><strong>Definition</strong></td>
</tr>
<tr>
<td><strong>Illustrative learning</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Skill development</strong></td>
<td>(1661) Weizenbaum</td>
</tr>
<tr>
<td><strong>Instructional learning</strong></td>
<td>(1661) Mansfield</td>
</tr>
<tr>
<td><strong>Disciplinary (domain) learning</strong> (learning about the discipline, role and environment skills, physical, mental, etc.)</td>
<td></td>
</tr>
<tr>
<td><strong>Task management skills</strong> (planning and decision making)</td>
<td></td>
</tr>
<tr>
<td><strong>Task or technical skills</strong> (how to do it, operate and when)</td>
<td></td>
</tr>
<tr>
<td><strong>Dispositional learning</strong> (values and attitudes)</td>
<td></td>
</tr>
<tr>
<td><strong>Propositional learning</strong> (knowledge about)</td>
<td></td>
</tr>
<tr>
<td><strong>Procedural knowledge</strong> (knowing how)</td>
<td></td>
</tr>
<tr>
<td><strong>Conceptual knowledge</strong> (knowing that)</td>
<td></td>
</tr>
</tbody>
</table>
Problem solving, decision making, routine action.

By a unified theory as for all cognitive behavior (Newell, 1990, p.15). He suggests the areas to be covered

Newell has argued that a unified theory of cognition means a single set of mechanisms

Institutional design
of the ecologically important in the application of cognitive science to
learning. The work by Weis, Freudenthal and Wolff (1961), and their comprehensive review
identified concomitantly between cognitive and socio-cultural considerations in detail
in the ecologically important in the understanding of learning in adults. There are

whereas the ecological relations in the understanding of learning in adults. There are

Weis and Newell (1961) have suggested that a unified theory of learning and human information processing

3.2 Cognition and the development of expertise

For human interaction to achieve inspiration, motivation and role modeling
because resources cannot replace learning in the manner, since these are a continuing need
necessary. This conclusion is emphasized by Brown (1961) and the observation that
and opportunity to explore through acquisition, discussions, and action learning is also
learning and manipulation of environments, handsbooks, guides, by a rational human being.

Weis and Newell (1961) argue's however that the cognitive model of a rational human being
are dependent on access to more expert worker, a mentor, or in the view that meaningful regulation, knowledge acquisition and concept development

Additionally, the literature on constructionism and transformation of learning is consistent

meaning in the knowledge and application it affords.

can be better accessed and utilized. In the view of (961) terms the learner has negotiated
conceived and understood knowledge developed through experience, complex and opaque knowledge
in the Dreyfus model, as the worker moves towards proficiency and expertise the

but that the complexity makes the conceptual knowledge more opaque and inaccessible.

this requirement. Relevant here is Butzmann's (1961) observation that as complexity of
the task increases, so does the need for greater conceptual understanding.

The two highest stages are characterized by apparently unconscious stages of the work

Development of the worker is thus promoted, and finally conscious. These two stages of

Knowledge in the Anderson (1982) conceptualization, at Dreyfus' next two phases of
Induction in higher mental abilities requires the development of expertise in a particular field. The notion of the expert system in psychology is sometimes referred to as the expert model. However, the human expert is not a computer model, but a human being who has acquired a high level of expertise through years of practice and experience. The expert model is based on the concept of the expert system in psychology.

The model is a simplified representation of a cognitive process. Newell (1961) introduced the concept of a cognitive process in psychology. The expert model is a cognitive process that consists of a series of cognitive skills. Newell's model is based on the idea that a cognitive process is a series of cognitive skills. The expert model is a cognitive process that consists of a series of cognitive skills.
environment is dependent on the possession of socio-culturally derived knowledge. Although developed from a different theoretical perspective, Newell’s (1991) approach is complementary to the original work of Brown and Duguid. While the expert learner becomes aware of the need for additional knowledge, the need for additional knowledge is revealed by the learner’s experience with the problem-solving environment.

Observations and conclusions:

While the expert learner becomes aware of the need for additional knowledge, the need for additional knowledge is revealed by the learner’s experience with the problem-solving environment. The expert learner seeks to acquire new knowledge and skills, not just to solve problems, but to become a better learner. This approach is consistent with the work of Brown and Duguid, who have emphasized the importance of understanding the problem-solving process.

Brown and Duguid (1989) have argued that the problem-solving process is complex and involves a variety of cognitive and social processes. They have emphasized the importance of understanding the problem-solving process as a means of acquiring new knowledge and skills. The expert learner, by contrast, is more likely to acquire new knowledge and skills through the process of problem-solving, rather than through direct instruction.

The expert learner seeks to acquire new knowledge and skills, not just to solve problems, but to become a better learner. This approach is consistent with the work of Brown and Duguid, who have emphasized the importance of understanding the problem-solving process. The expert learner, by contrast, is more likely to acquire new knowledge and skills through the process of problem-solving, rather than through direct instruction.
Billier's conclusions are well supported by earlier work by West, Farmer and Wolfe.

Knowledge to be acquired includes conceptual development, constructive intervention in the training context of human interaction where the construct to result in the construction and organization of knowledge. This concept and transformation constitute structures, which are conditioned by social and cultural influences. 

Inference is to be understood as not directed at the learning of the learner and different sciences that are related to access, manipulation, and knowledge. Similarly, to Newell (1990), Billier argues that knowledge is constructed through the contribution of both cognitive structures and socio-cultural, through the acquisition and development of conceptual structures. 

In addition to the construction, organization, and development of conceptual structures, cognitive competence can also be found in the idea that personal dispositions are fundamental in self-regulated learning. 

Billier also argues that the knowledge is an individual construct in the area of complex thinking. This construct is not necessarily a result of working memory and involves a relational to the skill required in effective and efficient deployment. 

The construction of knowledge is also addressed in Billier's search for complementarity.

Other cognitive structures may be complete and internal, but when is learned, the cognitive structures of the novice may be incomplete and that is learned, in other words, complementing the application of those cognitive structures.
Expert performance is not acquired by gradually refining the skills first adopted as a

The piece of information in the development of expertise has been identified by both

and include the acquisition of automaticity of lower order tasks (Case, 1985; Kirby,

and understanding, rather than from following rules (Nisbett, Ghiselli, & Hunt, 1987).

experts are able to attend to an

have shown that the working memory

proaches leads to an ability to carry out the task in an

Drury's (1981) notion that expertise leads to an ability to carry out the task in an

and explain different possible action responses. In a cognitive explanation of

their internal representation of knowledge by experts is critical to their ability to plan

systematically one's knowledge. Our notions are yet to achieve that efficient

experts can form an immediate expression of a problem that enables them to

have also concluded, from their research on expert performance and its development, that

In investigating differences between experts and novices, Billeck (1994a, 1994b) has

learn or use cognitive strategies.

and will suggest a set of important dispositional schemas to explain the motivation to

processes, representation of knowledge, and knowledge construction. Similarly to Billieck's (1994a, 1994b)

section, but ignores the consideration of cognitive schemas that are active in the process of

becoming proficient, the development of an internal representation of information, dispositions, and schemas

Wells are critical of instructional design that is proactively with the development of

appropriately for the content to be learned by a particular learner. Wells' framework and

of the instructional designer is to make the best decisions about what strategies are most

mapping of organizing strategies, and logic. For example, the task of

information that is designed to incorporate the use of cognitive strategies such as concept

complexity is not, in their view, restricted to the acquisition of knowledge.

and recognition of knowledge through interaction with the social and physical world.

most important. Wells' framework and Wells argue that acquisition is a process of

the experts and store knowledge in packets of bundles, but that there are also processes

First, following Anderson's (1984) they acknowledge that these are schemas with

expertise.
The development of these skills in the workplace, however, must consider the goals and conditions of successful approximation of skill development and the identification of knowledge and skill, and the success in the training needs of the learner. Under the assumption that learning activities are required to foster interaction and generalization of knowledge, learning activities that encourage interaction are required to foster interaction and generalization of knowledge. In such an environment, experts provide scaffolding for early learning by novices. Gradually, through interaction with experts, the notion of scaffolding is refined.

Exploration of the notion of cognitive apprenticeship. Pamer, Bucumash, and LeGrand

monitoring of progress.

diagnosing the state of the learner from the interaction, and in the evaluation and transfer of knowledge to the domain knowledge of the instructional designer involved in the course development. This development of the course development of the instructional designer involves considerable thought and effort. Hence, the discussion and Chinn's view, which section of tasks and their repeated practice. They have argued that the observational and diagnostic learning in the workplace does not easily enable the learners to develop the skill or task selection. Chinn (1994) have drawn attention to the importance of learning task selection, but diagnosis for instrument learning. Youn (1994) has identified the selection of the instructional strategy and instructional design. For instrument learning, Youn has identified the selection of the instructional strategy and instructional design.
Relative effectiveness of different training strategies to make informed decisions...
Contents:

Learning cycle - learning occurs through repeated cycles of planning, doing, reflecting, learning, and completing performance with others.

Reflection - learners reflect and compare performance with others.

Rehearsal - learners rehearse their thinking and what they have learned.

Risks and a focus of learning practical competencies.

Interweaving - learners go back and forth between a focus of accomplishing the needs of these competencies in the real world.

Authenticity - material to be learned is embedded in tasks and settings that reflect work in the workplace.

Learning environment: includes a number of learning that lend themselves to deployment among workplace and workplace environments that learners be exposed to learn through authentic and engaged understandings (Collins & Brown, 1991). Cognitive apprenticeship, Collins and work seeks, necessitates that learners be exposed to learn through authentic and engaged understandings (Collins & Brown, 1991, p. 28).

Learning learners' particularly novices, no place together a picture of the

Similar vein, Collins and Brown (1992) argue that

students in construct meaningful knowledge on their own (Carns, 1993, p. 138). In

where the calls arise constructivism, where educational have a place within the ability of

must be built into the learning program and its delivery. Carns (1992) warns against

conceptual development and skill development through proponent solving and metaphorically.

Clearly, for flexible delivery, it is desirable to design adaptive, intelligent systems to provide for

need for expertise, one to instruction and demonstration from a more expert human.

learning is insatiable within self and product distribution and a synthesis of the

flexible learning, and the opportunities for learning on an individual worker basis, that

flexible learning in the workplace. In an industry setting the advancement of resource-based

material to be learned, thus the question of how best to provide this through flexible

material to be learned, yet the question of how best to provide this through flexible

acquiring the view that the construction of knowledge requires interaction with learners

Flexible Delivery in the Workplace

Issues of how best to structure and deliver learning that provides concept.

development and is well suited to the challenge for training has become a crucial issue for

The issue of how best to structure and deliver learning that provides concept.
In a study focusing on the sorts of issues that arise during formal training, Bellin et al. (1996b) found that cognitive apprenticeship, a process of learning that involves working on real-world problems, can be enhanced through observation and analysis of the work environment. Bellin and his colleagues noted that the effectiveness of cognitive apprenticeship was not just a matter of cognitive processes, but also of social interaction and problem-solving.

Collins (1997, p.9) argues that a cognitive apprenticeship is an effective way to develop learning. This involves understanding the problems and how to approach them, as well as the social context in which the learning takes place. He notes that multimedia is useful in providing visual aids that help learners understand the problems and how to solve them. However, he also emphasizes the importance of social interaction in the learning process, as learners need to work together to understand and solve problems.
about cognitive skill (Redding, 1995, p.90).

Learning is to occur of the learners – their learning styles, prior knowledge and the context within which the development of learning courseware aimed at goals to the design task is knowledge

motivations and prior knowledge. Reusse (1995), writing in the context of the

workplace, observes that learners are not captive vessels waiting to be filled

and Mulhern (1997) observes that learners are active creators of their own learning.

Kember et al. (1997) report on the development of self-directed learning materials

which provide the support learners need to take responsibility for their own learning. Social cognitive constructivist

primarily physical to primarily cognitive, while Collins (1997) has associated this need

that these sorts of changes have shifted the demand on human performance from

complex workplace tasks and objectives. Redding and Redding (1993, p.75)

repeatedly communicated within the literature that ERP/CRM

need for this level of understanding in the development of workplace knowledge is

material to be assimilated and integrated into the learner’s knowledge structure. The

dynamic, interactive, and self-regulated learning to understand how that information

developed from knowledge that Dil (1987) and Reber (1987) have identified as cognitive,

Effective progress from the novice to the expert stage (Dreyfus, 1987) requires the

in the workplace.

utmost in conjunction with the guidance that is available through interaction with others.

important part to play in the development of workplace knowledge. They need to be

environmen. He concludes that although resource-based learning materials have an

practise, and with which common concepts that may be applicable in everyday workplace

to proportional knowledge which may not be readily accessed through workplace

Biliows also acknowledges, though, that resource-based learning materials provide access
supervised and teaching in quality, and were not responsive to out-of-class challenges and responses. The research identified that student use of mediating responses was largely

put classifying the students’ thoughts into a set of mutually-different mediating

inference process of applying the transcripts of the interactions, thinking, and the thought process that had during the study of the learning materials. Through a

material, and subserviently interpreting students’ views to stimulate recall of

methods of involving videotaping students as they worked through learning

A second study by Marland, Palring, and Rull (1992) (s) focused on student

more complex.

in-text instructional devices, and suggested that the issue of text-based learning are

such as Nisbet and Simmonds (1992) and Winsemian, and Nisbet, and White (1991) for the use of

by Marland et al, directly challenged the earlier recommendations made by others

and where they perceived thought either under text scanning activity. The study compared

by way of modifying directly recalling where they were not the consuming to complete

who proposed that in-text questioning and activating devices were more successful where

proposing that in-text questioning and activating devices were more successful, where

concept, since external exploration in his necessity. Incessant formal did not always serve

development of the inner-relationships between conscious competences and between

as variable in learners effectiveness. They advocated more attention to paid to the

those access incentives. Marland et al also drew attention to the organization of concern

where, as Marland et al (learn) because that is clear that how to make use of

be useful to students. Additionally, the research indicated that less sophisticated (or

be evident in the text, such as strategies, and guidance, concerning whether, or not

students more than a search of the text to achieve the assessment outcome. Access

noting more than a search of the text to achieve the assessment outcome. Access

assessed after attention at the design stage to avoid self-assessment that required

self-assessment retrieval. In-text self-assessment devices, designed to elicit and encourage the

learning more than a search of the text to achieve the assessment outcome. Access

suggested that the amount of reading determined by learning materials needs to be

level, Marland et al made a number of suggestions and recommendations. First, they

and in-text design features. On the basis of the research with students at universities

the ways that learners interact with and use resource-based prior learning materials

The study by Marland et al (1991) in disuse education, provides considerable insight.
dependent upon learners moving to a more independent, self-directed style of learning.

Kember's (1991) two-dimensional model of open learning argues that success is not a high priority among diverse educational institutions, yet college lecturers focused on the learning characteristics of students has been identified by Deakin (1986) as a necessary ingredient of instruction. Research has shown that learners have a flexible delivery of instruction that can be accommodated to their needs in a way that enables those learners to accommodate their needs and effective self-directed learning are not well developed in vocational education and training (VET) learners. She has suggested that although the delivery of education in such environments has been criticized for not being well developed in VET, it is supported through the study of adult vocational learners and their different perceptions of learning. These perceptions include the notion of independence and self-directedness in learning. She has proposed that learners should be supported to develop skills of independent learning and self-directedness. In research, she has observed (Evens & Smith, 1999; People's Republic of China, 1997) that learners are supported by a number of resources and communication within the learning environment.

Pincus & Schiek-Smith, 1997.

Research has been undertaken in the workplace, Chapter 6 describes how the method of delivering training and the workplace is critical.
assess a low preference for independent learning. Calculator et al. (1996) have noted, in their
findings that VET (Vocational Education and Training) learners have a low preference for
learning in a social context and a high preference for learning in an independent context.

Owens and Edwards-Wilson (1996) have suggested that learners in VET programs are
more likely to be in a social context and that this context may influence their learning
preferences and their needs. In another context, a study by Park and Henderson (1996)
showed that learners in a social context were more likely to learn in an independent
context.

Recent work by Brooker and Walker (1996) has shown that learners are in a social
context, and this may influence their learning preferences.

Brooker and Walker (1996) have suggested that programs directed at learning will be more
effective if they are designed to meet the needs of learners in a social context. They have
also suggested that programs should be designed to meet the needs of learners in an
independent context.

Similarly, Simeon and Smith (1997) have suggested that programs should be designed
to meet the needs of learners in both contexts.

In conclusion, it is clear that learners have a low preference for learning in a social
context and a high preference for learning in an independent context. This is consistent
with the findings of Calculator et al. (1996) and other researchers.
Learning has particular relevance since it:

- allows delivery
- flexibility in delivery to meet workplace needs
- consultation and evaluation style services
- customised design

summarise these demands as:

These organisations represent a challenge to established learning providers, and are encouraged to develop learning-based organisational cultures (Ford, 1990).

Carter and Crispe (1961) have noted that enterprise community and leadership

4.3 The Workplace as a Learning Environment

human interaction of resource-based instructional delivery, direct authentic experience, and support through unendurable conceptual knowledge. Also, there are questions regarding the effective mix of knowledge, the constructive strategies to be employed in the development of robust and appropriate learning to be used in the development of workplace with a more expert work role. These questions relate to the learning preferences of the workplace, the approach that is used to develop workplace learning and the approach that is used to develop workplace learning and the use of new learning technologies to remain relevant. If workplace learning is going to use new learning technologies to characterise (e.g., VCTAC) is unlikely to be successful where learning is expected by workplace-based learning materials, written in a common style irrespective of context.

It is also clear that the approach to learning using government funded development of support learning in which an attitude of responsibility for their own learning.

assisted learning is which in an attitude of responsibility for their own learning.

flexible delivery in the workplace. Carter et al. (1961) noted that effort is required to

recognise the importance of self-directed learning to the success of

their learning. Recognising the importance of self-directed learning to the success of

what British workplaces, that mutual support does not appear to be commonly

work with British workplaces, that mutual support does not appear to be commonly
preferences for skill in self-directed learning. 

Warren, Christie and Choy (1998) have shown, VET learners are not characterised by a stable self-direction but are more prepared to support learners with a more expert worker or a worker where the expertise exists outside the experience of teaching. Additionally, the isolation of learners can be effective when the learners' experience is raised. The question of whether or not an enterprise is prepared to support learners with a more expert worker or a worker where the expertise exists outside the experience of teaching is addressed.

These findings resonate considerably with the constructivist work by Billig (1996) and others, reviewed earlier in this chapter. McKeown's findings also resonate with research by Cribb et al. (1998), which discusses the importance of interaction in the learning process, the role of interaction in the application of learning, and the impact the workplace has on the development of an adaptable workforce. McKeown's observations on the skills which may increase productivity in the workplace, but which are not conducive to additional learning which is central to work may focus narrowly on technical skills which may increase productivity in the workplace but which are not conducive to additional learning which is central to work.

Additionally, learning which is central only to work may focus narrowly on technical skills which may increase productivity in the workplace but which are not conducive to additional learning which is central to work.
with some companies viewing a quality outcome as specific skill development, while
others believed that outcomes of quality outcomes for training viewed consistently.
Field's research by Hayton et al. (1967) indicates that an large business develope

mean knowledge to other members of the firm may also be limited if the knowledge is
new knowledge in a small firm are often gained by the reduction of a new
does and leadership in a small firm are often gained by the reaction of a new
may be quite different with little change and a small workforce. Additionally, new
amount of learning required is limited through a number of factors. The firm's work
response to the learning needs of small enterprises. For many small enterprises, the
Field's (1967) work has shown that formal and structured training is not an effective

personal and family pressures outside work on the learner.

free expectations on thesurvival.

misunderstandings about the training and negate all the positives.

agreements between workers and management.

Lower levels of trust or even conflicts between groups.

Communication also notes that there are constraints of a more complex nature:

communicated (1961) has noted several constraints in using the workplace for training.

employees did so. 98% of businesses with 100 plus employees did.

Becoming Training Excellence Survey showed that only 18% of all businesses with
findings are obrigatory confirmed by Cotton (1967) who reported that the national 1993
learning environments that those with more clear goals do. While this was not true for very small organizations
having more clearly defined goals. While this was not true for very small organizations
would differ with the size of the organization and the environment they were in. The
also inspected enterprises size as a variable, and predicted that the learning environment
In investigating the clarity of learning goals and expectations, the research study
Workplace training and/or assessment in the few cases where workplace documented workplace supervisor roles or structured and documented...
that exist for learning at work, where the need to engage in training activities is

Both Harris et al. (1961) and Calder and McCollum (1961) have pointed to the reasons
Training and the emphasis on training taking place within the production schedule.
Training policy is important within enterprises in order to establish the importance of

with some enterprises being more advanced (Harris et al. 1961, in their approach,

communicated on the wide variability between enterprises in how well training is planned,

more impressive is effective learning in the workplace. Each of these writers

and Smith (1961), additionally, further support for the need for planning of training

Within the workplace is provided by Brooke and Butler (1961), Calder and McCollum

and also been learned on Broker and Butler (1961), Regan and Scott (1961), and

the workplace is characterized by just happening (p. 124) in a context of no clear

Further evidence of the need for structures in the workplace to support learning is

better support of the development of structures to support learning

Education Minister (1961) has shown a strong preference among small business

smaller enterprises, a study in Australia by the Office of Training and Product

Calder and McCollum (1961) have made similar remarks, particularly in the case of

that their efforts were only given on a completed job. In the United Kingdom,

apprenticeship, apprenticeship work does not production is not aided, and early learning

unstructured training an expectation that the initiative to learn would come from the

summary of the enterprises with whom I worked that workplace were characterized by

there was considerable diversity in a context that one had well-developed structures, a

supervisors put into practice by six named workplaces that employed apprentices. The

in an apprenticeship context, rather than one of small business training, Brooke and

were delivered in enterprises of more than 20 employees (Robinson, 1961).
The successful establishment of a community of practice depends on the community of practice being an authentic, real-world setting where learning and practice are closely integrated. The success of the community of practice is influenced by the quality of the learning environment and the performance of the members. The learning environment is a critical factor in the success of the community of practice.

Innovative approaches are necessary to create a community of practice that is real-world. Learning communities are built by a culture of community of practice and their learning experiences may be enhanced by communities of practice. Learning experiences through external training providers or other organizations may need to be sought.

To enhance learning experiences through external training providers or other organizations, the development of skills required for the process of learning and practice is essential. Learning experiences can be improved by combining the scope of external work with the scope of the work of the organization. This approach (Kollmorgen & Green, 1992; Learning & Wenger, 1996) may improve the planned introduction of new skills and knowledge in the workplace. Learning experiences can also be improved by combining the scope of external work with the scope of the work of the organization. This approach (Kollmorgen & Green, 1992; Learning & Wenger, 1996) may improve the planned introduction of new skills and knowledge in the workplace.

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Evidence from the research literature suggests that a combination of factors are in place that are likely to reduce the effectiveness of flexible delivery for the development of apprenticeship skills in the workplace. These factors are:

- A low preference among VET learners for independent learning and a high preference for structured learning in a social context (Smith, 1999). This preference for structured learning may reduce the effectiveness of flexible delivery.

- A need for the development of self-directed and independent learners (Booth, 1999). Without these skills, learners may struggle with flexible learning.

- A high demand for workplace learning and training (Huntsman et al., 1999). The workplace is a significant context for learning, and learners need to be able to apply what they learn in this context.

- The lack of workplace trainers who are effective at delivering workplace learning (Pettigrew, 1999). Effective workplace trainers are critical for the success of flexible delivery.

- The complexity of workplace learning (Rose, 1996). Workplace learning is often complex and requires a high level of skill and understanding.

- The need for a clear understanding of the learning objectives (Pettigrew, 1999). Learners need to understand what they are learning and why.

- The need for a supportive learning environment (Rose, 1996). A supportive learning environment is essential for successful workplace learning.

In summary, flexible delivery for the development of apprenticeship skills in the workplace requires a combination of factors. These factors include learner readiness, the provision of workplace trainers, clear learning objectives, and a supportive learning environment.
Although several earlier writers (e.g., Hudson, 1966; Wiiksen, 1964, 1972) had differences in perception, memory, and learning processes characterized through individual processing characteristics. Those variations were observable through individual human perception, memory, and learning that was based on a cognitive processing model. Following increased interest in how individuals may vary in their information processing, memory, and learning, this was formalized as the development of an approach to perception, memory, and communication based on human information processing and with the increasing amount of research into human development of information theory (Wiiksen, 1953). Further interest in human development of information theory (Wiiksen, 1953) has been joined by other researchers interested in human information processing. These publications have given rise to a range of theoretical frameworks in psychology and education that are applied to education and human information. These ideas have provided a wide range of research findings in human information processing and have been applied to the development of educational psychology. Important developments in educational psychology occurred in the second half of the 1960s, with the publication of Robert C. E. C. M. (1967) and 1969, with the publication of Robert Gagne’s Conditions of Learning in 1963, and among other works by John W. P. Learning Styles, Approaches.
Achieving orientation is characterized by study for the acquisition of knowledge, while an academic orientation is characterized by study for the acquisition of skills. While in orientation is one adopted by a student who learns the material in order to reproduce it only, rather than to necessarily understand it; a non-academic orientation is a deeper and more meaningful mode of learning. Over time, researchers have reliably shown that students who primarily use a traditional approach tend to be more effective in learning than those who primarily use a surface approach. Improved learning among students who primarily use a deep approach to study, however, does not translate into higher scores on post-tests or exams. Instead, there is a need for instruction to be more effective in facilitating the acquisition of knowledge. The need for instruction to be more effective in facilitating the acquisition of knowledge is also highlighted by the observation that there is almost universal agreement that the meaning and reproducibility of knowledge, rather than the knowledge itself, is the focus of effective learning. Additionally, while there is a need for instruction to be more effective in facilitating the acquisition of knowledge, it is also important to consider the role of individual differences in learning. The definition of individual differences in learning is essential in that it provides a clear picture of how learning styles can be developed and an account of the various learning styles that are evident in the classroom. These styles include visual, auditory, and kinesthetic learning styles. Visual learners tend to learn best through reading and writing, while auditory learners learn best through listening and speaking. Kinesthetic learners tend to learn best through physical movement and hands-on activities. In order to accommodate these different learning styles, it is important for teachers to be aware of the various learning styles and to provide instruction that accommodates these styles. This can be achieved by providing a variety of instructional methods, such as visual aids, group discussions, and hands-on activities, to cater to the different learning styles of students.
These two continua result in four quadrants, and learning style is described as the

a single continuum, and AC and AE are at two ends of a second, orthogonal continuum
through abstract expression (AC), which results in the formation of abstract concepts (AC),
followed by reflective observation (RO), which leads to

the formation of abstract concepts (AC), followed by reflective observation (RO), which leads to

concrete expression (CE), which results in the learning of hypotheses

individuals learn and solve problems by progressing through a four stage cycle:

(1976), working with a Jungian approach to psychological type, suggested that

also interested in individual differences in human information processing.
outcome, such as influencing preferred conditions, common and modes into

The CLSI has been largely used by researchers and practitioners interested in applied

- Expectation, where students indicate the level of performance they anticipate.
- Mode, where students express their preferences or different delivery modes.
- Numeric, qualitative, informative, and people-related concerns.
- Concerned, where students express relative preferences for working with

Learning environment:

Conditions of learning, where signals scales describe student preferences for the

Your major categories:

Learning, The Cambridge Learning Styles Inventory (CLSI) provides scores in
describe learning style. He opined to examine the preferences students display in their
instead of being interested in examining the underlying cognitive dimensions that may

Campbell (1980) took a quite different approach to the study of learning styles and,

research

propositions, since the shortcomings of the Inventory result in difficulties replicating

Pinao, 1993). This has led to an amount of speculation surrounding Koll's
sobility and the construct validity of scores (e.g., Hunsaker, 1984; George, 1984).

Kolb's proposition has assisted considerable attribution, his Learning Style Inventory

Kolb's proposition has assisted considerable attribution, his Learning Style Inventory

concerns the learning style. Whereas, Kolb also argued that in the same learning

can vary with the learning task. However, Kolb also argued that in the same learning

situation, meaning that the position a person occupies in the two-dimensional plane

argued that a person may prefer one style in one situation, and another style in another

used in the literature to describe what appear to be fairly similar constructs. Kolb also

exemplified indicate very clearly the confusion between the numerous different terms

This would call them approaches to learning, and approaches to task. This

Kolb argued, learn by concrete experience and active experimentation,

collaboration, the assimilator, the diverger, and the converger. Accommodators for

place an individual holds in that plane. Kolb named the four learning styles the
Learning style as a

Keefe and Ferrin (1990) have developed the notion of learning style as a composite

with a view to identifying unique predictors of learning behavior.

Keefe and Ferrin (1989) have identified the need for a new model of learning style that is sensitive to individual differences in learning preferences and learning styles. This model, which integrates the theoretical frameworks of P. E. Yarrow and A. T. S. Hargreaves, proposes that learning style is a multidimensional construct that encompasses a range of individual differences in learning preferences. This model is based on the assumption that learning style is a complex, dynamic, and multifaceted construct that is influenced by a variety of factors, including personality, cognitive style, and environmental factors.

The model proposes that learning style is characterized by a set of preferences for different modes of learning, such as visual, auditory, and kinesthetic. These preferences are influenced by a range of factors, including personality traits, cognitive style, and environmental factors. The model also recognizes that learning style is not static but is influenced by a range of factors, including personality traits, cognitive style, and environmental factors.

The model is based on the assumption that learning style is a complex, dynamic, and multifaceted construct that is influenced by a variety of factors, including personality, cognitive style, and environmental factors. This model is based on the assumption that learning style is a complex, dynamic, and multifaceted construct that is influenced by a variety of factors, including personality, cognitive style, and environmental factors. This model provides a framework for understanding the complex interplay of factors that influence learning style and offers a basis for developing effective instructional strategies that are tailored to the needs of individual learners.


Ridgeway, Richard and Chinn (1661) have attempted to integrate the many conceptualisations of learning, learning style and information processing. These two dimensions are combined to form a single learning style that can be used to explain individual differences in learning. The learning style is determined by the interaction of two factors: the person's internal style and the environment's demands.

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Riding and Sadel-Smith (1992) have reported that the Whole-Imagery dimension of cognitive style has been derived from the Field-dependent-Field-independent dimension of cognitive style. The Whole-Imagery style is characterized by a preference for information to be presented in pictorial, diagrammatic, or preschematic, real object form. However, the Sadel-Smith and Riding (1992) paper was not able to establish a strong and consistent relationship between the Whole-Imagery style and institutional preferences.

Riding and Sadel-Smith (1992) (6661) paper was not able to establish a strong and consistent relationship between the Whole-Imagery style and institutional preferences. They suggest that intuitions have a preference for information to be presented in verbal/representational form, whereas images, being pictorial, prefer verbal/representational form in words, and images, being pictorial, prefer verbal/representational form.

Riding and Sadel-Smith (1992) (6661) describe the Whole-Imagery dimension of cognitive style in terms of the habitual mode of representing information in memory, with the preference among Whole-Imagery individuals for non-print-based media of instruction for collaborative learning programs. Further, Sadel-Smith and Riding (6661) have also suggested that Whole-Imagery individuals have identified a highly significant relationship to meet the needs of different groups of learners or individuals. In an attempt to develop predictions to assist the institutional design and delivery of instruction, the relationship between cognitive style and institutional preferences in a collaborative learning context has been also begun.

Riding and Sadel-Smith (1992) (6661) and Sadel-Smith (1992) (6661) have also begun to explore the relationship between cognitive style and institutional preferences in collaborative learning context.

Doctor and Bloom (1977)

Similar suggestions of mental constructs have been made earlier by Doctor (1978) and in the two hemispheres of the brain, and that they are independent of learning style. Dimensions of cognitive style are quite fundamental and may affect neural processes. Riders (1961) has also provided evidence that these two underlying categories.
Assessing Information Processing following the classical Information Processing model

- Information Processing style, which is the individual's intellectual approach to which to learn and modulate by all person-environment interactions.
- Instructional preference, which is the individual's choice of environment within which learning style is situated.

General area of interest:

Learning style is so over-read that she would avoid it other than to describe the cognitive approach and process of learning. Curry's view was that the term learning style to refer to the general area of interest in individual differences in her analysis to intended learning, she distinguished between the terms describing a wide variety of conceptualizations and measurement devices. Researching the term, learning styles is overstated and has been employed to the degree and the multitude of concepts used in learning style research. As Curry (1983), Curry (1983) made a systemic and influential attempt to organize

Drawing attention to the fact that there are a number of conceptualizations of the term Learning Style. He summarized the work of others (1977), (1977), (1974), and (1969), to develop a comprehensive conceptual framework for understanding the diverse work on field-dependent—field-independent was later applied to problem-solving. The distinction field-dependent from the surrounding perceptual field. The perception, and the variations between people in their ability to perceive part of a situation, is the 1970s, their indications that the field-dependent—field-independent dimension may be applied to a number of differences between individuals.

Originally proposed in the work of Wilson et al. (1954), Wilson et al. (1974), and Wilson et al. (1979), this work has been expanded and extended in research.
characteristic of the individual, but nevertheless, still modifiable by learning.

Information processing style was Curry's second layer of the onion, which because

of its agreement with the environment and its layer most useful to vary in the
context. At the same time, this changeable characteristic meant to Curry that this
layer was the least stable as a characteristic of any given

which they learn was the outermost layer of the onion. Her expectation was that
intrusion of preference, referring to the individual's choice of environment in

Leaning how to the layers of an onion.

above. Curry blended the various models of learning styles into three layers.
Recognizing the types of leaning that had been posulated, some of which are reviewed

defined setting.

Learning ability which is the learner's potential performance on a defined task in a

with the particular learning environment.

into a personally meaningful form. Learning strategies are used by learners to cope
learning strategies, whereby a learner transforms information from the form provided

way he or she learns, and affects the choice made about learning alternatives:

self-concept about learning, which is the person's conscious perception about the

not interact with the environment:
adapting and assimilating information, but being a stable characteristic that does

(cognitive processing style, which Curry defined as the individual's approach to

short-term, sensory leaning, short-term memory, associations, codings, long term

strategies.

"Sources:"

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Phenomenographic approaches to psychology is a little different from the other two. He has included a developed a typology, that is a little different from the other two. He has included a

and Claxton and Murfield's typologies are largely in agreement. Biggs' though has

information processing, which is based on social interaction. Consequently, the Curry

Murfield's typology is an elaboration of Curry's, and separates out their component of

into a cognitive sequence and explains. As Murray-Harvey points out, Curry and

other information presented into forms most able by that individual to be placed

information processing models as combining the strategies used by learners to

solve problems (Brown, 1994). Similarly, each of the typologies recognizes the

can be observed in the different ways that learners perceive the world. Learn, tasks, and

integrative cognitive style and learning style at a stable and relatively characteristic

Each of the typologies recognizes the personal style models as being those that

<table>
<thead>
<tr>
<th>Instructor Preference</th>
<th>Institutional Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenomenographic</td>
<td>Social Interaction</td>
</tr>
<tr>
<td>Information Processing</td>
<td>Information Processing</td>
</tr>
<tr>
<td>Personality Style</td>
<td>Cognitive/personal Style</td>
</tr>
</tbody>
</table>

1994

Table 4.1: Typologies of Student Learning Processes (from Murray-Harvey)

Comparison is shown in Table 4.1.

Developed by Curry (1987), Claxton and Murfield (1987) and Biggs (1994). This

process was made by Murray-Harvey (1974) in first comparison of the typologies.

An attempt to compare the approaches to research and theory on student learning

represents an underlying and relatively stable personality dimension.

The individual's approach to adapting and assimilating information. This layer

Cognitive/personal style is the internal layer of Curry's model and is defined as
The research of Spence (1990) and others has revealed that it is possible to use an instrument for measuring different conceptions and preferences. The instrument, called the SPP or the Preference Profile, is designed to assess and measure different conceptions and preferences of student learning and learning styles. It is based on the idea that factors affecting learning can be identified through a careful analysis of results obtained from the two approaches to learning, which are amenable to change.

Conceptions of student learning are composed of motives and stability. The SPP is derived from a series of environmental preference surveys (EPS) (Fiske, 1991, and Biggs, 1979). The EPSs are derived from the theory that the learning style of an individual is not fixed but develops over time. The SPPs are designed to measure the same thing, to make these conceptions and preferences comparable in research. The SPPs have also been used to measure the instrument's ability to discriminate between different teaching and learning styles.

Murray-Harvey's research not only addressed the different typologies but have been

approach

againg first impressions and processing differences to their view of task demands

are seen as forming an open-ended and recursive system, in which individuals

personal traits, contextual factors, level of processing, and quality of outcomes

approach

apply this approach to his typology. In that

and is thus correlated with their identification of instrumental preferences

expressions while studying. Finally, the typologies developed by Laxman and Martin

as Makin and Selby (1976) who have used an interview approach to explore students
4.2 Variables Related to Learning Style

Successful outward layer of the option: that also encompasses increasing dimensionality due to context and context in each which are considered to be fairly simple to the other trousers in a meaningful way in the same way as Schmeeck’s (1961), refers central personality characteristics. This concomitant dimension, introvert more concerns the central personality dimension. This concomitant dimension, the further layers being learning styles, cognitive strategies, cognitive style. The remaining six cognitive layers. The outermost layer provides learning preferences. The learning profile, as proposed by Schmeeck (1961), is one that works and has qualified her opinion入侵 to the best of knowledge on Curry’s (1961) work, and has qualified her opinion入侵 to contexts really a learning style, as suggested by Schmeeck (1961). Sandler-Smith has contexts really a learning style, as suggested by Schmeeck (1961).

For example, in a learning strategy habitually employed in a certain set of other. For example, in a learning strategy habitually employed in a certain set of the is not always a simple matter to classify learning behaviors into one category or the between the terms, and some guidance on how the terms might be used. However, it

The Sandler-Smith nomenclature is useful in that provides some differentiation.

Information
- cognitive style - a distinctive and habitual manner of organizing and processing information
- cognitive strategy - a plan of action adopted in the process of organizing and processing information
- skills of attitudes through study of experience
- learning style - a distinctive and habitual manner of acquiring knowledge
- skills of attitudes through study of experience
- learning strategy - a plan of action adopted in the acquisition of knowledge
- another:
- learning preference - the favoring of one particular mode of teaching over another

Terms to describe what each sees as quite different consequences used in the literature:

Extending on Curry’s (1963) model, Sandler-Smith (1966) has identified five different
In class, curriculum, and who see assessment as requiring the regulation of material learned have yielded Asian students as passive learners who seldom move outside the differences. There are stereotypes of Asian students in Australia, for example, which the most frequent area of research on learning styles is that involving cultural suggests that as our society becomes more diversified in terms of cultural backgrounds, have need to teach across different cultural groups. Cognition and Instruction (1987, P. A. Claxton and N. M. Sullivan) (1987, P. A. Claxton and N. M. Sullivan) have been shown, for example, in learning styles research by educators who interest in the learning styles of specific cultural groups of students has been varied.

Cultural Background

...
directive was the first language. They also restricted the sample to students of Finance
year in Australia university students of Chinese origin, and for whom Chinese
American, Miller and Cassini (1986) narrowed their definition of Asian students to first
working with university level students, using focus discussion groups. Kelly's
Differences in style have also been shown by Andrews, Dekker, and Solms (1961),
Cassini (1969); each of whom used written, and Ramsey's (1963). ASI
also been shown in research by Kenner and Gow (1960), and Smith, Miller and
may have existed. Differences in learning styles related to cultural differences have
into one single group, thereby masking any differences between those cultures that
acknowledged that the research methodology placed all non-English speaking cultures
English is a native language. No such differences were shown in the results, but it is
English was not a first language were in any way different from those for whom
Smith and Lindner examined whether the learning preferences of students for whom
background students into a single group, irrespective of their cultural background.
he or she of the Smith and Lindner (1961) study which put all non-English speaking
these students into the different cultural groupings of Asia. This definition is similar
those students as overseas students, but made no attempt to more finely group
on Asian students as overseas students, but made no attempt to more finely group
One of the difficulties with the research on culture quoted above is that it does not

Counterparts.
Indicate that Asian students rely less on rote learning than do their Western
factual learners, is mostly anecdotal (Biggs, 1969, p.27), and that there is evidence to
Smithemtically. Biggs concluded that the evidence indicated that Asian students are
study of students' (Biggs 1979, 1980, 1981, 1992) who come to the different career
however, on the basis of a series of research studies using the concept of "apprehension
1984, 1989; Bromley and Bridge, 1984; Cassini, 1989; and Novak, 1990). Biggs,
noted that overseas students have a reproducing orientation (et ball, and Chan, 1989;
Computer Science, Education, Dentistry, and Commerce. Other researchers have
research was based on interviews with academic staff in the disciplines of Pharmacy;
research that many overseas students adopt a reproducing orientation to study. This
Samuelwoicz (1987) working at the University of Queensland, concluded from her
Cultural differences in learning style have also been investigated by Yuan (1994). These students participated in open-ended discussions.

Conclusions, particularly with regard to the support structures necessary to enable students to support their ideas, were similar. Students in Chinese and English cultures were also exposed to different instructional materials, a higher degree of interaction within the learning process, and to different educational environments. As a result, a higher level of learning was observed. In contrast, students in Chinese and English cultures were more like each other than Australian and Chinese students from Chinese and English cultures. A study of these differences has been conducted by Smith and Smith (1993).

In a further study using the scales of Miller and Crassini (1986) and Smith and Smith (1993), students from Chinese and Australian cultures were compared. Students were assessed on a scale by scale basis, and drew important conclusions about the differences in learning styles. A non-academic orientation was identified as a significant factor in the learning process. An important result of this study was that the Chinese students generally showed a higher level of learning than the English students.
As a result, differences with respect to gender and achievement, as opposed to material presented visually or
for auditory processing differences, were interpreted as a preference
for students indicating their major factors. The first factor was interpreted as a preference
Smith (2000a) in a recent qualitative study of the learning preferences of technology
had shown superior verbal ability among females.
Le (Criswell, 1982; MacTavish, 1974; Murphy, 1982; Walentine et al., 1994)
involved verbal ability. At the same time, a study by a number of researchers (Bredin
research by Hilderman (1963), which showed higher performance among males for tasks
listening, writing, and through direct experience. These findings are consistent with
females showed a preference for learning through reading, rather than through
females showing a preference for qualitative content and people-oriented content
other research, showed males performing numerically consistent with
students, also using the CSTL (Smith and Lindsay, 1961; Smith and Lindsay, 1990a) in his study with technology
by Blumen and Komar (1973), and Smith (2000a) in this study with technology
CSTL, showed males as more competitive than females. That finding was not shown
Gender differences investigated in the Smith and Lindsay (1986) study, using the
Gender Independence in Learning.
required greater levels of cognitive organization and direction, while males preferred
females showed a greater preference for numerical and mathematical content in learning. Females
greater preference for the qualitative and people-oriented disciplines, while males
In summary, these results indicate that females have a
Gender differences in learning style were also reported in a research review by
Research showed, however, also to be more visual learners than males.
learning contexts that was well organized and had clear guidance for students.
learning situations, and instructors who are authoritative, while females preferred a
qualitative content, and content involving people. Males also preferred competitive
proper content including numerical and interpersonal concepts, while females preferred
Hilderman, Peterson, and Zarkans (1989). Using the CSTL they showed that males
Gender differences in learning preferences of education students were shown by
Gender
Study of distance education university students, Richardson, Morgan and Woodley. Females show significantly higher scores on the feel of failure subscale. In their own achievement motivation and extrinsic motivation, while their achievement motivation subscales, rather than on the cognitive subscales. For example, males show the ASV have encountered gender differences and be shown only on the Richardson, Morgan and Woodley (1999) in their review of gender research based on the achievement motivation subscales of Enniss and Hamson’s 1991 ASV. Australian students, Smith and Smith (1999) identified a gender difference only in Finally, in their research comparing the approaches to studying of Chinese and employees of the union family.

preferred program and class attendance as a way of managing their time with meaningful communication with teachers and fellow students. Some women disciplined and pursuing their career options and an opportunity for on-the-job and basis was lowered by a significant number of women in the survey as well as to number of compulsory courses in their list. Regular attendance on a face-to-face methods relying on independent learning were more favored by women who had a among women in their preference for technology delivered courses, and that teaching women teachers in TAFE. The study showed a considerable range of responses. TAFE in all states of Australia. The study also investigated women students in TAFE in all states of Australia. This study did not compare the two genders, but was collected through interviews with in the TAFE sector, with a focus on women in a particular group of learners. Burns, Williams and Burns (1997) have also undertaken research on learning styles.

scores.

A study, no gender related difference was revealed by a comparison of factor scores. Again, no gender related difference was revealed by a preference to study independently, and to set their own learning time. Self-directed learning where students scoring highly on that factor were interpreted as self-directed learners where students scoring higher on that factor were encouraged to study independently or collaborate with each other. A second factor was instruction for structure, guidance and encouragement. No difference between the males of TAFE and females showed a significant difference between the
Limited Kingdom, Woodley and McIlroy (1979) conducted a study of 18 to 30 independent study age groups retired. Working at the Open University in the
Findings from other research focused on relationships between age and success in learning.

For learning, higher own learning in that they showed a preference for authoritative instruction, and
lower own learning in others. However, there was evidence in the sample and partial support for the findings of Holland (1980) and Venter and Davidson (1982)
that higher learning were older vocational learners. These result would appear to lend at least
partial support for the findings of Holland (1980) and Venter and Davidson (1982)
that older learners were more resistant to change towards learning responsibility for their own
learning than were younger learners. These results indicated that younger

A study by Calder et al. (1979) with vocational learners indicated that younger

learners had above average expectations of themselves.

Younger students. The older students also had higher preferences for learning by
Younger students, but they also preferred qualifications that were
authoritative instruction. Additionally, older students preferred numbers and
more computationally they were interested in the detail of content they preferred an
older students of technical education preferred a well-structured program; they were
interested in the technical skill of the program. These results showed that
Younger students. Results in somewhat different findings. Smith and Linmer also
more mature students have lower need for course and classroom structure than do
Age.

Results from studies by Holland (1980) and Venter and Davidson (1982) have shown that
motivation scale showed females scoring higher than males.

Higher motivation scores for females scored higher than males.

External motivation scale is noteworthy that the gender interaction for the intrinsic
Smith and Smith (1965) did not find their interaction for Australian students on the
for intrinsic motivation with men obtaining higher scores than women. Although
more females than males. There was also a gender by discipline interaction
shown that the female scores for the reproduction of attention were higher.
Programs: Child Care, Office and Secretarial Studies, Business Studies, Electives.

Schatz and Linn (1986) worked with particular program groups of students and humanities students had higher preferences for learning by listening or watching, and humanities students had higher preferences for learning through direct experience, while social science students also have higher preference for working with mainstream offices than did social science students, but social science students had a higher peer affiliation more than science students; that science students had a higher peer affiliation more than humanities and social science students preferred. Margery's (1983) showed differences between program groups at the University of Chicago, and for a visual presentation of learning material also using the CST, instruction and for a visual presentation of learning material also using the CST, involving minimal material, for delivery that included short attention with the detailed and numeric concepts; and in history students showed preference for material people. Davis processing students also showed a preference for common which includes processing students were characterized by a focus in common to that high preference for a well-organised course with clear expectations; business and data differences between program groups. Education and criminal justice students had a preference for learning, but these are significant learning preference differences.

Program of Study

(6661) showed them to be less extensively motivational be more intrinsically motivated, and Robertson, Morgan and Woldow (1986) showed older students to outperform younger students in higher scores than younger students on the mean. Both studies showed similar research where Brown and Ranson (1983) and Ranson (1986) have shown similar research. Providing some consistency to the mix of results using age as a variable, Robertson, students performed better than older students in science subjects at the UKON, showed, however, that subject discipline may interact with age, in that younger have suggested that there was more likely due to older students having more stable lifestyles into year-olds that the older students were more equipped for independent study. They
students showed low scores on operational learning. Arts and science students reproduced orientation, while technology students showed lower scores. Arts students, shown to have a general mix of superior scores repeatedly high scores in the discipline, showed differences among discipline education. University students, shown to have shown academic

Holland's (1983) research, shown in the learning styles may be content specific and vary within learning

effectiveness, of style learning styles and the California Psychological Inventory (CPI), deep and

found that mathematics and science, Westman (1966), using Schon's (1963) Deep and

social science, and those held independent learners have greater success in subjects

skilled at learning and rememberer material with a social component (e.g., humanities)

Effective processes increased personal learning style, for example, are more

Holland (1983) has suggested that the field dependence-independence (Viniker et

appearance data used in this study are the same data as used in the present thesis.

defined any closely than those whose broad areas. If needs to be moved the

business students and apprentices, in this latter study, program environments were not

Smith (1966) has shown differences in the learning preferences of technology and

program as provided by the instructor. Also working with vocational students,

students more likely to adopt a passively style that accepts the content and structure

research on research into cognitive preferences. Lamb (1983) has shown that influencing

more active-experiential approach, in a meta-analysis of 54 published articles

by-passed observation and reflection than were liberal arts students, who adopted a

Hayden (1961) showed that academic learning students were more differentiated

between the learning styles of students in liberal arts courses and those in courses of

Similarly, Reading-Brown and Hayden (1961) have shown differences to exist

preference for information objects and direct experience as a mode of learning.

example, children care students had preferences for working with qualitative

data showed that each group of students had a distinctive set of learning preferences,

Foundation Year Art and Apprentices. Students were tested using the CST. The
4.3 Strategies, Styles, and Preferences

Vocational students enrolled in accredited technology and human service programs study increased similarity between university student preferences and those of the vocational students with those of first year university students. Results from level of preference, using the CST, Smith and Linender (1968) compared results of students, such that comparisons within the same study were not made. Working at a separate factor from the strategic approach. The study did not include university placed on the VSL, although most previous studies have shown deep approaches to be a high presence and more appropriate. Those factors, deep and strategic, are similar to previous findings for university students. Chalmers (1967) had suggested that the different approaches to learning typically secoral institutions providing both TAFE and university level programs. Ruller and students two groups are the same. Conducting their research in an Australian multi-education and university student learning styles and preferences. Working at a level of styles, using Enneat and Ramsden's (1986) VSL, Ruller and Chalmers (1967) have shown that the factor structures of the vocational students and the university

There has also been some interest in the literature on differences between vocational

comparatively high scores. Obtained low scores on external motivation, as opposed to education students with
Personality dimension

Personality style which the student is in agreement and relating permanently

The inherent layer of Curry's three-content theory is the constant
more stable than preferences, but is still amenable to development through learning
because this layer does not interact directly with the environment. It is a good deal
the traditional approach of an individual to processing style, and is concerned by Curry as
model Curry sees as the information processing style, and is concerned by Curry as
most amenable to development and change. The second most other layer of the onion
preferences are the least stable regime of the learning style of an individual, and the
experiences and other environmental factors. Curry suggested, therefore, that learning
that interacts most with learning environments, learning experiences, instructor
has suggested that learning preferences, the outermost onion layer, represent the layer
influence of instructional and other environmental factors on learning style. Curry
(1983) onion rings model provides a useful framework in considering the

displayed by the same learner
preferences that learners exhibit, and to the variety in learning styles that may be
contextual and contextual play in a learner's approach to learning. The learning
approach to understanding learning that includes consideration of the part that
surrounding research on learning styles and processes where the authors strongly feel that
but almost impossible to think of oneself in that way. She broadens the considerations
is easy to think of others as always adopting the same learning approach all the time,
an application of maladaptive learning behavior, as though it
\text{deep approaches, learnere of an achievement oriented learner, learnere as though it}
Lamberti and colleagues, for example, the notion that an individual can be classified as a
Lyons and learning dimensions, but she reflects some of the considerations reflected in
points to the value of the factor analytic approach in arriving insights to learner.
The notion that individuals will use different learning styles in different situations. Everyone possesses every style to some degree, and people will use different styles in different situations. The more self-directed and independent, the more the instructor-controlled pedagogy to the more self-directed and independent.

In their review of cognitive style, Storr and Christie (1994) have observed that everyone possesses every style to some degree, and people will use different styles in different situations. Everyone possesses every style to some degree, and people will use different styles in different situations. The more self-directed and independent, the more the instructor-controlled pedagogy to the more self-directed and independent.

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Richardson, Moran, and Woodley (1996) have observed that, with approaches to
secondary technology students, cognitive style and learning behavior are influenced
through time. More years of college education, Wescanam's findings, and Warmin.

Finnish and Warmin's findings that subject learning styles do not change significantly as they proceed
are supported by research work by Haysen (1996) who has shown that a learning style
should be the same for different students in different environments. Haysen's findings, and Warmin's

considered the learning styles of students and provided some learning situations on the correct and right
process (1961) and provided some learning situations on the correct and right
process is influenced by the

Haysen's findings that the value of learning styles is a predictor is influenced by the
whether the learning task is to be a cognitive or motor. More importantly, Coker
invention, leading her to the conclusion that learning styles are hard to learn.

considerable differences in response to the thinking and feeling modalities of the
the same inventory in a context of learning about their sport. Her results showed
their focus on classroom learning and separately she has the same group respond to the
the Kohl Learning Styles Inventory. Coker then analyzes responses to the inventory with
study of the effect of learning context and context in her study with athletes. Using
suggested that cognitive style can be influenced and developed. Coker (1961) was able
to show this effect of learning context and context in her study with athletes. Using
and that they are at least partially developed socially through observation of role

Stemmer and Ghorbran (1961) make the point:

Everyone has wholly different styles and that other people have a style or they

We suspect that none of these theories have ever viewed styles as purely

syles in different situations has also been proposed by Kolb (1976) and Lattin

development of a styles theory.

The Chute and Carlinolo study has moved from a preference base to the conceptualization of cognitive style to an examination of preferences and strategies. Learning preferences. While the Chute approach has been to move from their learning preferences to psychology on the basis of the CCL, which measures and Carlinolo (1961) study is interesting in that they have attempted to develop a model of program development to make learning strategies into account. The CCL is a model that integrates into the preferences of individuals and groups in a way that provides insights into the preferences of individuals, the concept of "classroom" in instructional design perspective, the data yielded by the base instructional decisions to more closely match learning preferences to learning preferences rather than styles. In Chute's (1961) and the research of Smith's and delivered preferences, Carlinolo instead his research to measure those preferences through a number of subscales. In Chute, S. (1961) and Smith, S. (1973), they have developed a belief that learning styles are composed of learning contexts, conditions, and circumstances. (Travers, 1973; cited in Chute, 1980).

...the results strongly supported the existence of learning styles, an attitude of preference and behavior are derived from this earlier learning. Cognitive behavior or observation and imitation. They further argue that adult learning and Piaget's and Vygotsky's theories (1974) argue that children develop preferences and learning behaviors through experience both in the family setting and outside that setting. Learning experiences reveal, especially in middle childhood, the importance of the different learning preferences and behaviors. The research available has not provided a clear answer on whether change studying, the research available has not provided a clear answer on whether change.
The research undertaken here is represented by Salder-Smith in a more explicit layer than will be investigated together with learning strategies which are preferences that will be investigated, together with learning strategies which are represented by Salder-Smith in the current thesis as learning adaptability.

Learning environments, and of systemic development to broaden a learner's scope of learning preferences. These preferences are capable of adapting to different representational information processing characteristics, to an overall lower representational layers with stable personality traits in the innermost layer, though a less stable layer of Salter-Smith (1966) is represented in the notion of a set of cognitive processes proposed by Curry (1963). The key characteristics of that model, and those of Salter-Smith (1966), although there remains confusion in the conceptualisation of the hierarchic and in consciousness only, and research should be designed to identify learning preferences in well defined, contextual and contextual do operate to change learning preferences and learning strategies, such as learning tasks and learning situations not the focus of this research. There is still more to learn about the nature of personality, or to provide for application to other situations.

The issue of the flexibility of learning preferences and learning environments in contexts of the workplace to enable them to carry out their workplace tasks, particularly designed to identify the ways in which people construct knowledge and did not classify these mediation processes any further. The research in this thesis is a similar approach to O'Malley and Chamorro (1961) and McIntyre and McNair (1972) have used a classification of learning strategies developed by O'Malley and Chamorro (1961, pp. 44-45) and the similar taxonomy of learning strategies proposed by McIntyre and McNair (1972, pp. 4–79). McIntyre, participle and Partin, 1972, have used a classification of learning strategies developed by O'Malley and Chamorro (1961) and in the current thesis it is proposed to use the Salter-Smith (1966) conceptualisation.
developed by their learners for use by apprentices.

Learning strategies that may be used by apprentices in the workplace, or activity
and contextual data from the workplace will enable development in this phase of
suggested that the learning preferences data, together with the learning strategies data
Lament (1993), and Marland, D. (1992a; 1992b). It is also
of learning preferences and cognitive processes as suggested by Hany (1998).

used by apprentices to consider knowledge in the workplace will enable some linking
design and delivery of apprentice training. The investigation of learning strategies
flexible delivery. Additionally, those preferences can be used to inform institutional

designed to develop or change those preferences as may be required for effective
apprentices in the context of learning their trade and identify, strategies may be
preferences that have been chosen as the focus. Once the learning preferences of
the preferences of learners can be changed through adaptation of development, it is
designed to identify enterprise strategies that can be used to develop effective flexible
access to a wide range of learning resources, and a wide range of teaching options. It
potential to enable considerable customization towards learner preferences. Through
seen as providing considerable advantages for learners. Flexible delivery has the
The Working Party suggested several features of flexible delivery, each of which was
assessment practices.
- delivery venues, and
- delivery modes

that flexible delivery provides students with greater flexibility in
delivery proposed by the Flexible Delivery Working Party (1992), which recognized
Compared with these forms of learning are the components of the definition of flexible
(Misko, 1994b, p. 3).
- problem-based learning
- integrated on-the-job and off-the-job learning
- integrated theory and practical learning
- mixed modes of learning
- group-based learning
- resource-based learning
- self-paced learning
- discovery learning
- competency-based learning

learning available with flexible delivery as:
learned, and the method through which the learning takes place. She lists the forms of
in choice of place of learning, level of contact to be learned, actual contact to be
delivery of education and training. Since it enables the learner considerable flexibility
Misko (1994b) has discussed flexible delivery as a “client focused” approach to the

5.1 Introduction

CHAPTER 5: CLIENT-CENTRED FLEXIBLE DELIVERY
planned and integrated programs has been put together in order than stimulate very

become deliverable, Mitchell and Pluer were able to find little evidence that well-

For all the encouragement there has been given to the use of new technology to support
decome deliverable, Mitchell and Pluer (1997), in an Australia wide study of the use of new

additional deliverable. Mitchell and Pluer (1997), in an Australia wide study of the use of new

Smith (1996) has been able to observe that designs of instructional materials still

although there has been widespread recognition in Australia and overseas that

in virtual camps and multimedia are expected.

booklet form, a search of ACTEAC, Australian Training Products, and Open

Training Services material catalogues evidences, Where recently, the Office of

Training Services material catalogues evidences, Where recently, the Office of

booklet form, a search of ACTEAC, Australian Training Products, and Open

materials for the workplace, the vast majority of such materials have been produced in

media have been drawn to the attention of authorities developing flexible learning

paradigm that enables training to be linked around production requirements (Keans,

322; People, Robinson and Cavell, 1997). Additionally, although different learning

perceived to attend education and training establishments, and by self-paced

associated with workplace delivery, avoiding the need for enterprise to release

industry. Within the industrial training context, flexible delivery has been largely

education and training settings, it has not been the usual result for training within

Learning outcomes through customization is attractive and valuable for use in all

While that view of the possibilities for flexible delivery yields the most effective

decisions above:

best be achieved with guidance to the learner, rather than being left to make all these

controllable and effective. Selection of resources and revised teaching methods may

and the teaching methods that are most revered to yield a learning experience that is

is possible for a learner to assemble the resources that best fit learning preferences,
Phonics reviews other studies in the early education sector (e.g., Kuhl, Kuhl and Y Li, 1983; Horik, 1982) which have shown little advantage has been gained through manipulating learning style with teaching method.

Studies (e.g., bangor, Kuhl and Kuhl, 1983; Horik, 1982) which have shown little advantage have been gained through manipulating learning style with teaching method. Phonics reviews other studies in the early education sector (e.g., Kuhl, Kuhl and Y Li, 1983; Horik, 1982) which have shown little advantage has been gained through manipulating learning style with teaching method.

Software, the Mikro view, therefore, has considerable relevance to development of production technology. Greater emphasis on learning and new learning technologies and new production processes can be easily controlled and changed through computer-aided design. The need for economies of production is also much greater, leading to the production of goods, that is, the product of manufacture, less in the particular needs of clients in the place in the industrial context of the quality movement is a guiding principle in the place of the quality movement. The need for economies of production is also much greater, leading to the production of goods, that is, the product of manufacture, less in the particular needs of clients in the place in the industrial context of the quality movement is a guiding principle in.
Focused learning paradigms.

Remuneration can be most effectively engendered through a flexible delivery and clear workforce beliefs that their respective goals of higher productivity and higher industrial awards. Clearly, in these agreements both the managers and the common in the new Australian Workplace Agreements that are replacing the older

(6661) has asserted that flexible delivery of learning is becoming increasingly

Learning component of the agreements specifics self-paced flexible learning. Donoghue

Learning participation where there are new examples of workplace agreements where the

that flexible delivery at the workplace can increase the likelihood of successful

competence, such as in higher remuneration for the worker in question. In a better

in learning agreements where remuneration outcome, naturally expressed in terms of

Not uncommonly in the 1990s, industrial awards and workplace agreements common

access to training through flexible delivery

and Smith (8661) provide evidence that competencies see a widening of employee

advantage and cost to the business at least some capital and equipment costs to industry. Henry

shifts and work schedules and, for governments, over keen to reduce costs, if has the

additional advantages seen for workplace learning are that it can be better aligned with

can occur continuously an integrated theory and practice in a shared context.

workplace delivery whereas Burns (6665) has noted, the acquisition of knowledge

A second manifestation of client focused education is the movement towards

increases student participation at the institutionalisation education level (see Smith.

Although Mileski was unable to be more conclusive than that, there is little argument

(1987). A second manifestation of client focused education is the move towards

potentially alternative to campus attendance is one clear piece of evidence that he had

of participation in education and training. The growth of distance education as a

that clear focused learning activities from flexible delivery can increase the likelihood

although Mileski is unable to draw is that there is some evidence to suggest that individuals

Mileski is able to draw is that there is some evidence to suggest that individuals

Cohen, 1979). However, where advantage has been claimed, the best conclusion
validation and implementation.

Learning design:

needs identification and analysis.

For either of these approaches to be effective:

In an instructional design sense, Sadler-Smith suggests that three stages are required.

One can choose between the packages available, again on a basis of cognitive preference. Packages may be designed, using different models of instruction, so that the learner prefers one package to another. This decision can be exercised within the package or across a series of parallel packages. These different approaches may be incorporated into the same learning preference.

different learning modes so that the learner can select on the basis of cognitive preference.

Sadler-Smith has suggested that involvement of the learner in the learning design is not necessary as the learning system is not prescriptive in the presentation, in an individual learner. Thus, the learning system is designed to be responsive to individuals. A non-adaptive learning system is not prescriptive in the presentation, in terms of content and non-adaptive approaches to developing learning systems. An adaptive approach, as and by ATC/AC are similar in nature.

devolved by the National Skills Development Committee, by Open Learning Services, workbooks.

By both Climate (1661) examined this approach and the guidelines based workbook, but section do other than give advice on how to develop your materials generally acknowledge the presence of learning media other than paper.

advising on the need to deliver implementation and the development of flexible delivery.

Moving from what came from long production runs of identical products, Wichel and Brier of scale that come a variety of customer demands, rather than rely on the economies of scale, these modern and flexible manufacturing systems are the capacity to enhance modern and flexible manufacturing systems in the delivery of training.

claimed and proven advantages, these has in fact been little coherent assessment to

Nevertheless, for all the enthusiasm for flexibly delivered VET, and for all the
Conceiving Flexible Delivery

3.2.4

Efficient

Problem-solving attitudes and skills, and with a focus on shifting problem-solving in
schools. The FLS was a package designed for teachers to assist children to develop
when the Flexible Learning System (FLS) was developed in the United States for use
in schools. This package was designed to help teachers to develop the skills of
learning that are needed to become more self-directed in the planning and monitoring
of their own learning (see also Candy, Crapper & O'Leary, 1994). Riddle (1996) has also argued that the limitations of matching style with instruction can
be largely addressed through providing learners with the skills to develop new
non-adaptive approaches. Riddle and Seldin-Smith (1996) and Seldin-Smith and
very adaptable, can be used for simpler and cheaper forms of technology. Within the
context of access, if the learner group and the context within which they work, can be
seen as exploratory to develop CD-ROM materials and provide the equipment necessary
learning through interaction. While Seldin-Smith's suggestions have merit, equally,
visual or auditory exposition, as well as a certain amount of discovery,
sythes have been suggested that CD-ROM technology is capable of providing learning experiences through text,
with learners having opportunity for choice within the learning materials. He further
accommodate learning style differences is to use a non-adaptive approach such that
Seldin-Smith (1996) has suggested that the most practicable and cost effective way to
or performance of the target learners (see Seldin-Smith, 1996).

include, in the learning needs analysis, data collection pertaining to the learning styles
needed for performance at a required level of skill. If a considerable advance in
of knowledge gaps between what skills and knowledge are possessed and what is
identification and analysis in a training needs analysis is restricted to the identification
process of moving from a training needs analysis through to delivery of training in
an industrial training context, these same steps are particularly critical in the
Flexible delivery is an approach to vocational education and training which allows for the adoption of a range of learning strategies in a variety of learning environments to cater for differences in learning styles, learning

Workshop Party (1992) proposed the following definition of flexible delivery:

In the vocational education and training sector, the publication Flexible Delivery

...time to time with the notions of flexible teaching or flexible delivery.

Captured in that set of observations about flexible teaching and learning are the

(Deakin University, 1997, p7).

Deakin University's recognition of the varied understanding and practice that underpin the terms flexible delivery, flexible teaching and learning can mean different things to different people

('Observes':


In his publication Flexible Delivery, Flexible Teaching and Learning at Deakin University (1997), the

characterisation by flexible approaches to educational provision and the design of ways

conference, Rooke (1987) defined flexible learning as an approach which is

make Flexible Learning Systems the theme for his Birmingham conference. At that

sufficient activity for the Association for Educational and Training Technology to

Ellickson has traced the term to the early 1980s and observes that by 1986,

the classroom from teachers to pupils (Wyger and Eckland, 1975). In Britain,
and sequence to be made within the non-endorsed components. A strong theme in the
thoughts, with outcomes expressed in competences, do enable choices about content
over content or sequence. Additionally, there can be restrictions on time and place of
competency outcomes is demanded, there is unlikely to be substantial learner control
defined set of learning outcomes, or in the case of industry training, a specific set of
characteristics. Indeed, where course accreditation demands the implementation of a
implication, they do not suggest that all flexible delivery must encompass all of those
Bums, Williams, and Barentin (1997) acknowledge that this set of characteristics is

flexible delivery is characterised by the following key features:

- Learner control and choice regarding the content, sequence, time, place and
- Flexibility in terms of entry, course components, modes of learning and points

Delivery Working Party, 1992, p.2)
Flexible delivery and flexible learning when they wrote:

People, Robinson and Calvert (1997) proposed a different definition for each of industry and employers for greater employability in the delivery of training and, secondly,

embraces two separate developments in VET. First, there is the demand by people, Robinson and Calvert (1997) observed that flexible delivery,

learner. The ambiguity in identifying the criterion in VET is not restricted to flexible
easier way of considering the training carried out or whether the claim is the individual
Calvert (1997) point out that there is ambiguity about whether the claim is the individual
Although ANTA adopted this description as a definition, People, Robinson and

This description is precisely that proposed by Johnson (1999, p.4) to define 'open

flexible learning' (ANTA, 1999b, p.11).

role of training from a source of knowledge to a manager of learning and a
methods of distance education and the flexibility of technology; it changes the
and when and where and how they learn; it is common among the delivery
in the skills needed and delivery requirements of clients, not the interests of
Flexible delivery is an approach rather than a style or a means. It is based

Taskforce adopted the definition:

In 1999, the Australian National Training Authority's National Flexible Delivery

place of learning (Evans & Smith, 1999).

provider control; over content, sequence, type of programs, methods, and time and
The term 'open learning' means different things to different people and is
not always possible to be sure that those who use the term are thinking about
the same aspect of education when they employ it. For the Committee, the
term 'open learning' refers to an educational process in which learners are
given the freedom to choose their own learning activities and to be taught
by methods that maximize their individual interests. Flexile learning, as
opposed to rigid instruction, refers to a situation in which the learner is
given the flexibility to choose their own learning activities and to be taught
by methods that maximize their individual interests. Flexile learning may be
for example, the result of a self-directed study program, a problem solving
situation, or just the actions taken to satisfy the needs of individual
learners. The term 'flexile learning' was coined by Caillo (1997) to refer to
a situation in which learners are able to choose their own learning activities
and are given the freedom to choose their own learning methods. The
Committee defines flexile learning as the process of planning, developing,
and facilitating a range of learning activities that meet the needs of
individual learners. These definitions are useful but can be applied to
the term 'flexile learning' to refer to a situation in which learners are
given the freedom to choose their own learning activities and to be taught
by methods that maximize their individual interests.
The concept of open education is still defined but has to do with nuances related to the accessibility of education. Rumble concludes that open education is a very different idea from distance education.

Communique, 1994, p. 17.

Australian Senate Employment, Education and TrainingReferences

At least in higher education - whether on campuses or off campuses - the institutional and constitutional delivery of courses never present all needs to be flexible, student-centred, and to offer opportunities and choices. Open learning is not simply distance education under another name. Open learning as the long record of distance education in Queensland already.
Learning and flexible delivery. They suggested that open learning
communication (1) (1997) addressed the distinctions between open learning, flexible

Learning resources are available to learners;

- technology is employed where it is seen to be appropriate and affordable;

- learner support systems are necessary;

- piece, and method of learning;

- some degree of learner control and choice regarding content, sequence, time;

Flexible learning are characterised by:

of the learner community, and concludes that it is evident that open learning and
european community. Lumsdon examines the use of the terms in each of the countries
the same interpretations usage of the terms that occurs in Australia is evident in the
of strategies, within open learning or distance education. Lumsdon’s paper suggests that
and distance education...” indicating a view of flexible delivery as a strategy, or set
Lumsdon (1999), when he wrote “The rapid growth in flexible delivery of open learning

A similar relationship between the terms was used in the abstract of a paper by


philosophy (The Australian Senate Employment, Education and Training
considered as an education and training strategy which emerges from the
philosophy, the notion of flexible delivery, favoured by the VET sector may be
If open learning is considered an expression of a certain educational

Committee, Part 2 (1995) when it suggested that:

Report of the Australian Senate Employment, Education and Training
Reform, the relationship between open learning and flexible delivery was further explored in the
aruged, the combination of distance being independent from that of open access.
This

Rumble’s and Edwards’ compiler’s from conference within, as Rumble (1989) has
the consumer’ (Edwards, 1995, p.251). It is through that notion of subservience that
The inclusion in the conceptions of flexible learning of the notion of learner is likely to

be closely related to the idea of the learning process being learner-centred, where the learner is the driving force behind the

learning process. This is in contrast to the traditional approach where the teacher is the driving force.

In this context, the learner is expected to take an active role in the learning process, deciding what they want to learn, when they want to learn it, and how they want to learn it.

This learner-centred approach is in line with the concept of adult learning, where the learner is seen as a fully participating member of the learning community, rather than as a passive recipient of information.

In conclusion, the inclusion of flexible learning in the conceptions of learning is a significant shift towards a learner-centred approach, where the learner is at the centre of the learning process.
The Kegan review provides an insightful into the distinction that may be made between distance education and distance learning in that he does not include any notion of the separation of teacher and learner (to distinguish from private study).

The provision of two-way communication between teacher and learner and to capture the educational context.

The possibility of occasional meetings for both didactic and socialization.

The separation of teacher and learner (to distinguish from face to face).

The participation in an instructional form of education where there is division.

The introduction of instructional design, scaffolds, working processes and feedback, etc. (Kegan, 1980, p.33).

Reasons and objectives of educational methods for both didactic and socialization.

The use of technological media (including print) to unite the teacher and learner.

The influence of educational organization (to distinguish from private study).

Kegan reviewed a number of definitions of distance education and concluded that the definition of distance education and its key characteristics was comprehensively complete the learning program.

Finally determine content and sequence, along with the length of time provided to be an individual within the enterprise, that person may not be the customer.

The length of time a set syllabus which learners must cover, and the learning of distance education proposed by Kegan are preserved in a provision.

The reasons for extrinsic or learner control over content, sequence and pace of progress.
Currently, though, there are some informed indications that the flexible learning (or
employment education and training references Committee Report Part 1, 1994),
presented in higher education (Ellington, 1997; Evans & Smith, 1999;). Since
appeared in the Vocational Education and Training Sector, whose open learning has been
learned. There is also some evidence that the term flexible learning has been more
learned. This has been in certain, it has come to have the same meaning as "open
learning". It has been applied to a wide variety of contexts and "open learning"
interchangeable. Ellington (1997) has observed that over the years the term "flexible
learning" and open learning are used instead to accept that these two terms are reasonably
learners appear to be little reason to distinguish strongly between the terms flexible

would have been more applicable,

case studies Ellington describes in the rest of his paper indicate that the word and
because having some say in how, where and when learning takes place. Indeed, the
learning takes place... It is more likely that flexible learning is characterised by
the word or when he writes... "learners have some say in how, where or when
the application from Ellington (1997) does, though, leave some ambiguity in the use of

Professional Development (Ellington, 1997, p.4)
Learning distance learning (CILT schemes, where access courses of continuing
institution-based courses or in non-traditional contexts as open
where or when learning takes place - whatever within the context of traditional
which covers all those situations where the learners have some say in how,
interpretation, and using the term "flexible" delivered as a general term
would suggest that we all pay to promote the general adoption of this wider

Waches
Learning is within this notion of learner control is given by Ellington (1997)
also expressed by Evans and Smith (1999) that the key characteristics of flexible
provider by another party, such as the learner's employer. Support for this view,
provision needs. Where controls are introduced they are often initiated by the learning
provider requirements for assessment and receipt of accredited awards. The

Learning Styles and Client Focus

5.3

Organisation (Evans, 1995, p.256)

branches (Bromley, 1997) in an area of open education. Evans & Edwards (1991) point out that the concept of open education has drawn their precedents from distance education. Evans (1991, p.256) has pointed out that the emergence of distance education was becoming blurred. As Evans (1991) has pointed out, the emergence of distance education has introduced a complex of technologies and new forms of education such as distance education. Evans (1991) has argued that new technologies and methodologies were resulting in a convergence between distance education and other forms of education. The impact of technology that was seen by Smith and Kelly (1981) when they argued earlier that distance education has not yet been widely implemented (McPhee, 1968). It was evident that the needs of educational distance education were being met by educational institutions. The opportunities for educational distance education were being met by educational institutions. The opportunities for educational distance education were becoming reality for learners and teachers. The previous research by Smith and Edwards (1991) and Edwards (1991) point out that the focus of the previous research was not on the necessity of knowledge and knowledge in both education and learning. However, it is possible to develop, design, and implement both education and learning. The previous research has highlighted the importance of learning and teaching knowledge in both education and learning. The previous research has highlighted the importance of learning and teaching knowledge in both education and learning.
Greater difficulty than do mature students with resource-based learning. Relevant here
who are neither confident nor competent. She also notes that younger students have
very effective for conditional and competent learners, but less effective for students
flexible delivery. She notes, for example, that independent students in the application of
advances sensitivity towards vocational education and learning styles. Party (1961) also
concluded that learn can select from the packages in a manner that maximises
ways so that the learner can select, from the packages in a manner that maximises
vocational education that learning materials are packaged in a number of alternative
adaptable models. Diller (1964) proposes that it is important in achieving excellence in
repeat of greater individualised instruction. Similar to Sadler-Smith's (1996) non-
advantages of flexible access and continuous quality of delivery, as well as being
able to yield cost-effective learning outcomes for industry, and have the former

Taylor, Kemp and Burgess (1993) have argued that distance education methodologies

The NCV (1961) research strategy in the period 1967 to
focus on the government coordinated VET research strategy in the period 1967 to
learning styles is important in effective learning provision in VET, and has made this a
also conclude that learning preferences and learning styles influence the
review of open and flexible delivery for industry training, McKelvie and Cade
types and contexts of learning to achieve effective instructional outcomes. In their
McLure (1961) found that VET instructors need to be sensitive to these
students are hindered by low verbal explanation, while low ability students depend on
Sahlberg (1961) has also noted that students do better than low ability students on nonverbal tasks. His work on
attention to research by Harris, Tuck and Iles (1963) showing that high ability
achievement in the relevance of learning styles to VET students. In their review of the
draws Wisker (1961) is one of only a very few writers who have directed their

Also commenting the developments in Kok's Learning Styles Inventory, which had
equally forcefully to the Rubik and Snow frameworks, expressing the contrary view, but
Workplaces, Fox and Rogers (1993) have shown substantial differences in learning. Based on a needs analysis, Carling et al. (1996) recommend using resources in the teaching preparation provided to support the form of flexible delivery and the design and content of the material, choice, and for students to use the program in a way that allows some freedom of learning, in a form which allows student information, problem solving, hypothesis testing, and for students to use the program in a way that allows some freedom of learning, in a form which allows student information, problem solving, hypothesis testing.

Her research shows the value to achievement of learning outcomes of introducing multimedia and an easy-to-use multimedia technique has been used to provide independent learning.

Studies where multimedia techniques have been used to use independent learning in a multimedia context have demonstrated that students, and not the interaction with the teacher, are responsible for the improvement in student learning. "Independent Learning", which makes the learning more learner-centered, provide the learner with the control of the learning process. Learners are provided in the learning environment that is more learner-centered, and the learner is provided in the learning environment that is more learner-centered.

Additionally, there is ample evidence in the literature that the concept and the content of learning are associated with the likelihood of success of flexible learning outcomes. These studies have provided results that were related to flexible independence. In these studies, learning outcomes were shown to be related to flexible independence. The review of these studies showed that four of the seven showed clear and positive effects, and that the other three showed no significant differences.

Allison and Allison (1996) were able to identify seven studies whose findings of independent and other students achieve higher academic grades. Also are the findings of Wallace (1993), that students who prefer to work...
Similarly, working with nursing students’ learning styles not accommodated,
standard deviation higher than students whose styles were not accommodated.

Methodologies were designed by learning styles and effectiveness of the portion of a
alternative, the combined evidence from the meta-analysis conducted by Dunn et
preferred to studies by different studies. Dunn et al. concluded that matching student learning style
preferences with instructional method is clearly advantageous to academic
learning. Studies designed to determine the value of teaching students through their own
learning styles, as well as results across the two experimental

Dunn et al. (1999) conducted a meta-analysis of results across forty-two experimental

Reference on their own learning:

the presentation by Dunn of individually tailored instructional techniques, and student
learning together with student learning; knowledge of their own styles was a powerful predictor for
students to learn. The findings are important to any discussion of learning styles, since
learning styles, and provided students with an independent learning guide. Supporting
Phenomenon learning styles with cues, Dunn et al. focused on

learning and thinking strategies. Dunn et al. focused on

Poland’s, in a more sophisticated study than that of Kinnell and al. (1997),
management for a group of managers working in an economy in transition such as
management learning was a recommended and successful one for improving skills of
Polish managers had a comprehensive approach to learning, and that approach to
and Mrzygolda’s (1998) preferred learning styles approach. Results indicated that
in teaching is supported by evidence from a number of studies. Kinnell and al.
Smith et al’s arguments that there is a need to cater for learning preferences

are to be achieved.

presentation and different learning support structures for common learning outcomes

workers with different learning styles require the use of different media of
styles, particularly between male and female workers. They have also shown that

and Guy and Denison's (1995) experiments in pay careful attention to how learning styles influence learning. It is clear that some workers may not be

preference enhances learning if is clear that some workers may not be

in reviewing the literature, supporting the view that attention to learning style

in schools and higher education institutions. The majority of research and theory on learning styles and preferences has been generated to provide data on the matching of learning styles to workplace learning since the

styles. However, they also agree that some learning styles appear to be more suited to workplace learning and the performance of certain duties than others.

educational experience. However, they also agree that some learning styles appear to positively influence learning outcome; and that learning style can be influenced by

conclusion that the matching of learning styles to teaching methods in the workplace

The extensive review of the field by Hayes and Allinson (1991) leads them to the

learning materials to enable students to operationalize their learning style strengths.

strategies, and that it is important for schools to provide the options in method and

important to teach students to recognize and use their personal learning style

learning styles. In the interview with Shangnessy, Dunm suggested that it is years of the implementation of a policy to match learning methodologies to student

achievement up to the 8th or 9th grade on the California Achievement Tests. After these

reports that an underachieving school in North Carolina changed its school

achievement of special education students throughout the nation. Shangnessy also

styles in teaching was one of only a few strategies that had a positive effect on the

Department of Education investigation concluded that accommodation of learning

in an interview with Phil Dunm, Shangnessy (1998) indicated that a four-year U.S.

group of students provided with homogeneous instructional methodology, style performance achieved significantly significantly higher grades than did a control

of students provided with learning opportunities based on their identified learning
Suits to their own learning style.

Supports a view that students do inherently select the instructional medium most
responsive to their own learning style and preferences. Students, therefore, can be
classified into two general groups: those who learn best through visual cues and
textual information, and those who learn best through auditory cues and verbal
information. This research suggests that students who learn best through visual
cues and textual information can be effectively taught using multimedia
technologies, while students who learn best through auditory cues and verbal
information may benefit more from interactive multimedia presentations.

Working in a library context, Lycokson and Jacobson (1993) have observed that a

confident in their learning style. Development of confidence in their learning style helps students become more positive in their learning experiences. Given the learning style information provided, students can be classified into two groups: those who learn best through visual cues and textual information, and those who learn best through auditory cues and verbal information. This classification helps students develop confidence in their learning style, which in turn leads to increased motivation and success in learning.

However, the research also suggests that students who do not have a clear preference for a particular learning style may experience difficulty in mastering new concepts. These students may benefit from a variety of instructional strategies, including multimedia presentations and interactive learning activities. The research also highlights the importance of teacher support and guidance in helping students develop confidence in their learning style.

According to the research, students who learn best through visual cues and textual information can be effectively taught using multimedia technologies, while students who learn best through auditory cues and verbal information may benefit more from interactive multimedia presentations. The research also suggests that students who do not have a clear preference for a particular learning style may experience difficulty in mastering new concepts. These students may benefit from a variety of instructional strategies, including multimedia presentations and interactive learning activities. The research also highlights the importance of teacher support and guidance in helping students develop confidence in their learning style.

needs of different learner groups in industry and commerce.
Individual learning preferences can be acquired and shifted when individuals are exposed to a variety of teaching methods. This remedial approach suggests that schools become better equipped to make effective use of those different situations. Clear evidence (1964) shows that remedial teaching methods and information processing is disadvantaged and, in a sense, disadvantage the learner who is locked into some learning situations and is not provided with other learning experiences. Strobel (1979) shows that the learner learns more effectively when the learning experience is not entirely disadvantaged. Learning preferences can be acquired and shifted when individuals are exposed to a variety of teaching methods. Although there is substantial evidence for the proposition that remedial teaching
for self-directed learning to effective, flexible learning has been noted by several
characteristics by a need for self-directed learning if they are to be effective. Then, need
require independent learning in the sense of separation of learner from teacher, but are
(1994) as available with flexible delivery; reviewed earlier in this chapter, do not all
io The research presented in this thesis. The forms of learning presented by Flisko
The accomplishment of independent learning as self-directed, learning is relevant

- encourage a problem-centered orientation to learning.
- relate learning to student needs and
- enable students to bring their own experiences to new learning situations;
- encourage students to take more responsibility for their own learning;
- education should aim to:

control. Withih argues that adopting a personal development view of learning implies
further accomplishment since, he suggests, it conveys more of a sense of learner
take responsibility for one's own learning (p. 121). He expresses a preference for the
between a capacity to think and operate without close direction, and the ability to
Withih (1987) draws the same distinction in his discussion of independent learning

p. 123)

(Morran, 1993; Morran, 1993; Morran, 1993; Morran, 1993; Morran, 1993)

learn "learning" and develop a greater autonomy and self-direction in learning
concerned with students taking responsibility for what they learn and how they
students study in isolation. For other writers, independent learning is
learning, means the separation of the teacher and the learner; such that
in open learning and distance education, there is one view that independent

Independent learning," when he writes:

Morran (1993) makes a useful distinction between different conceptions of

S.4 Self-Directed Learning and Flexible Delivery

adopted and learned.

contrasted by a learning task requiring a different, and non-prepared approach to be
context provided. Other writers, such as O’Doherty (1970) and Candy (1986), have
identified two dimensions of learning: the institutional and pedagogical. The first
of these dimensions is relatively straightforward:

- Formal classes in attendance at any time.
- Formal instruction is union or demand.
- Formal start to instruction at any time.
- Formal provision to study anywhere.
- Restricted only to open entry.

Institutional needs to develop from:

- Moving from closed to open access.
- Within the institutional, Kember suggests:
  - Teacher directed learning to learner choice.
  - Teacher control of structure and goals to self-direction.
  - A position of not valuing experience to one where experience is respected and
    valued.
  - Teacher control of learning to learner control.
  - A problem-solving approach to a problem-solving approach.
  - Extrinsic motivation to intrinsic motivation.

Pedagogical orientation. The second dimension involves the development from
pedagogical orientation to an institutional orientation. The first of these dimensions
is relatively straightforward:

- Formal classes in attendance at any time.
- Formal instruction is union or demand.
- Formal start to instruction at any time.
- Formal provision to study anywhere.
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Institutional needs to develop from:

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  - A position of not valuing experience to one where experience is respected and
    valued.
  - Teacher control of learning to learner control.
  - A problem-solving approach to a problem-solving approach.
  - Extrinsic motivation to intrinsic motivation.
University conveys, and suggests strongly that the early development of confidence
the relationship between learner self-confidence and motivation in the Open
Bums, Williams and Bannister (1971), Thompson (1978), and White (1961). What expressed
Independence is the development of self-confidence, a notion echoed by Bannister (1961).
Independence relies on knowledge. Paul suggests that the first step in the achievement of learning
problem conceptualisation and the seeking of resources to assist in the constitution
involves changing the learner's approach to learning. This involves changing the learner's approach to learning.
what constitutes new ideas and refers to current beliefs and knowledge to
point of only (Paul, 1990, p.83). This involves changing to personal values and the
notion that graduates should be more self-sufficient learners than they were at the
independent learner is not an absolute one, but a
suggestions, though, the notion of "an independent learner" is not an absolute one, but a
independent model of post-ordination (Campion, 1990; Kember & MacKinnon, 1976). As Paul
development of post-ordination (Campion, 1990; Kember & MacKinnon, 1976) and more recently in the
independence is developed substantially in Evans and Nation (1961) and more recently in the
behave consistently with new knowledge and reflect on and challenge what they learn. This
also suggests that, in a changing knowledge society, it is increasingly important that
are equally common to the need for self-sufficiency and self-confidence.
initially well equipped to be independent learners. Kember, Callear and Mares
reach new conclusions and serve a broader cross-section of clients who may not be
independent on several grounds, including the need and need for open learning to
Paul (0661) argues the case for the development of learner autonomy and
as learner-developed and institutional methods.
model also takes into account institutional policy and concerns for instruction, as well
Kember's model, the Brockett and Hiemstra Personal Responsibility Orientation
the individual learner's desire for performance and responsibility for learning. As
implementation and evaluating the learning process. The second assumption focuses on
institutional processes in which a learner assumes responsibility for planning.
model they also identify two dimensions. The first of these represents the external
directed learning in their Personal Responsibility Orientation model. Within this
Brockett and Hiemstra (1976) have developed a theoretical framework for self-
institutional model of context.

Similarly distinguished between the attributes of the learner, and those of the
Miller and Glassman (1986) with Chinese students, where the underpinning factors they identified were perceived to be the opposite of those identified by Moore (1986) among Western students. "Self-directed learners are those who are successful with independent learning, and those who are not successful with self-directed learning are those who are independent learners." These findings indicate that the independent learners are more likely to be successful in their learning, while the self-directed learners may face more challenges.

The diversity of learning styles and preferences can be addressed through various teaching methods and strategies. Some students may prefer a more structured approach, while others may prefer a more open-ended, self-directed approach. Teachers can adapt their teaching methods to accommodate these differences.

Several writers (Cruickshank, 1991; Saltire-Smith & Riddle, 1999) have emphasized the importance of teaching strategies that cater to the needs of different learners. The development of effective teaching strategies is crucial in ensuring that all students can achieve their full potential.

In conclusion, understanding and accommodating the diverse learning styles and preferences of students can significantly impact their success and overall educational outcomes.
There has been some question in the literature of Boor, 1998; Coady, 1999; and Crompton, 1999) of whether or not learners are prepared for flexible delivery, and in their own learning.

The focus is on the students are metacognitively, motivationally, and behaviorally active. Payne (1986) have observed that a common element of self-regulated learning, responsibility for decisions associated with the learning process, self-direction in learning very much in terms of the learner accounting increase that flexible delivery necessitates more learning management by students, and a greater emphasis on the learning process. Brooker and Haimson (1966) have defined that flexible delivery necessitates more learning management by students, and a greater emphasis on the learning process. Similarly, Ahinson and Melehan (1966) and Brew and Whitel (1966) have argued that flexible delivery necessitates more learning management by students, and a greater emphasis on the learning process.

Flexible skills (Boor, 1998; p. 69).

Learning such personal responsibility for learning assumes a level of

"a level of learner responsibility and control in self-management or self-directed learning".

Learning independent learning (p. 23), Boor (1988) has argued that flexible learning in VET delivery, where that is operationalized as a mix of face-to-face teaching and a common element of independent learning (Ramsay & Smith, 1994). For example, the definition and conceptualization of flexible delivery is a shared definition between knowledge and process and knowledge as a commodity (Boor and Hodgeon, 1987), At the same time, the distinction between knowledge and process and knowledge as a commodity may only be motivated by a desire to understand meaning, although meaning may also be motivated by utility outcomes only; but that conceptual development may also be provided some evidence that the acquisition of procedural knowledge may work.
capability of workplaces to support such learning. Client-centred, flexible delivery of independent, or self-directed, learning has accompanied flexible delivery, and the requirements need also to take account of the capability of the client to engage with the learning resources and the delivery of learning programs. However, those design and implementation components of the decision-making process at the point of delivery present a number of challenges, preferences and styles of learning are.

In concluding this chapter, it is clear that the achievement of client-centred, flexible delivery of self-directed learning (p.81)

observed, Microcognitive skills may be considered as the tools required for the 'job' importance of microcognitive skills, or learning to learn and yet as Bower has been able to find while evidence of understanding among VET teachers, the

1998, p.82).

skills in self-direction as an automatic outcome of VET training (Bower)
directed in their learning when they commence VET training or will gain the

There appears to be an assumption that VET students either are already self-

directed students are, and Bower has also concluded that there is no mechanism for determining how self

research and action. Bower's (1986)1 research with VET teachers and Austrian has

Hughes (1993) have challenged educators to re-examine learning that encourages

microcognitive experiences as part of their learning activities, while Bower and

Herrmann (1961) have argued that teachers should provide students with

they are to be effective in taking responsibility for their own learning. Bower and

microcognitive skills of planning, decision-making, monitoring, evaluating and learning. It

Bower and Kember (1961) have suggested that students need to acquire at least the

explored.

has argued that the microcognitive implications of flexible delivery need to be

define that the skills of learning may not be acquired or enhanced, and Radloff (1961)
a concern that flexible delivery can impede the achievement of learning. Effective to such a

last appropriate and effective Policy, 1966) has drawn attention to

whether or not flexible learning in the workplace or on educational environments is in

whether or not flexible learning in the workplace or on educational environments is in
Flexible delivery: informing the research problem of preparing learners and their workplaces for effective enterprise as a whole. Chapter 6 develops the research methods used in this thesis to workplace learning is inclusive of both the individual learner as a whole and the
reson in archives to inform the researcher about different groups of students may influence the use of qualitative methods in combination. Harper (1961) illustrates the use of qualitative and quantitative approaches can be used to make use of different levels into the same issue, and that researchers are well-advised to make use of both qualitative and quantitative approaches when available. Parnell's view is shared by Harper (1961), and the current project on a basis of the purposes of the inquiry, the nature of the research questions, and the resources available. Parnell argues that the choice of research method becomes one of understanding context-specific human experience. Parnell (1961) advocates methodological understanding and experiential methods to test hypothetical-declarative generalisations.

Parnell (1961) has suggested that the logistical-political research paradigm employs

Project strategies. Some of the data for this thesis were collected prior to commencement of the project. These were collected from the workplace. These interviews were designed to obtain information on qualitative research in the workplace. The second line of inquiry involves the section of grey literature for detailed information about the learning experiences they relate to age, gender, and area of apprenticeship. The second line of inquiry involves common patterns of learning preferences as well as variations in learning preferences in apprenticeship programs in a vocational training institution. Also investigated are the learning preferences of apprentices employed in the workplace and criteria in which they are focused on in their present research. The first line of inquiry is designed to choose, define, and support of flexible learning in the workplace. The research methods of both these are discussed in detail, and a view to develop strategies for the effective delivery of flexible learning.

The research focus of this thesis is to investigate the preferences for flexible delivery of flexible learning.
Siyes has been revealed elsewhere in this thesis, and based on the view expressed in the confidence in generalization. The rationale for measuring learning preferences instead of gender and age. Each subgroup also needs to be large enough to provide some generalization to a large group of appetitive pathways into subgroups of programs. For these reasons, the research methods include the administration of standardised differences is also required to provide insightful data on a large group (Pallone, 1990). Some insight into within group variability. Quantification of the similarities and the some instances into within group variability. Quantification of the similarities and the sample of appetitives is required to enable some confidence in generalisability, and for appetitives, rather than assuming or implying homogeneity among appetitives. A large generalisability also requires some knowledge of the variation that may exist among administration of a test or gestations to one sample bias the limitation of providing different times. As Harvey (1969) observes, quantities drawn from a single variable is a capricious to draw the data from one sample of appetitives. Also a proper number of appetitives to enable some degree of generalization of results. Also strategies to be developed the current research requires data that is based on a large To provide sufficient information for useful and broadly applicable hypotheses discovery.

Review of available methods.

By the small sample sizes. Similar arguments are advanced by Pallone (1961) (0661) in his that the data can be unreliable and the ability to generalise is drastically curtailed. The above may not influence the observed behavior. The advantages and yield understandings of behavior in animal contexts. But the presence of manipulative observations, on the other hand, can provide results that are widely representative data. Providing limited information on cause and effect. Also

through the qualitative analysis. In his view of typical research methods used, Harvey observes the advantage of large-scale generalisation in providing

It is generally believed in combination with interview studies of small numbers of students to
Ventral Report from Learners. In the research design for these studies, the conceptual


technique, "Mindset," has argued that this form of data is best obtained by direct


collection of knowledge. In developing his argument in favor of the simulated recall


preference for independent learning, and a lower reliance on peers and instructors in the


needed into the development of learning strategies that can result in an increased


the differences used by apprentices in constructing knowledge. Additionally, insights are


the learning preferences data require supplementation with information on


preference. The learning preferences data require supplementation with information on


the data to provide any understanding of the learning strategies that exercise those


enables certain instructional decisions to be taken; there is a belief in the capacity of

the current research where, although the data provided on apprenticeship learning preferences

provided in learning sequences to construct knowledge: A similar view has been taken in

that involve the acquisition of data on how students react to, use, and organize information

outcomes. Specifically, Mindset, Partning, and MindMap research methodologies

investigation of the cognitive processes that mediate instructional material and learning

those researchers were interested in the

approach to research into the learning processes of students, where learners are assumed


to be passive recipients of information. Those researchers were interested in the

Mindset, Partning, and MindMap (1996, p. 57) in their criticism of the process-product

that view was also expressed by
data drawn from case studies and from interviews. That view was also expressed by

learning strategies and advocated the supplementation of those methods with qualitative

the focus on "mechanical" and "qualitative - approachable" to research on learning and

learning means to them (Vygotsky, 1984, p. 13). Hartley (1996) and (1988, p. 57) has been critical of

approach seeks to understand student learning derived from student descriptions of what

observations. On the other hand, a phenomenographic approach (Marton & Saljo, 1976, 1981) has

been to explain student behavior from outside (p. 13), where the results of measures of


evidence (1996) has argued that the qualitative approach to educational research has

of the process instrument for measuring preferences is reviewed later in this chapter.

that are capable of informing instructional design decisions. The rationale for selection

literature that preferences are amenable to development in learners, and that preferences
and its reliability. Since a completely structured interview would not be sufficiently non-intrusive (Robson, 1993), a semi-structured interview was chosen. Clearly, the semi-structured interview was not likely to provide answers with understanding of the information being sought, a semi-structured interview was chosen. The semi-structured interview was a range of different forms of interviews, and was considered to be well-experienced in a number of different forms of interview, and has considerable information that is being sought in the interview. In the current study, the researcher is the interviewer must be experienced and have a good understanding of the sort of careful to point out that for semi-structured and unstructured interviews to be successful, interview and conversation that less the conversation develop within this area (p. 3). Robson is unstructured (completely informal) interview where the interviewer has a general area of interview was specified. Experiences (Robson, 1993, p. 373). Robson also identifies the interview is structured interviews and semi-structured interviews. In the former, the interview asks no questions of a generalised schedule, a predetermined set of questions and records the answers on a standardised schedule. The semi-structured interview is characterised by a set of questions developed in a flexible delivery.

The development of methods to prepare workplace learners to more effectively engage with flexible delivery.

In the workplace, the learning style of the interviewee and the interview will assist in understanding the learning preferences. The interviewee’s data on strengths and weaknesses of the interviewee’s data is designed to provide the information on learning preferences that, through flexible delivery in the workplace, to provide information on the pattern of learning preferences used by apprentices while learning.

The decision to interview a number of apprentices was taken in order to provide provision of data to complete the questionnaire component, was also of concern.

Inferences of qualitative data such as that generated by the questionnaire...
as worker (Harris et al., 1964) needs also to be taken into account in the research design.

enough in these study practices; the relation between appearance as learner and appearance
available in a workplace-based research situation to have appearances take their part in
they learn through observation and discussion with others. Second, the line is not
engage in that from here to here, they also learn by working with the simulated task, and
while their
workplace learning that method was not available to the present study. First, appearances

workplace learning that method was not available to the present study. In a context of
common on what they were thinking at each point of the video, in a context of
(1987a, 1992b) study to simulate recall during the interviews, where students were asked

study to simulate recall. The video clips were then used in the Marin, Parting and
in favour of the videoclarification procedure since it provides a maximum of cues during replay

technically required students to study while being video-taped. Marin and (1984) used a method
intervening their subjects on the use of multimedia strategies. In their research, they

methods yield the information on learning strategies that is required.

methodological observational methods was not available nor it is feasible. would choose
actual day-and block-release classes. The combination of time required for more

training provider such that large numbers of appearances are able to participate as they

minutes, the administration of the questionnaire was arranged to be organised through the
involves appearances for about twenty minutes, and the interviews for about sixty
training schedule for any length of time. The administration of the questionnaire
would no be possible to get support for methods that take them away from their jobs or
employees for research methods that involve appearances in limited time commitments. It

While it is relatively easy to gain support from the training provider and

projects, these pragmatic considerations are recognized and discussed also by Pull

The choice of research methods for the study also had to be made in the context that

the information interview, as discussed by Powley and Wells (1987).
The sequencing of data collection events for this research is shown in Table 6.1.

Ethics Committee on 16 November, 1998.
Approval for modification to the data collection was provided by the Deakin University Committee on 6 April, 1998, and assigned project number EC2298. Subsequent to conducting this research was approved by the Deakin University Ethics Committee.

Rather than a video-recorded period of study
module that had been completed within the last two weeks being used to simulate recall,
use in the research context of this project, the modification resulted in a learning
of the apparatus' time. The technique was therefore modified to enable the
amount of the apparatus' time. The technique was therefore modified. To enable the
collect data required through a single interview episode without compromising large
interviews enable systematic recording of responses. Additionally, the technique can
thought processes to be grounded in the learning task at hand, and the semi-structured
lookup process to be grounded in the current research. The technique provides for recall of
vehicle was influenced in the current research. The technique provides for recall of
Despite the shortcomings in the observation and data collection, the simulated recall
that development of familiarity was not regarded as feasible.
returns to being natural in close to nature or the context of the current research,
appearance became so accustomed to the presence of the observer that the behaviour
control research. Another potential solution reviewed by Robson is to have the
associated with that practice, and it would not be practicable within the settings of the
appearance is unaware of that observation (Robson, 1993, p.161), there are critical issues
under observation. Although this may be overcome, through a design where the
out, there is a major issue in the effect that the observer can have on the behaviour
for reliable and representative observations to be made. As Robson (1993, p.161) points
and place while being video-recorded, it is argued, is unlikely to provide a realistic setting
as being controlled and quite non-realistic. To ask students to study at a given time
Finally, the current author is critical of the Martland, Parkinson and Paul Research method
Optimisation of the instructional context, different forms of engagement with preferences for different forms of instructional media, different forms of measurement of a number of variables relevant to the study. These variables were

- Short administration time requirement;
- Language level accessible by your apprehensions;
- Establishes factual data on reliability and validity at acceptable levels;
- Research to be placed in a framework of other research;
- Use of the inventory in similar research to enable findings from the current

Criteria for selection were developed:

Selection of a learning preferences inventory was undertaken with some care. Several

though an experimental and interview method.

research, such as Martin and Skidmore (1979), where learning styles have been researched

the learning styles of preferences inventories available commercially, although there is

Recent research on learning styles and preferences has been informed by the use of one of

6.2 Identification of Learner Preferences

<table>
<thead>
<tr>
<th>Event</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Selection of research problem and questions</td>
</tr>
<tr>
<td>2</td>
<td>Approval obtained from Deakin University Ethics Committee to complete</td>
</tr>
<tr>
<td>3</td>
<td>Collection and analysis of qualitative data</td>
</tr>
<tr>
<td>4</td>
<td>Compilation and analysis of interview data</td>
</tr>
<tr>
<td>5</td>
<td>Approved from Deakin University Ethics Committee to broaden the scope</td>
</tr>
<tr>
<td>6</td>
<td>Collection and analysis of interview data</td>
</tr>
<tr>
<td>7</td>
<td>Review of inventory data analysis with a colleague to increase the</td>
</tr>
</tbody>
</table>

Table 6.1: Sequence of data collection events
very acceptable, while smaller half-reliability coefficients range from 0.96 to 0.99. Validity established over 2.54 US community college students. Hen and others are published and were technical data available in the CIST manual (1989), 1988 (1991). had used the CIST to investigate variables such as age, gender, and field of study.


and used the CIST to assist in instructional decision making for resource-based distance education in Malaysia. A range of other studies (e.g., Baeuml & Orland, 1997; Herdman, 1985, 1981) had also used the CIST in resource-based learning contexts. Additionally, Altay (1992) had also used the CIST to guide the generation of information to aid instructional design and deliver decisions in a changing environment in the United States. Both these research studies had been focused on finding students in the learning styles. While those research studies had been focused on finding students in the learning styles. The CIST has been used in similar research by Whillart (1981) with community college.

The CIST (1989) was chosen since it fitted best the set of criteria established. The

For comparable purposes:

Watson, Christie, and Choy (1992) have now provided a considerable amount of data useful according to their research. Since researchers in this area may wish to use the instrument since the

been used with a VEL learner group in research by Watson, Christie, and Choy (1992), the development of the current project. However, the Learning Preferences Assessment has


was identical, and the scales measured by the instrument were not considered as

assessment. Again, though no other research using this instrument with a similar group

inventory revealed the CTRH and CTRH (1966) Learning Preferences.

research was found using learner groups similar to the current study. The second

instrument was revealed, and although the instrument has good reliability data, no

the study. First, Reckham and Cresswell's (1974) Student Learning Styles Scales

Since commercially available Learning Preference Inventories were revealed for use in

Insensitive to statistical analyses.

Respondents,

Instructors and with Learning Material, different forms of interest amount.
This chapter

the statistical analysis of qualitative data, and these are discussed in greater detail later in
the book. The results of the research for qualitative data and the findings of the

Finally, the CISTI is amenable to statistical analysis with the possible disadvantage that

preferences, and have not been used in the current investigation.

have for their own learning performance. These subscales do not measure learning
the CISTI in detail. The CISTI also yields measures of the expectations that respondents
whose set above in the criteria for inventory selection. Table 6.2 shows the subscales of
relationships with peers and instructors, and interests. These subscales largely reflect
provide measures of learned instructional media, organization of instructional content,
relationships of learning areas of interest, and mode of learning. Together, the six sixteen subscales
the CISTI, each collected under one of those categories. These categories are conditions
name of those subscales. These are sixteen learning preference subscales measured by
important in the selection of the CISTI was the range of subscales it measures, and the

Their usual work to undertake the inventory.

Included to every minute. Providing an acceptable time for appointments to be taken from
schooling. The CISTI consists of thirty questions and is able to be administered in around
study, on a basis that the majority of apprentices have completed at least eleven years of
A, suitable for upper levels of secondary school, and is college level was used for this
available for the CISTI, each piloted at a different level of language accessibility. Form

Vygotsky using 1947 US community college students. A number of parallel forms are
study conducted by Carper and Castiglione (1961) has established a reliable number
studies are also reviewed in the manual with acceptable results. Finally, factor analytic

The CISTI is amenable to statistical analysis with the possible disadvantage that
The four occupational classifications chosen were:

- ASCCO Code 44, Builtling: and
  - ASCCO Code 43, Electrician;
  - ASCCO Code 41, Metal Finishing and Machining; and
  - ASCCO Code 42, Other Metal;

Confidence that the two samples could be statistically compared.

The profile of preferences, shown in Figure 2.1, 2.2 and 2.3 in Chapter 2, provided

limited generalisability and only be valid at that one time. Additionally, the similarity in
collections that can be collected through the administration of a questionnaire may have

different lenses enabled the study to address the Hardy (1996) and Patton (1991)
different samples within the same occupational group. The re-analysis of data collected at these two points
from the same occupational groups, using the same data collection instrument and applications
under the same conditions, with the same data collection instrument and applications
for each group were the same. The study was, therefore, able to re-use the data collected
and that been used in both the earlier studies. The reassessment and reassessment
had been tested in both the earlier studies. The reassessment and reassessment
time of testing. Additional to the data generated by the CoSL, problems such as age, gender
and precise program of instruction were also collected.

Learning Preferences Data Collection
Explanatory sub-scales. The sector analysis is reported in detail in Chapter 8. Total group was also calculated using all C1-8 sub-scales other than the a principal components factor analysis with orthogonal (varimax) rotation for the four clusters of responses.

In Chapter 7 as part of the analysis of results, the four clusters of responses are also reported with the graphical illustration. These graphical representations have been converted to histograms of the clusters, as best means and standard deviations were calculated.

To generate the profiles, a profile of scores for each C1-8 scale was calculated. To generate the profiles, several statistical techniques were applied: For the total sample of apprenticeships and each sub-group identified for separate analyses.

6.4 Statistical analysis

PC (SPSS Inc., 1997) was used: compute the group with coded dichotomous data. Results were analyzed using SPSS of scores from each C1-8 subscale. For each apprenticeship, were coded and entered into a

by the inventory. Very few apprentices took this opportunity. the researcher and receive individual feedback on their learning preferences. As measured from involvement in the study, each apprentice was invited to attend a time with participating in the study were chosen on a basis of willingness to complete the C1-8. In the number of modules they had already completed in their apprenticeships.

Apprentices of apprenticeships (NCER, 1997) have the highest density of female apprentices among additional reason that it provides the highest density of female apprentices among the largest apprenticeship occupational groups, and participation was chosen for the by age group. These occupational classifications were chosen since they represent your

Table 7.1 in Chapter 7 shows the sample characteristics by ASCC code, by gender and
The model chosen for the factor analyses was an orthogonal Varimax rotation, since these

analyses, and large enough to ameliorate the effects of the insensitivity in the data

(9661) and (9662) suggested around ten to twelve variables are sufficient for factor

analysis (9663). It is large enough to enable effective factor analysis. Additionally, the six variables

indicate that a sample of 389 is very robust. Additionally, the six variables

good, 500 very good, and 1000 excellent. Connors (1974) and Pierce (1961) have suggested that a sample of 300 is

the appearence group. Connors and Lee (1963) have suggested that a sample of 300 is

reason, the present study has included a factor analysis of the CLST data obtained from

assess that the factor structure for Australian appearances would be the same. For that

CLST data obtained from US community college students, there was little reason to

analyse. Although Ginger and Caliendo (1961) have completed a factor analysis using

The final sample size of 389 is large enough to warrant the effective use of factor

The mean score of the subgroups on each subscale.

The mean scores of each subgroup within the same subscale. These rankings are based on

order of ranking of each subgroup within a CLST category. Those rankings are based on

more than one subscale have been made by inspecting and comparing on the

variance is not a satisfactory technique for those comparisons. Subgroups comparisons

cause misinterpretation of statistical differences between subscales such that multiple or

comparisons of sub-groups on the same subscale. The purpose of the CLST data

outlines of the research. The use of analyses of variance has been restricted to

and completed upon in the interest of providing as much information as possible on the

meet the more conventional, and less stringent, criterion of 0.05. Those results are noted

was established to indicate significant statistical differences. However, where differences

(6661) and the author and a colleague in Smith and Smith (1961) an alpha level of 0.01

reason, as suggested by Harper and Kenner (1969), Richardson, Morgan and Woodley

through analyses of variance results in multiple testing of the same samples. For that

Comparisons between sub-group have been made on each subscale through analyses of

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through analyses of variance results in multiple testing of the same samples. For that

Comparisons between sub-group have been made on each subscale through analyses of

Comparisons between sub-group have been made on each subscale through analyses of
also for the variables that do not load on the factor, since their information also adds
has argued forcefully that it is important in the interpretation of factors to have taken
not distinguish between factors not included in the interpretation of any factor. Cattell (1978)
been set for discriminantness. Subscales loading on more than one factor were those that were seen in the current study at a criterion of 0.15. In the factor analysis
a criterion for the inclusion of a variable in the interpretation of a factor has been more
the factor within a total context of the pattern of loadings on other factors. Since the
argued that the discriminantness of loadings is determined on a basis of the interpretability
have
the next highest loading. Other writers such as, for example, Gorsuch (1974) have
load should be included if the factor where the loading is at least 0.20 higher than
suggested that, where a factor loading of 0.30 is used, items that load on more than one
suggested that loadings of 0.30 would not be highly valid. Although, in practical terms, loadings of 0.30

Advice in the literature on the determination of discriminantness of subscale loadings on
Research...

A factor on a factor to ensure its reliability. That criterion has been adopted in the current
variate. Tabachnik and Fidell (1996) suggest that at least three variables should load
interpretable is shown when the factors are interpreted through their highest
was used to meet Cattell and Brennan's (1996) suggestion that with respect to,
Comrey and Lee (1992) suggest that if the loading is too low, accordingly, a higher criterion of 0.40
than 0.40. Tabachnik and Fidell (1996) recommend a loading of at least 0.32, while
Subscales were only discussed as loadings on a factor if the factor loading was greater

(Cattell & Brennan, 1994)

noted here, the appearance of a general factor is unlikely when the data are psotive
load but the percent of the total variance to be included in discussion. It needs to be
more suitable than one that is too low. Accordingly, a criterion was also set that a factor had
factors chosen for discussion was determined using Cattell’s (1966) score least considered
phase, and made little difference to the subscales loadings on each factor. The number of

score transformation matrices. This is expected of low factor inter-correlations was largely

The number of
Groups or respondents on the same subscale imply data are not amenable to the

statistical tests to impart data. While statistical tests may be used to compare different

predicted differences in variables, there is controversy over the applicability of standard

processes to the generation of data regarding preferences within a

result of the ranking, the mean of the responses generated by the inventory. While a running

the items, the total score from any item and from the test is a constant. The effect is a

Iipsative data are characterized by the fact that in whatever way an individual responds to

the ipsative nature of the data is generated. 

Selection of the CTSI, however, is not without some attendant problems resulting from

Inipsative Data

Selection of the CTSI was made on a basis that the research was focused on learning

The regression technique available with SPSS (see SPSS Inc., 1997, Chapter 16)

each of the factors identified in the factor analysis. Factor scores were generated through

Further comparisons between subgroups are made using the factor scores generated for

he need to be consistent. This advice has been

meaning in the interpretation. He makes the argument that to understand a we need
be made.

In a test item, nevertheless, a comparison of preferences as indicated by the rankings can
not infer individual comparisons can be made of the level of agreement with a statement
not yield a true score as is claimed to be the case with normative data. Another inter-
the use of factor analysis. Cross (1966) notes further that despite this, since ipsative data
corollaries. The limitations of ipsative data, they argue, are particularly of concern in
resultant correlation matrices contain a large number of artificially high negative
procedures designed for normative data since the measures are interdependent and the
Dutiar (1994), and Cross (1966) that ipsative data are not suitable for statistical
The view is also expressed by Johnson, Wood and Birkman (1988), Connell and

describe Multifactor Personality in Studying Preferences, other unavailable:

in factor analysis, and Connell and Birkman (1994). Also suggests that such availability is
is best, whereas possible, to avoid any form of design induced dependence among variables
analysis of ipsative data may be successfully conducted. Numerous (1967) suggests that if it
factor analysis of ipsative data are over-rated and that under certain conditions, factor
factors analysis of ipsative data are over-rated and that the difference between the
negative correlational, that the interdependence is caused through the ranking process as
through the interdependence between the subscales, and correlating a high number of
not suitable for factor analysis since the matrix of subscale intercorrelations is biased
derived in the literature. One such set of views considers that ipsative data is
analysis of ipsative data, although very different views on the reducibility of ipsative
between subscales. Additionally, there are some difficulties associated with the factor
between groups on the same subscale, and has not been used to make comparisons
alternatives. In the current thesis, subscale level Rasch has been applied only to comparisons
produce meaningful differences between scores. To the given set of ranked

necessarily means a lower rank must be assigned to another. Accordingly, the ranking
necessity of the responses a high ranking assigned to one alternative in the response set
statistical testing of performance between different subscales. Because of the ranked
Individuals can be as validly compared on a scale by scale basis on ipsative and analytical scales as normative, that ipsative data can be factor analyzed legitimately and

analytically. Sawille and Williamson (1963) have concluded that

in a comprehensive comparison of ipsative and normative data, subjects Dr factor to factor response bias in normative data.

and point out that inter-correlations can be artificially high due to the control tendancy

Sawille and Williamson (1963) also question the assumptions made about normative data,

strongly arguing. The ranking data are considered ordinal, but the latter is interval.

that are ranked, and the response to a scale of strongy designed-agree-disagree.

example. Baron raises the issue of whether there is any real difference between four items.

assumptions about the internal nature of data generated through a Likert scale, for

about normative data are quite misleading, and there has been little challenge to the

viewed as interval. She puts forward compelling arguments that the assumptions made

point that he refers data is largely ordinal in nature, while normative data is generally

unidimensional occurs when the number of variables is less than about ten. Baron makes the

overcome distortions related to ipsation, while Baron (1966) suggests that

conclusions. Baron concludes that the number of variables needs to be at least thirty in order

with ipsative data, and that there are limitations in the interpretability of underlying

suggests, though, that factor analysis with a small number of variables can be distorted

has been conducted (Krementz & Zuckerman, 1963). Baron and Sawille (1973) have there

nomotive measurement (American Psychological Association, 1984). There is evidence of a number of studies that indicate functional equivalence of ipsative and normative measurement based on the results of substantial processes

evidence of an increase in the interpretability of data when the views of these studies have been considered on ipsative data. The reviews literature suggests that interpretability can be

that the ipsative-normative data analysis is artificial and based on theoretical foundations.

Krementz (1963), and Sawille and Williamson (1973). Baron has pointed out that the majority

concluded by writers such as Baron (1966), Sawille and Drumman (1973), and Sawille and

The views that ipsative data are not amenable to common statistical procedures have been
The conclusion is supported by an inspection of data generated by Chuber and Carroll


Intercorrelations can be factored soundly (Cronbach, cited in Saville & Wilson).

Isolative data can be used for comparing individuals scale by scale. The

complaints about isolative data are overstated and asserted that

in Saville & Wilson, 1991, p.235, communality similarity when he argued that the
scores yielded only a small deviation from that of the nonisolative scores. Cronbach (cited
isolative data, Carroll and Brennan, 1974) also show that the simple facitization of ipsative
unaffected. Although they developed techniques to accommodate some of the effects of
untangled, but the interpretation of factors by their highly loaded variables is also highly
satisfactory procedures are much smaller than has been commonly expected (p.273); and
conclude that with matrices of reasonable size the modifications to the outcomes of
developed some techniques to accommodate the effects of ipsative data. They
interpretable data in personality testing using ten variables, and have
Carroll and Brennan (1974) have made substantial comparative empirical studies between

precisely more, since as the number of variables decreases so does their reliability.
small. Bilgram suggests that the number of variables needs to be at least ten, and
Dunlap 1974) that ipsative measures are unreliable when the number of variables is
between nominative and ipsative factor analysis led to this affiliation with Cunnell and
which as Bilgram points out, is an unusually high number of variables. His comparisons
conclusions are correct, their simulations were based on a thirty variable set
comparative testing. Bilgram (1974), has suggested that although Saville and Wilson's
when ipsative data and using nominative data and selecting the data matrix to
Saville and Wilson's method was to generate simulated responses for 1000 subjects


that neither reliabilities nor validities appear to be overstated (Saville, &

126
Popular perception can provide difficulty in the interpretation of identified
conced correlations between variables and a greater likelihood of identified factors being
conced correlations is also evident. Nevertheless, data from the CTST does reveal in design-
set by Partain and Bremner (1996) and Callii and Bremner (1994) in achieving generally low inter-
additional, the CTST also means the criterion together with only partial presentation score to address concerns raised by poll
responses, but the subscales do not sum to any constant. The large number of subscales
subscales are interdependent in that they are the result of summed rankings from item
subscalf contributions to our subscales, and their contribution can be 1, 2, or 4. The CTST
the achievement in each item that loads on each subscale. Accordingly, any one item
subscales scores are then derived by summing across a number of items the rank given to
by the candidate ranking from 1 to 4. The four options provided in each item. The
the CTST is completed.
insensitive select scores reduces as the number of scales in the test reduce. The CTST is composed
sensitive scores that all presentation should be avoided, and that reliability of
scales is increased in a context of available research and theory. In completing the test, the
interpretation that the interpretations can be viewed similarly and outcomes sensibly
factor analyses have been examined in some detail. The results provide further
factor analyses of CTST insensitive data, together with the interpretation of
used in the current study. In other work by the current author (Smith, 2000), the
basic problem of design-induced inter-scale correlations and how not, interpretations been
result was to replicate. The second factor emerged as a useful construct that helps explain
college students' use of six scale subscales of the CTST to provide a readily interpretable
analytical process. Gulliver and Callii factor analyzed the results of 1394 community
medialine responses of students while using distance learning materials.

Weinstein and Mayer model, Maryland, pairing and pull, investigated the thinking and
outcomes, and performance. In focusing on the learning strategies element of the
strategies, learner characteristics, learning strategies, encoding processes, learning
cognitive terms. The framework and deans including teacher characteristics, teaching
students. These researchers took their influence largely from Weinstein and Mayer
in which they investigated the learning strategies used by distance learning
method (Malan, 1994) similar to that used by Maryland, pairing and pull (1992a).

The identification of learning strategies used by approaches employed a simulated recall

6.6.1 Development of the Interview process

6.6 Identification of Learning Strategies

Existing theory and research are strongly argued by Cattell (1978) and Cattell and
corporate (1974). An additional study of factor analytic studies indicate data is the removal of any
factor. Analysis of variance (ANOVA) by the number of variance (Baron, 1996; Breiman, 1994; Cattell & Breiman, 1994).

Factors (Cattell, 1978; Boyle & Pinto, 1993). In the present study the effects of these artificially

On the basis of argument that insightful data may be factor analyzed provided there is a

However, caution needs to be exercised in the interpretation of these factors. A study

On the basis of argument that insightful data may be factor analyzed provided there is a

Conclusion

In the present study the effects of these artificially

On the basis of argument that insightful data may be factor analyzed provided there is a

Conclusion

In the present study the effects of these artificially
This research on the learning strategies of distance education students, in knowledge (p. 166), a similar re-conceptualisation was employed by Gonzalez (1996). A definition of a learning strategy as a plan of action adopted in the acquisition of knowledge (p. 198). A similar re-conceptualisation was employed by Gonzalez (1996). A similar re-conceptualisation was employed by Gonzalez (1996). A similar re-conceptualisation was employed by Gonzalez (1996). A similar re-conceptualisation was employed by Gonzalez (1996).
These are strategies used in the application of knowledge from text or other learning applications that have been observed or proposed by previous researchers. Some of these strategies include:

- Retrieval
- Elaboration
- chunking
- encoding
- visualizing
- organizing
- using mnemonics
- summarization
- questioning
- repetition
- practice

**TABLE 6.3: Categories and Definitions of Learning Strategies (Adapted from Bollin, 1996, p. 274)**

Through application, problem-solving occurs and the application of individuals' knowledge is reached.
The interview was then structured to access information from the interviewees on each of the strategies listed, along with their definitions, in Tables 6.2 and 6.3. The strategies listed, along with their definitions, in Tables 6.2 and 6.3.

The use of these strategies, or forms of engagement with the workplace, were also explored with learners in the simulated recall sessions.

Each of these strategies, or forms of engagement with the workplace, were also conceptual development. Table 6.4 shows these strategies, together with a definition of

workplace environment, as described by Billiet (1996:494) that have been adopted in the present

workplace environment. Means of application resulting from engagement with the resources, while others are application mechanisms derived through engagement with the

resources.
their training provider had included them as ancillary, with little or no participation, and in their collection, they had worked on a number of different learning modules. Additionally, other specific sets of materials' learners were chosen on the basis that in materials to facilitate recall. Since the research was not focused on the merits of the module, the interview used the learning module to provide shared recall, were interviewed either during or within days of their successful completion of a learning experience within the enterprise and learning settings. As a result, learners encountered in applying the model within the enterprise and learning settings. Moreover, the model within the enterprise and learning settings were designed to engage with other learning practices other than the learning materials. Relating to our finding that other learning practices that include learning materials, would have been less effective at creating a very artificial learning environment, and to lose data, controlled observational paradigm available to Maryland, Prince George and Prince (1992)

Accordingly, for the current study to employ the more equipment of course in the relevant process, these activities are also being evaluated in as specific periods of time learning only from learning materials. More specifically, the study. A more important thought, a learner in the workplace does not normally sit for technology, used by Maryland, Prince George and Prince (1992b) imperative in the current workplace workers. Those reasons combined to render the controlled study not viable. Comparative learning at controlled and applied levels was not available with those employed in production. Imperatives and, second, the option of customizing the learning materials could be recommended for data collection with each application was necessary. However, by leveraging from those of the Maryland, Prince George and Prince research, first, the time limit with the learning materials. There are several reasons for needing to vary these study, and neither was the learning of having learners at applied levels and interest. As discussed earlier in this chapter, the use of video was not an option in the current...
The appearances were interviewed at times mutually agreed upon by the appearance and the researcher. At each of the interviews, strategies were conducted in quiet rooms quite close to the work area.

The difference in categorisation until agreement was reached. Categorisation, the two of us listened once again to the section of the tape discussed the differences in categorisation. The two of us listened again to the section of the tape and made our own categorisations. The two experienced colleagues also listened to the tape and made their own categorisations. The two colleagues then compared and, where there were differences in categorisation, the tape was listened to a second time. To provide reliability in those categorisations of strategy, categorisation of a second tape was through the tape to categorise each strategy within the categorisation shown in Table 6. The strategy analysis was transcribed to written form and the researcher worked with the interviews transcribed with the interviewee's permission of the appearance involved.

The appearance comments on:

- how the strategy had been used;
- whether the strategy had been used in learning that part of the module;
- whether the strategy had been used, with worked through the possible strategies (see Tables 6.2 and 6.3) that had been used, with
- used in sequence with the sequence. The conversation was semi-structured as we used in sequence with the sequence. The conversation was semi-structured as we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module we selected two learning scenarios and talked about the process. The appearance module was developed (see Appendix 2). Applications.
Acknowledged here as a problem in the reliable classification of strategies, it is often difficult to distinguish between what is mean and what is cognitive (p.66) is identification of meaningful and cognitive strategies. Brown’s (1987) common test the same three identified activity headings. Although there is emerging agreement on the review of the literature developed a framework of a wide range of learning activities under cognitive, affective and meta-cognitive or regulated activities. Venners (1989, 1992) Short and Webster-Benjamin (1999) when they classified learning activities into an idealised classification system for learning activities was developed a year earlier by.

Over affect:

- social/affection strategies that represent interactions with others or ideological control
- organisational and process to effect learning and
- cognitive strategies which are used to operate directly on information presented, and to
- monitoring or evaluating the success of a learning activity;
- metacognitive strategies described as higher order executive skills involving planning

into three sections groups:

McLean’s (1969, p.79), developed a system for the classification of learning strategies. Leaning, O. Malloy and Chmiel (1990, pp.44-45), similarly to McLean’s and socially contextualised learning strategies. In their research into learning a second and workplace research (E. Billek, 1996a, 1996b) has identified the importance of importance of metacognitive strategies in the development of independent learning skills.

Subsequent research by workers such as White (1967) and Biddle (1969) have shown the metacognition and affective processes were merely seen as simple mediating processes.

Interview data analysis
The interview schedule involved working through each of the strategies with the

<table>
<thead>
<tr>
<th>Scheduled Class</th>
<th>Practice</th>
<th>Problem Solving</th>
<th>Experimentation</th>
<th>Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussion with Teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worker</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussion with Fellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worker Observation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social/Assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 6.5: Classification of Learning Strategies, Derived from Hillen (1996)**

(McLeod, Parling & Putt, 1997; O'Malley & Chamot, 1997)

Below in Table 6.5, strategies identified for independent learners by McLeod, Parling and Putt (1997) were distributed under the O'Malley and Chamot headings to yield the classifications shown in this table. The strategies derived from Hillen (1996), and the workplace strategies adapted from Hillen (1996) were accordingly classified.
Effective flexible delivery in the workplace:

These three chapters of analysis together in the development of strategies to achieve
on learning strategies, derived from the interviews. The final chapter of the thesis brings
from the CST. Chapter represents the analysis and discussion of the qualitative data
drawn Chapters 7 and 8 now provide the analyses and discussion of the quantitative data derived

of the analyses of the content of the transcripts, and recorded separately.

of those activities in the workplace were separated out from other interview material as part
most particularly those shown in Table 6.4. Common on the processes and support for
they were supported in their workplace in their efforts to engage in the learning strategies.

Part of the interview process involved encouraging participants to talk about how well.

difference and, through re-examining the transcripts together, we came to agreement.

together the areas of disagreement. Where disagreement occurred, we then discussed this
strategy via the frequency of use, once the had completed the task, we examined
strategy, then separately examined the transcripts and made her own assessment of
whose research area is cognitive psychology, and specifically learning styles and
The classifications of strategies and their frequency of use were recorded. A colleague

reported by less than four applications:

often used - a moderate response was placed in this category if its use was

exclusively.

Four applications reported using the process, but their use was infrequent and not
not used only in a restricted way - a strategy was placed in this category if at least

reported use:

used frequently - a strategy was placed in this category if at least five applications
Table 7.1 shows the sample characteristics by ASCEO code, by gender, and by age:

- ASCEO code 9217, Hairdressing:
- ASCEO code 414, Building and related trades:
- ASCEO code 43, Electrical:
- ASCEO code 412, Metal Fabricating and Machining:
- ASCEO code 42, Other Metal Fabricating and Machining:
- ASCEO code 411, Metal Finishing and Machining:
- ASCEO code 42, Other Metal Fabricating and Machining:

Classifications were:

Australia Standard Classification of Occupations (ASCEO) (1993). These occupational
classifications were applied to occupations in four occupational areas as defined by the

Informed for data collection were apprentices in four occupational areas as defined by the

were isolated to answer the inventory in the context of their apprenticeship studies.

were separated into groups of apprentices during their periods at the institution. Apprentices

block released from their employer for several weeks at a time. The CLSI was

employed at the time of testing and attended the institution on a weekly basis or on a

students at a vocational education and training institution. All 389 apprentices were in

the next have been derived from the administration of the CLSI to 389 apprenticeship

To recall briefly from Chapter 6, learning performance results reported in this chapter and

Sample Characteristics

CHAPTER 7: ANALYSES AT CLSI SUBSCALE LEVEL
Table 7.1:  Sample distribution by occupational classification, gender and age-group.

<table>
<thead>
<tr>
<th>Occupational Classification</th>
<th>Gender</th>
<th>Age ≤ 20</th>
<th>Age ≥ 21</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCO 41/42 Metals</td>
<td>Males</td>
<td>77</td>
<td>23</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Females</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>77</td>
<td>23</td>
<td>100</td>
</tr>
<tr>
<td>ASCO 43 Electrical</td>
<td>Males</td>
<td>55</td>
<td>16</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Females</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>58</td>
<td>16</td>
<td>74</td>
</tr>
<tr>
<td>ASCO 44 Building</td>
<td>Males</td>
<td>81</td>
<td>10</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Females</td>
<td>6</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>87</td>
<td>18</td>
<td>105</td>
</tr>
<tr>
<td>ASCO 4927 Hairdressing</td>
<td>Males</td>
<td>17</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Females</td>
<td>85</td>
<td>3</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>102</td>
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<td>110</td>
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<tr>
<td>Totals</td>
<td></td>
<td>324</td>
<td>65</td>
<td>389</td>
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</tbody>
</table>

Further detail on gender distribution and age characteristics are shown as Table 7.2.

Table 7.2:  Age and gender characteristics of total sample

<table>
<thead>
<tr>
<th>Sample gender and age distribution</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>284</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>105</td>
<td></td>
</tr>
<tr>
<td>Age Males</td>
<td>Mean 19.57</td>
<td>Std Deviation 5.69</td>
</tr>
<tr>
<td>Age Females</td>
<td>Mean 18.76</td>
<td>Std Deviation 3.44</td>
</tr>
<tr>
<td>Age Combined Sample</td>
<td>Mean 19.35</td>
<td>Std Deviation 5.19</td>
</tr>
</tbody>
</table>

Age range was 16 to 50 years.

The profiles of scores for Apprentices on each of the CLSI subscales are shown as Table 7.3 and Figure 7.1. It needs to be remembered that the lower the score, the more preferred is that subscale.
Mode of learning. These rankings are shown in Table 7.4.
Preference within each of the CISTI major scales of conditions of learning, interest and
levels of mean scores the subscales were ranked in order of highest preference to lowest

Figure 7.1: CISTI subscale means – total sample

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Direct Experience</th>
<th>Read</th>
<th>List</th>
<th>Peep</th>
<th>Qual</th>
<th>Numb</th>
<th>Auth</th>
<th>Indep</th>
<th>Orgn</th>
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</tr>
</tbody>
</table>

Table 7.3: CISTI subscale means – total sample

- Total sample (maximum subscale score is 24)
- Means, standard deviations, and Cronbach's α for each CISTI subscale

Cronbach's α
The Organization and Detail subscales both measure preference for the level of instructor and confrontation of the least ranked pair.

- Authority and Competition are the highest ranked pair.
- Goal Setting and Independence are the third most preferred pair.
- Instructor and Peer are the second most preferred pair.
- Organization and Detail ranked as the first most preferred pair.

Subscale: Reading
- 18.20
- 14.86
- 14.22
- 12.49

Subscale: Learning
- 17.7
- 16.85
- 15.14
- 10.99

Subscale: Moore
- 18.60
- 17.78
- 13.83
- 14.73

Subscale: People
- 14.16
- 13.24
- 13.10
- 12.76

**Conditions of Learning**

Table 7.4: CLSI subscales ranked by mean within major scales – total sample
apparentheses (see Chapter 9) where it was not uncommon for applications to report that
higher rankings for Goal Setting is related to evidence provided in the literature with
further evidence for the social context of learning preference among Terman’s (1965) sample,
which provides a consistent view for an attribution and social learning context, and provides
learning subscales. The confluence of research associated to independent is
independent learning is in fact a low preference for applications among the conditions of
between Goal Setting and independence is substantial (see Table 7.4), and indicates that
the preference for working alone and independently of others. The gap in the mean
goals to fulfill their own specific learning needs, which the independence subscale measures
learning scales the preference respondents express for developing their own learning
The Goal Setting and independence learning subscales were ranked next highest. Goal
apparentheses. Like a learning context that is social, supportive, and friendly.
other students. The ranking data indicates that next to clarity of organization and detail,
measures the preference for the development of those same sorts of relationships with
have for developing warm and friendly relationships with the instructor, while Peer
instructor and their peers. The instructor subscale measures the preference respondents
subscales that measure the degree of attribution that students like to have with their
Ranked next in order of preference were the subscales Instructor and Peer, the two
avoided programs.
level were characterized by a passive approach to learning, and a preference for well
Similarly, Reading-Brown and Hayden (1989) showed that technical students at college
accept the content and structure of learning programs as provided by the instructor, and
cooperative learning programs. The data and analysis indicated that engineers adopted a style that
conclusion from an analysis of fifty published articles of research on
assumptions. The high ranking of these two subscales together indicates a strong
instructor has the greatest learning, assessment requirements, and achievement through

that study were separated into apprentices, technology, health, and business students, and
the goal-setting subscale also loaded on the highest score (Smith, 2000). The samples in
interpreted to re-named "Self-directed Learning," a more accurate description since
learning preference. The Independent-Dependent Factor was found to be more strongly
identified Self-directed-Dependent study as one of two factors describing VET student
Smith (1999a) conducted a factor analysis on VET student data using the CLST and
instructor-controlled (authority subscale) learning environments. In a broader study,
Differences in learning preferences among VET students were found to be slightly higher preference for
instructor-controlled independent learning, but showed a slightly higher preference for
students displayed similar rankings to those of the apprentices. However, technology
separate research by Smith (2000) on technology learners at vocational training level,
While comparatively little other research has been reported on technical learners in
other apprentices.

Other research on apprenticeship expressed in the comparison of learning outcomes with
Closest to controlled and formal learning contexts are strongly non-preferred, as is
punish or individual learning objectives, but not strong liking for independent learning.
Instructor and Peer support in a friendly and informal way, some room to enable the
clear in program organization and expectation, a learning context that provides
Taken together, the subscale rankings provide a picture of apprentices as preferring
controlled learning settings, or for inter-apprentice competition.

Independence, independence a distinct among the apprentices for closely instructor-
Competition are substantially separated from the next lowest ranked subscale.
Performance with other learners in the group. The mean for both authority and
the competition subscale. The later subscale measures the preference for competition of
controlled learning environment has received a low ranking from the apprentices, as has
Authority, which measures the preference for the instructor to provide a survey
still the immediate needs of their workplace and employer.

They preferred a situation where they could vary the learning objectives in their training to
rather than the opposite, but also for learning concepts that involves people. (1977) have observed that field-dependents have a preference for working in the concrete
opposites, but the opposite was true for working with imaginative
expectations. The opposite would show a higher preference for working with imaginative
workings with opposites on such things as construction and repair. Clearly, it is to be
inspected of Table 7.4 and the rankings that appear are consistent with interest
inspections of subscale rankings and the evidence from the limited other research
analysed beyond frequency counts.

preference for self-directed learning, although their study did not provide
Australian VET students' Wimmer, Chinn, and Choy (1998) have also shown a low
importance for social mediation of learning based on their study with
consistent with other research (Billiet, 1994b, 1996b) on workplace learning, which the
foundings are one of both groups. It is important to note here, though, that the appearance data in the
self-directed learning factor, indicating the comparatively low preference was a feature
were shown between the apprehensions and technology students in the former scores for the
factor scores were extracted for each group on each of the two factors. No differences
socially and socially dependent collaborative environments, consistent with Riding's (1661) suggestion that Whoisdes are generally non-verbal learners. Smith (1961) has shown a highly significant preference among field-dependent learners for a field-dependent style, consistent with their need for a structured learning environment. Smith's work by Riding and Cheema (1661) in their development of a 2-dimensional model of cognitive style. Riding and Cheema (1661) have shown that Whoisdes are consistent with field-dependent style. Tvetu and Cheema (1661) in their current study are without a significant influence on the preferences in the current study are without a significant influence on the preferences. field-dependent style is used by Riding and Cheema (1661) in their current study are without a significant influence on the preferences.
Table 7.5: Means and standard deviations of each CSTI subscale by gender

<table>
<thead>
<tr>
<th>CSTI Subscale</th>
<th>Males</th>
<th>Females</th>
<th>n=105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Experience</td>
<td>11.99</td>
<td>13.99</td>
<td>4.15</td>
</tr>
<tr>
<td>Emotion</td>
<td>11.93</td>
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<td>Knowledge</td>
<td>11.94</td>
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<td>4.13</td>
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<td>Reading</td>
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<td>13.94</td>
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<td>Lifeskills</td>
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<td>12.97</td>
<td>13.94</td>
<td>4.57</td>
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<td>Interpersonal</td>
<td>12.97</td>
<td>13.94</td>
<td>4.57</td>
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<td>4.57</td>
</tr>
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<td>Peer</td>
<td>12.97</td>
<td>13.94</td>
<td>4.57</td>
</tr>
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</table>

Table 7.5 below shows means and standard deviations for each CSTI subscale by gender.

Gender Differences - Results

(continued...)

...
Table 7.6: Subscale Rank for each of the subsections within major scales

Figure 7.2: Means for each subscale by gender
Table 7.7

Analyses of variance by subscale by age-group and gender - summary

<table>
<thead>
<tr>
<th>CILI Subscale</th>
<th>Age x Gender</th>
<th>Age F Ratio</th>
<th>Gender F Ratio</th>
<th>Direct F</th>
<th>Interactive F</th>
<th>Reading F</th>
<th>Listening F</th>
<th>People F</th>
<th>Influence F</th>
<th>Qualitative F</th>
<th>Numeric F</th>
<th>Authority F</th>
<th>Debrief F</th>
<th>Instructor F</th>
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</tbody>
</table>
7.4 Gender Differences – Discussion

Although the ANOVAs have shown several gender differences in the conditions of learning subscales, these differences need to be interpreted in a context. Table 7.6 shows little difference between the genders in the rankings of their preferences for each learning subscale. Only computation and authority are ranked differently between the genders and, even then, they have only changed places. That result means that while there are differences between the genders in the intensity of preference, there are only minor differences between them in their relative preference for each subscale.

Qualitative – an information richness that older females have a higher preference
Independence – females show a higher preference
Goal setting – females show a higher preference

At a 0.05 level, the following differences were noted:

Direct experience – males show a higher preference
Reading – females show a higher preference
People – females show a higher preference
Inanimate – males show a higher preference
Qualitative – females show a higher preference
Numerical – males show a higher preference
Handwashing preferences are better supported in their workplace. Though initially evidenced later in Chapter 9 of this thesis, there was evidence in the interviews that higher preference among females for independent study and goal setting may be evidenced earlier in their workplace. The gender difference for independent study and goal setting subscales was established only at the 0.05 level. One possible reason for the gender difference for both the independent and the goal-setting subscales is that the latter subscale is more related to the instrumental aspects of life, such as career planning and time management. Females typically score higher than males on this subscale, and this difference is consistent with the results of previous research where females scored higher than males on the goal-setting subscale. The gender difference for independent study was not significant for the results presented here. The finding that females scored higher than males on the independent study subscale may reflect gender differences in the way students pursue their studies or the way they organize their time. However, the finding that females scored higher than males on the independent study subscale is consistent with previous research where females scored higher than males on the goal-setting subscale.
points. Females, in turn, are more tolerant of the different modes of presentation than reading for males, while for females this spread of means is limited to only about 3.5
nearby the points of difference between the means ranking for Direct Experience and
preference than the males, evidenced by the lower spread of the means. There are
each gender shown in Table 7.5. While appearances exhibit a much stronger set of
A further observation on the Modes data is evident from close inspection of the means for

indicates that both genders have ranked the subscales in precisely the same order.
genders in the hierarchy of preference for Reading and Direct Experience, but Table 7.6
for Direct Experience. The current study has shown significant differences between the
the current investigation, while appearances also showed a significantly higher preference
difference are both consistent with those of the current investigation with appearances. In
difference was shown between the genders for the Reading subscales, but not
significant difference was shown between the genders for the Reading subscales. In that study, a
scores calculated from the factor also showed that females had significantly higher
performance for context-based learning than did male technology students. In that study, a
in his factor analytic study of the preferences of technology VET students, Smith (2009a)
Hedegren, Perrier and Zikmund (1987) and Smith (2009a).
These findings are precisely the same as those shown by Bragg and Cunningham (1977).
In these findings, while males were higher on the Qualitative and People subscales,
more important role in the CAE. Additionally, the ranking of the subscales is quite
differentials between the two genders as shown in Table 7.6. These differences indicated
every Inherent subscale of the CST. Additionally, the ranking of the subscales is quite
relationships are formed, resulting in a more supportive flexible learning environment.
working in very small salon businesses with only a couple of colleagues, strong personal
Table 7.8 shows means and standard deviations for each subscale by age-group. While Table 7.7 showed the results of the ANOVA's computed by age-group for each variable in learning preferences and performance.

A number of previous studies (e.g., Woodley & Melchior, 1979) investigated age as a variable in learning preferences. Additionally, their same age has been used in for Vocational Education Research, 1979). Additionally, the same age has been used in for Australia Training Statistics into ages 21 and above, and below 21 (National Centre of Australia Training Statistics, 2011). The correlation of 21 years was adopted since it is consistent with the classification of the sample of apprentices was split into those 21 years and over, and those under 21.

7.5 Age-group differences – Results

The preferences are strongly presentation and practical applications for learning. They did not hold these.

Each one manner using their senses while although females also preferred sensory showed that male and female learners have a strong preference for learning in an arranged and by Fox and Roberts (1997). Using the Myers-Briggs Type Indicator, these researchers exhibit such strongly defined preferences is consistent with work completed on definitions.

are the males, with less distinctive preferences. The observation that females do not
Figure 7.3: A graphical representation of subscale means by age-group.

### Table 7.8
Means and standard deviations of each CLSI subscale by age-group.

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Direct Experience</th>
<th>Icon</th>
<th>Reading</th>
<th>Listening</th>
<th>People</th>
<th>Immanent</th>
<th>Qualitative</th>
<th>Number</th>
<th>Authority</th>
<th>Independence</th>
<th>Detail</th>
<th>Instructor</th>
<th>Condition</th>
<th>Goal Setting</th>
<th>Persuasion</th>
<th>Peer</th>
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<tbody>
<tr>
<td>Under 21</td>
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<td>1.52</td>
<td>1.82</td>
<td>1.41</td>
<td>1.55</td>
<td>1.11</td>
<td>1.71</td>
<td>1.62</td>
<td>1.40</td>
<td>1.82</td>
<td>1.55</td>
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<td>1.52</td>
<td>1.82</td>
<td>1.41</td>
<td>1.55</td>
</tr>
<tr>
<td>21 and over</td>
<td>2.57</td>
<td>2.85</td>
<td>3.23</td>
<td>2.87</td>
<td>3.07</td>
<td>2.56</td>
<td>2.92</td>
<td>2.86</td>
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<td>2.98</td>
<td>2.87</td>
<td>2.57</td>
<td>2.85</td>
<td>3.23</td>
<td>2.87</td>
<td>3.07</td>
</tr>
</tbody>
</table>

n = 65

Table 7.8 shows the means and standard deviations of each CLSI subscale by age-group.
Goal Setting - Younger appeared to show a higher preference.

At a 0.05 level, the following differences between age-groups were identified:

- Informal - younger appeared to show a higher preference.
- Listening - older appeared to show a higher preference.

Groups on the following CLSI subscales:

To summarize, significant differences at the 0.01 level were shown between the age-

Figure 7.4 below:

Qualitative subscale at the 0.05 level. The interaction effect graphically represented in

Table 7.4 shows in Table 7.7 indicated an age-effect by gender interaction for the

<table>
<thead>
<tr>
<th>Reading</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal</td>
<td>Informal</td>
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<tr>
<td>Listening</td>
<td>Listening</td>
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<td>Direct Experience</td>
<td>Direct Experience</td>
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<tr>
<td>Modes</td>
<td>Modes</td>
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<td>Qualitative</td>
<td>Qualitative</td>
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<td>Number</td>
<td>Number</td>
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<td>People</td>
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<td>Immediate</td>
<td>Immediate</td>
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<td>Interests</td>
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<td>Independent</td>
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<td>Goal Setting</td>
<td>Goal Setting</td>
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<td>Peer</td>
<td>Peer</td>
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<td>Detailed</td>
<td>Detailed</td>
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<tr>
<td>Instructor</td>
<td>Instructor</td>
</tr>
<tr>
<td>Organization</td>
<td>Organization</td>
</tr>
</tbody>
</table>

Table 7.9: Subscale Ranking by Age-Group

Table 7.9 shows the rank order of subscales by age-group, within the major scale areas of

the CLSI.
Independent study through audioassess, none of the delivery methods provided for

instructor provided by a teacher. Although listening could be associated with

lower preference for independent study, since listening presupposes a classroom setting

suspends higher than did the younger apprentices. This finding is consistent with the

results in Table 7.9, which showed that older apprentices also ranked the listening

ANOVA, indicating a higher intensity of preference for listening, and in the subscale

but no such difference was observed for reading. That result was shown in the

apprentices showed a higher preference for listening than did the younger apprentices.

preferred iconic presentation and direct experiences. In the current study, older

traditional instructional forms such as listening and reading, while younger students

The study by O'meara, Brainard and Canfield (1979) showed that older students preferred

Discussion

Figure 7.4: Qualitative subscale - age-group by gender interaction.

Female apprentices while for males there was no difference:

apprentices have a higher preference for qualitative material than do younger

A significant age-group by gender interaction indicates that older female

Indpendence - younger apprentices showed a higher preference.

Female apprentices, while for males there was no difference:

apprentices have a higher preference for qualitative material than do younger
observation and demonstration.

The individual questions in the CL1 do not lend themselves to discriminating a preference for video delivery from a preference for
independent learning packets. These activities may be referred to independent learning, study to meet learning goals, These activities may also be referred to as components of independent
in-lecture demonstrations. While demonstrations and observation often take place in a context of a
in-lecture demonstration, specific concerns related to the presentation of video or demonstration and observation, or in case of
appearance concerns related to the demonstration of the current study (see Chapter 9). It is more likely that
learning strategies component of the current study (see Chapter 9). It is more likely that
be non-preferred. Similar comments were heard from the appearance interviewers, for the
presentation of video is almost universally disliked. However, the presentation of video, observed in a large study of flexible learning Among Australian VET
students, has exposure to computer screens and video presentations, more exposure to
experienced in learning than their older counterparts, and to have had more educational
experiences. The interquartile range of younger students is included in the ANOVA
presentation of learning material. This higher preference was exhibited in the ANOVA.

Younger students, on the other hand, showed a higher preference for icon.

Intensity of the preference:

Although no significant difference was shown between the two groups in the
where the older appearance have ranked the instructor higher than did the younger
Concurrent with this suggestion is the rank ordering of subscales shown in Table 7.9.
According to the attribute delivery rather than paired comparison in independent learning.
Apartment may be more likely independent than younger appetites in their preference for
concerned by the attractiveness as a teaching to an instructor. It can be suggested that older
questions are in terms of their appearance learning program learning would have been
appearance involved with appearance. Accordingly, since they were asked to respond to the
Those goals independently of the instructor. Support for the suggestion that the younger student in the production of the final report. Students' interest, were placed in a student who they learned to set the goals they wished to achieve and to work towards.

Available to discuss the work, and to comment on others, but were not able to assist the problem and to develop the assignment in a very independent manner. Teachers were problems which engaged the student to collect information to inform the research on the school assessment in the new system was based on setting for students a series of products work. By the end of the 1980s, high assessment and assignment pattern that required considerable more student research and study. In the 1989, the Year 11 and 12 high school curriculum moved towards a work curriculum that were made over several years prior to the collection of the data for this study. Learning and goal setting may be found in changes to the Victorian high school program. An interesting possible reason for finding that younger appears to perform independent.

Younger students to outperform older students in the independent study of the sciences better, those findings were consistent with Broom (1969) who had similarly shown. Humanities and Social Sciences Woodley's findings were that older students performed better in the sciences, younger students actually performed better than their older counterparts. In the completing for independent study since they had more stable lives within which to organise.

Open University. These researchers concluded that the older students were better in terms of age, there was a relationship between age and first year performance at the UK example. Woodley and MacInnes (1969) showed that for students between 18 and 30 there was a preference of younger students provided some greater complexities. For their social interaction, inspection of the distance education literature on the success of their independent learners showed that older students performed better in this context. Holland (1980) has shown that college age students at college level are more independent and goal-setting subscales are not consistent with previous research. For example, independent and goal-setting subscales are not consistent with previous research. For

Although established only at the 0.05 level, the findings of age-specific differences on the
and Bowen also draw a distinction between different forms of learning, as identified by apprenticeship, such that the control and Bowen suggest that the difference may be reconciled. Continuing

majority of older apprentices had undertaken other apprenticeship prior to enrolling their

independent... (Control & Bowen, 1999, p.33) In the current study it is likely that the

supervision practices which they were not expected to think too much of be

need of supervision and direction in their learning because of previous management

self-direction. They have identified that older and more experienced workers may be in

supervised a further explanation for the higher pressure among younger apprentices for

setting more than do older apprentices. Work by Cormier and Bowen (1999) has

explanation of the finding that younger apprentices place greater emphasis on learning and goal

behaviour change as a function of learning experience, provide a plausible further

apprentices. This change, taken together with the research evidence that learning

felt by younger students in the apprenticeship sample, but generally by the older

through their course. The change in high school curriculum in Victoria would have been

behaviours are influenced by the experiences of learning they have while progressing

shown that among post-secondary technology students cognitive style and learning

processes and behaviours are derived from this computer learning. Hessen (1995) has

developed these processes and behaviours through observation and interaction

family, school and outside their setting. Children, using a range of resources and process milestones,

behaviours and preferences are related to what they have experienced, both in their

previous work by Ramirez and Price-Williams (1994) indicates that student learning

disciplinary (Brown, 1993, p.166).

independence of their students as learners, their education self-confidence and self-

Almost without exception the schools we visited reported on the breadth

implementation of the VCE in schools and has remarked

to VCE studies. Additionally, Brown (1999) has reported on a study of the

who has argued that independent learning and the use of resources are important

enhance their performance for independent learning is also provided by Williamson

apprentices', experience with the new Victorian Certificate of Education (VCE) may have

157
The current investigation collected no data to assist in informing some of the activities and occupations that those older females engaged in prior to remaining education. The findings, although only weakly established, may also be related to the education by Burns, Williams and Bartlett (1997) in their study of women in technical and further education. The broadening of interest among older females in personal enrichment, as indicated with the broadening of interest among older females in personal enrichment, as indicated when older females. This difference between the two female groups may be associated with their preference for qualitative concern but that older females have a higher preference and indicates that there is no difference between older and younger male applicants in reported in Table 7 show an interaction at the 0.05 level, between age-

The ANOVA reported in Table 7 show an interaction at the 0.05 level, between age-

The study does not provide for any systematic analysis of those possibilities. However, the evidence collected in preference for independent learning and social setting. However, the evidence collected in have had an influence may have resulted in the older apprentices expressing lower Competence and Beijing, the suggestion that rapid management supervision practices may also be prerequisites. This form of learning among the older apprentices, coupled with and restricting learning are more likely to be the forms of learning experienced by novices, such as correction, the addition of new information to existing knowledge, or knowledge of new information to existing knowledge of

Rumelt and Norman (1978) they suggest that the Rumelthi and Norman notion of...
By means within major CSTI scales for each occupational (ASCO) classification.

Occupational classification: Table 7.11 also below, shows the ranking of each subscale.

Figure 7.5 below is a graphical representation of the means for each subscale for each

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Mean s.d</th>
<th>Mean s.d</th>
<th>Mean s.d</th>
<th>Mean s.d</th>
<th>Mean s.d</th>
<th>Mean s.d</th>
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<tbody>
<tr>
<td>Direct Exp</td>
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<td>4.08</td>
<td>1.39</td>
<td>1.79</td>
<td>4.47</td>
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<td>3.70</td>
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<td>3.93</td>
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<td>2.63</td>
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<td>3.16</td>
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<td>3.16</td>
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</table>

Mean s.d: Table 7.10 shows the means and standard deviations for each subscale by occupational classification.
Table 7.1: Ranking of subscales by mean within each major scale, by occupational classification.

Figure 7.5: CLSI subscale means by occupational classification.
Table 7.13: Summary of F-Ratios and p-Levels (p < 0.05; **p < 0.01). Analyses of variance by subscale by occupational classification and conditions.

<table>
<thead>
<tr>
<th>CLSI Subscale</th>
<th>Direct Experience</th>
<th>Iconic</th>
<th>Reading</th>
<th>Listening</th>
<th>Mode</th>
<th>People</th>
<th>Inanimate</th>
<th>Qualitative</th>
<th>Numeric</th>
<th>Interest</th>
<th>Authority</th>
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<th>Competition</th>
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</tbody>
</table>

The ANOVAs calculated for each of the subscales indicate significant differences.
by the scores for the following subscales are probably attributable to gender.

Table 7.13 (age group by gender ANOVAs) and Table 7.13 indicates that the differences shown
in the other occupational groups. Comparison of Table 7.5 (gender subscale means), Table

Happiness sample was largely female (80%), while females were poorly represented in

suggests that gender differences may account for the majority of the contrast. The

between the Happiness apparatus and the other three occupational groups

the gender distributions in each of the groups. The large number of differences identified
differences between occupational classifications may be at least partially attributable to


<table>
<thead>
<tr>
<th>Building (B)</th>
<th>Building (B)</th>
</tr>
</thead>
<tbody>
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<td>People (H)</td>
</tr>
<tr>
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<td>Qualitative (H)</td>
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<td>Numeric (E)</td>
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<td>Independent (H)</td>
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<table>
<thead>
<tr>
<th>Store (E)</th>
<th>Store (E)</th>
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<tbody>
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<td>Direct Experience (M)</td>
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<td>Numeric (M)</td>
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<tr>
<td>Numeric (M)</td>
<td>Numeric (M)</td>
</tr>
</tbody>
</table>


Table 7.13: Contrast pairs contributing to significant subscale differences. By

shows the contrasting pairs contributing to the significant p-ratio, as shown by the

subscale

Subscale name indicates the member of the pair most Prevailing that
occupational classification p-ratio. Letters in brackets following the

subscale

shows the contrasting pairs contributing to the significant p-ratio, as shown by the
Hansen was most interested in collective style differences based on the group embedded
using the Wilkin et al. (1977) Held dependent-field independent interaction framework.

Students with varying collective and individual orientation differences at college level between
areas. However, Hansen (1992) investigated differences in apprenticeship in different occupational
and health and community service students. These appear to be no other work published
students. Here the learning preferences differences between these two occupational, business,
have shown that learning styles or learning preferences are related to the concept of
between occupations (e.g. Doctor, 1978; Doctor & Bloom, 1977). Several researchers
in clerical and sales occupations. Other researchers have also shown style differences
shown distinctive learning styles for workers in clerical and managerial positions, and
Reading-Brown and Hayden drew attention to work by Dorsey and Person (1984) who

7.8 Occupational differences - discussion

By Gender:

Hansen's approach, since it was not identified in Tables 7.5 and 7.7 as influenced
apprenticeship. The detailed supervise is not likely to be gender influenced in the context with
Differences shown between the other occupational groups are less likely to be gender

- Direct Experience
- Reading
- Imaginative
- Qualitative
- Numeric
- Independent
- Cooperation
Building load expressions (typically work in terms such that the product of any given
immediate destruction after completion to enable recording of material's. Additionally,
appearances in the training environment because of its lack of portability, and is almost
be made for building appearances, whose product is also not highly visible to other
evaluation of their work that are readily/material appearances. A similar argument can
casily compared product, such that they may be less concerned about the competencies
or others. Electrical appearances on the other hand, do not produce a handleable and
produce a product that can be inspected, handled, and compared for quality with the work
the context within which the appearances work. Needs/thinking appearances may be
does not lend itself to intuitive explanation. However, a plausible explanation may lie in
Hardiness is likely to be gender related, with the difference with Electrical appearances
Comparison than the Electrical or Hardiness appearances also showed a stronger preference for
argument. Needs/thinking appearances also showed a stronger preference for

than in the other two trades, but it is acknowledged that this is a highly speculative
analysis associated with component production and load assessments is typically less
work at the trade level is critical, and according to a plan. The need to make more detailed
By building load expressions lend to be larger quantity estimation since the majority of
numerical calculations to meet tolerance standards within the industry. Calculations made
the greater need among modular/mechanizing trades and electrical trades to make the
resulted in the occupational sample, but it is also possible that the result is derived from
refers to the lower performance for numerical control is related to the higher number of
Results of the current investigation indicated that Modular/mechanizing appearances are more
showed no differences between students in the two majors.

Figure 1. Although the showed there were differences due to ethnicity of students, he
The higher preference for Direct Experience shown by Metals and Machining apprentices over Building apprentices, although intriguing, may be related to the fact that Metals and Machining apprentices work more likely to work on models or constructions which are non-situated, and which are not the same as those that they will produce in the workplace. Building apprentices show a higher preference than Electrical apprentices for content dealing with People, again this may be attributable to the higher need for team work in the industry. Although these are very speculative comments, much more research is required to establish defensible reasons for these differences.

Taking the Occupational Classifications one-way ANOVA (Table 7.12) together with the Scheffé tests results (Table 7.13), a number of conclusions can be reached about the differences between Occupational Classifications:

- Although all apprentices show a strong preference for Detail in learning programs, this preference is strongest among Metals/Machining apprentices, and weakest among Hard Dressing apprentices.
- Independent Learning:
  - Non-Hard Dressing apprentices have a higher preference than Electrical apprentices for working with People.
- Apprentices for working with People related content:
  - Hard Dressing apprentices have a higher preference than Non-Hard Dressing apprentices.
  - Hard Dressing apprentices in a context of all apprentices assigning a low preference to reading as a mode of learning.
- Metals/Machining apprentices show a Direct Experience as their preferred mode of learning, stronger than Hard Dressing apprentices; and Metals/Machining apprentices show it higher than Building apprentices.
Within sample differences have been investigated using gender, age-group and occupational classification as the independent variables. Differences identified in this chapter are summarised below, subscale by subscale.

**Summary of Within Sample Differences**

7.9

Concerning towards people and qualitative concern and less preferring of numeric and quantitative where the largely female Hardiness appearance groups is more favorably disposed accepting of text-based learning material. The major difference lies between the genders, than the other groups; and there is also evidence (Table 7.13) that they may be more and 7.13) that Hardiness appearances may be more amenable to independent learning and be valuable in the design of instruction. There is evidence, for example (see Tables 7.12 achieved, the Hardiness appearance's however, do indicate some differences that may be made to suit the clientele may be limited by the construction of the components to be used than the conditions of modes subscales, such instructional design decisions gender differences, however, tend to be concentrated in the least subscales groups. Gender differences, however, tend to be concentrated in the least subscales within the three groups with variation in process being made to suit gender differences within the groups which comprise, male dominated, female and show the same instructional preference, with some minor variations between them. However, from an instructional point of view, the differences between those occupational groups are small. The results of the Occupational Classification analysis indicate that these appearances rank completion low in their preferences.

Mechanical/appraisal appearances have a higher preference for a competitive learning environment than other Hardiness or Educational appearances, although all
ANOVAs indicate that males rank their subscales significantly higher than females.

- Instrucor - Ranked by the total group as the most preferred Interest subscale.
- Interactive Subscores

    - Showing a higher preference than either Handicaps or Electrical appliances.
    - Environmental Hardships/Handicaps accounted for this difference.
    - Environmental/Handicaps have a higher preference than females for comprehensive
    - No ANOVAs indicated that
    - Respondents ranked first of eight Interest subscales.
    - High scores on any independent variable, the
    - Independent Learning, and so do females.
    - Younger respondents have a higher preference than older respondents for
    - Independence - Ranked sixth by the overall group, closer and/or similar subscales.
    - Higher learning goals, and do male respondents.
    - Younger respondents have a higher preference than older respondents for setting
    - Goal Setting - Ranked fifth by the overall sample, closer and/or similar subscales.
    - ANOVAs showing no differences related to any independent variable.
    - Poor - This subscale was ranked fourth for the overall appearance subscale group, with the
    - Differences.
    - and the ANOVAs conducted on each of the independent variables showed no
    - Instructior - For all groups combined this subscale was ranked third in preference.
    - Subscale was significantly lower than the Handicaps/Mechanical appearance.
    - Classification and/or subscale showing the Handicaps/Mechanical appearance preference for this
    - Detailed - This subscale was ranked highly by all groups, with the Occupational
    - Variables.
    - ANOVAs showing no differences between groups on any of the independent
    - Organisation - This subscale was ranked consistently highly by all groups, with the

7.9.7 Conditions of Learning Subscores
The next chapter reports on the results of a factor analysis conducted on the CMT data for the appearance sample.

Statistical Significance:

- Male/Malefriend appearances ranked highest in importance, but without
  male/male, an interesting finding from the ranking analysis was that
  showed female appearance to be more amenable to presentation involving listening
  - Reading - This subscale was ranked a high by all groups, but the ANOVAs
  ANOVAs indicated a stronger preference among female appearance for listening.
  Listening - Ranked third and only closely behind Loneliness, for the total group, the
  significantly more than do older appearances.
  ANOVAs indicated that younger appearance prefers Loneliness presentation
  Loneliness - Ranked by the total group second of the four Mode subscales, the
  appearance.
  that this preference was stronger among same appearance than among female
  consistently above the highest 0.05 level. Among Male and female
  Direct Experience - Ranked by all groups (gender, age-group, occupation)

7.9.3 Mode Subscales

- Younger colleagues.
- Effect indicated that this preference is higher among older females than younger
  qualitatively common significantly more than do males appearances. An interaction
  Qualitative - Ranked fourth by the total group, females were shown to prefer
  females appearance.
- Numeric - Ranked third, males prefer numeric common significantly more than do
  common significantly more than male.
- People - Ranked second by the total group, females were shown to prefer people
At the same time, the data discussed in Chapter 7 provide evidence that the dimension of differences is a matter of degree.

Chapter 8: FACTOR ANALYSIS

Introduction
8.2 Factor Analysis: Results and Discussion

Identified by Kiing and his colleagues: Gruber and Cattell (1961), or the Wholes-Analyzer and Verhelst-Huminger factors of Cattell and Cattell (1961), differences in the identification of factors similar to those shown in previous research by these participants. These differences in the factor analysis of the Cattell and Cattell (1961) matrices are described in Chapter. It is expected that the results of the factor analysis conducted in the current study will be consistent with those of the Cattell and Cattell (1961) study, as they have been confirmed in the current investigation on an exploratory level.

The details of the approach to the factor analysis conducted in the current study were described in Chapter 6.

From a theoretical basis, a new development of a theory of the possible nature of the Cattell-Cattell approach to the factor analysis is given by Gruber and Cattell. The Cattell-Cattell approach has been used to move from their conceptualization of cognitive style to an understanding of personality based on the analysis of the factors of the Cattell-Cattell (1961) study. The Cattell-Cattell (1961) study is interesting in that it has attempted to develop a learning and teaching approach in each of the factors revealed by Kiing and his colleagues. More recently, Kiing and his colleagues (1961) have investigated the relationship between cognitive style and instructional preference, and have begun to draw together the personal styles and information-processing approaches in each of the factors revealed by Kiing and his colleagues.

The results of these studies also provide the intuitive evidence discussed above for the Cattell-Cattell approach. The Cattell-Cattell approach found the learning styles very highly, and the qualitative subscales low.

The lower preferences associated with the Learning and Reading subscales, and the higher preferences associated with the Direct Experience and Logical subscales, and the models of presentation measured by the Direct Experience and Logical subscales, and...
Factor 1: Verbal-Non-Verbal Preference

Factor 2: Visual-Spatial Preference

Factor 3: Emotion-Intellect Preference

Table 8.1: Three Factor Structure of the 16 CTSI Subscales for all apparent (n=389)

Table 8.1 shows the three factor structure and factor loadings in detail.

Results: Computation of the final test indicated a significant result at beyond the 0.001 level. 

Additionaly, the results of this study show a significant result. 

The factorability of the matrix was established through the acceptability of 389 subjects 

Factor 1: Verbal-Non-Verbal Preference

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which qualitative information is provided through reading, as opposed to learning about
and the degree of the subcases that lead to the factor indicates first, the degree to
the factor identification procedure for qualitative content analysis through reading
shows preference for learning about physical objects through direct experience, and little

Inspection of the subcase means for the total group of applicants (Table 7.2) shows a

appearances.

been distributed along a dimension similar to the dimension shown here for
print-based factors. Indicating that the business studies learners in their sample may have

investigation of instructional preferences where they identified a print-based

Verbal–Non-verbal dimension also provides support for the Seller-Smith and Ricking

Identification of the

Verbal–Non-verbal dimension is possibly based on a personal style approach to the research, rather than to

An investigation of a learning style (polytopia) is possible, based on personal styles applied to the research, rather than to

Description of a learning style (polytopia). Additionally, development of the styles

Concealed–Applied, it is suggested here that names are more appropriate to refer

Verbal–Non-verbal, rather than provided with the teacher and card-nario (1661) (1661)

Verbal–Non-verbal, rather than provided with the teacher and card-nario. It makes sense that

insightful learning preferences, rather than views, the teacher has been

insightful processes information verbally or through images. In the context of

psychological processes information verbally or through images, which means whether an individual

(1661) Concealed–Applied Racket, the factor appears to be related to Cognitive

direct experience. Apart from its strong relationship with the teacher and card-nario

direct experience in the amount of qualitative learning material that is delivered through

The identification of this factor indicates that the learning preferences of applicants are

The similarity between the two factors

Necessitates yielded an index of 0.83 (961). This relation was used in the index developed by Callie, Balic, Horn and

the present study was used in the index developed by Callie, Balic, Horn, and

between the factor identified by Gather and Card-nario (1661) and the factor identified in

Organization suggests that loaded on the teacher and card-nario factor, the similarity

clearly interrelated but since it did not include the other non-homogeneously related

Inference, not been considered distinct. The factor identified for appearance is more

loading was not separated by at least 0.15 from the loading on Factor 2 and thus

subjective as compared to the amount of qualitative learning material that is delivered through

Although, this is not related to the qualitative learning material that is delivered through

The research indicates that the appearance of the factor identified for appearance is more

Research and higher negative loadings for manipulative and Direct Experience. Accordingly,

current investigation has shown higher positive loadings for Qualitative, Learning and

higher positive factor loadings for the subcases Organization, Qualitative, Learning and
This factor indicates that performance on the learning program, with
the provision by the content of learning and the detail provided on the learning program, with

thinking.

and knowledge are characterized by similar patterns that promote connection
Johnson (1961) and Sherrington (1964) who argue that content areas such as
learning is associated with a preference for structure in this factor is supported by the work of
and the concepts are less structured. The suggestion that the number of concepts may be
and the concepts are less structured. The suggestion that the number of concepts may be
learning of well-structured concepts. The other end of the factor
demands structure and the learning of well-structured concepts. The other end of the factor
learning situation in which is well structured and definite, and where the content is
environment and the controlled by the instructor. The subscale Authority,
learning situation in which is well structured and definite, and where the content is
load positively along with Number are associated with the clarity of learning.
An interpretation that is attractive is that of Structure Content, since the subscales that
include the factor is measuring something more complex than only content interest
end, and people on the other, high loadings from the Detailed Authority subscale.
Although these are internal components to the factor with Number loading highly at one

that they did not also identify a factor similar to Factor 2.

Because very similar to the two identified by Cotton and Cattellolo (1961), it is

Recall that the current study has identified two
solution was the most interpretable. Given that the current study has identified two
factor solution was the same although a number of solutions were explored, the two factor
possible presence of a third factor, and the explanation given for the choice of a two
factor identified by Cotton and Cattellolo. There is no discussion in their paper of the
factor identified by Cotton and Cattellolo. In their two factor solution this factor was not identified by Cotton and Cattellolo.

Factor 2: Structure-Content Preference

Factor are ranked either at the top or the bottom.

Their major scales, and inferences that for applications the subscales that load on this
options, Table 7.4 shows the ranking by mean of each Cattellolo subscale within the
application much better the hands on direct experience learning about numerous
the highest in application thus any given learning program. Second, the result indicates
physical options through hands on direct experience is a major variable in determining
Subscores were reversed between the current study and those of Chuter and Cunningham. Between the two studies, the raw score for one of the factors was 1.0 (p<0.001), indicating a perfect match. The signs of the

Cronbach's alpha for the second (N=107) and second and third factors were 0.96 and 0.99, respectively. The third and fourth factors were higher at one of the other ends of the factor. The second factor, which is conceptually related to that of the fourth factor, was lower in the current study. The fourth factor, which represents the second of the variable, is higher at one of the other ends of the factor. No other differences were found.

This factor corresponds precisely with the second factor identified by Chuter and Cunningham in the study of self-directed learning preference.

Factor 3: Self-directed learning preference

is provided and there is little need for students to develop their preferences. The learning (self-directed learning preference) of a factor associated with student preference is provided, however, in the concept of orthogonality. The relationship between Wohlwill and Kluwer's (1971) and Richmond and Kesler-Smith (1961) and seen by Wohlwill and Cherna

Factor 3, discussed below, is more similar in the Flod-Mönstedt-Flod-Indergaard (1961) model. The factors in the Kluwer model are determined by qualitative descriptions in determining the sequence and significance of learning programs. However, qualitative descriptions in determining the sequence and significance of learning programs. However, qualitative descriptions in determining the sequence and significance of learning programs. However, qualitative descriptions in determining the sequence and significance of learning programs. However, qualitative descriptions in determining the sequence and significance of learning programs.

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Factor 3 does not lend itself to ready interpretation with other factors of preference, or

environmental. Objectives and requirements and how highly the instructor controls the learning experience provided evidence that application differences are

learning about people. The factor also provided evidence that application differences are

the level of criterion that is met in relation to the theoretical, provides support for the performance of preferences for one or more of the criterion for another is associated with

a high degree of concern/need to pursue at one end of the dimension, and a less
environment where their peers and instructors are supportive and friendly. Inspection of the other end of the dimension represents learners who prefer to learn collaboratively, where the other end learning goals and pursue them through working in groups. The difference in learning goals and pursued through working in groups demonstrates the self-directed aspect of the dimension, which pays particular attention to the role of self-directed learning. Hence, learners at the self-directed end of this dimension prefer to identify and express their preferences and develop their own learning processes. Significant portions of the learners on this end of the dimension are only interested in learning and are less concerned with the goals and instructors at the collaborative end of the dimension.

The distinction of positive teachings of subscale goals, such as Self-directed and Independent, are not entirely independent studies in that study are those in the current sample of preferences, such that the two end subscales of preference for learning, as seen in this study, however, can be identified, a single factor describes the different subscales. Studies (1974) have been identified to describe collaborative and self-directed learning. Similarly to collaboratively and independent student’s perceptions of VET learners, the learners were dichotomized in their study as two separate factors, while in the current study with apprenticeships, one factor has been identified to describe collaborative and independent learning. Preferences of VET learners, and in particular, VET learners from the United Kingdom, were identified in a study by Smith (1978). Similarly in a recent study by Smith and Smith (2000), the learners of the learner and Smith and Smith (1978) have identified the nature of their learning preferences in collaborative and independent learning. These studies suggest that learners’ preferences for learning are multidimensional and that these dimensions can be identified as self-directed, collaborative, and independent.

In a recent study by Smith and Smith (2000), the learners of the learner and Smith and Smith (1978) have identified the nature of their learning preferences in collaborative and independent learning. These studies suggest that learners’ preferences for learning are multidimensional and that these dimensions can be identified as self-directed, collaborative, and independent.

Although outcome criteria such as Self-directed and Independent were interpreted as different dimensions of the learners’ preferences, the dimensions of Independent and Collaborative were interpreted as a dimension of the learners’ preferences. However, although Collaborative and Independent were interpreted as different dimensions of the learners’ preferences, the dimensions of Independent and Collaborative were interpreted as a dimension of the learners’ preferences.
Identified interactions even close to significance at a 0.05 level. However, the two-way analyses were conducted on an exploratory basis separate from small sample sizes produce considerable room for interpretative error. To be prudent, explaining only a minority of the variance, and the deployment of further analyses to explain 50% or more of factor scores of small groups since these scores are based already on factors and/or factor scores of each group. The authors advise caution in only eleven females in the older appearance age-group. The analysis advised caution in calculating for each gender. It is acknowledged that two-way ANOVAs could have been calculated for each gender, and the results of a one-way ANOVA calculated.

Principal component factor analyses model has enabled precise factor scores to be calculated. The use of a model enables comparison between each of the factor scores for each gender. The calculated factor scores were also calculated for each gender for each of the six identified factors allowing the regression equation available through SPSS* to be calculated.

Gender Differences

Table 8.2 shows these factor scores by gender, and the results of a one-way ANOVA conducted.

more self-directed learning appears to be effective, particularly the need to be put in place to enable a part of a more friendly, interactive, and dependent environment. It also indicates that different learning styles require different environments. This finding should not be interpreted to mean that one style leams better than another. Rather, in independent learning, the learning should provide independent learning tasks, not learn the skills required to engage in independent learning. This finding suggests the need for more research on the social and intellectual environment of independent learners.

The importance of the self-directed learning environment on the establishment of independent learning appears to be particularly important in the direct influence on the establishment of independent learning. This finding suggests the need for more research on the social and intellectual environment of independent learners. The importance of the self-directed learning environment on the establishment of independent learning appears to be particularly important in the direct influence on the establishment of independent learning.

Table 8.3 indicates that independent learning and goal setting is less

against the subscale means (see Tables 7.3, Figures 7.1 to 7.3) and the subscale
interest, as has been shown also by Brainard and Cramer (1977), Heldgren, Pedersen, and their performance on the factor is most likely to be attributed to this difference in concomitant variables. A highly significant gender difference in the score is associated with the number and people subscales. Both these subscales show a gender difference in the factor scores, indicating the gender difference in the factor scores. In Chapter 7, did not identify a significant difference between the means of girls and boys for the people subscale. The girls subscale, Number, and a highly negative loading for the people subscale. The detailed analysis of the Structure factor has been presented in the previous section of this chapter.

Identifying a Verbal-Non-verbal factor, on which females also scored higher than males. Females have a higher preference for self-directed learning than males.

Table 8.2: Means, standard deviations and F-ratios for factor scores, by gender.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean (Females)</th>
<th>Mean (Males)</th>
<th>F-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal</td>
<td>7.06</td>
<td>5.94</td>
<td>1.02</td>
</tr>
<tr>
<td>Standard</td>
<td>0.83</td>
<td>0.77</td>
<td>6.86</td>
</tr>
<tr>
<td>Self-directed</td>
<td>1.02</td>
<td>0.77</td>
<td>6.86</td>
</tr>
</tbody>
</table>

It is important to note that factor scores provide for comparisons only, rather than

10.0 > d**
Table 8.3 shows hierarchy scores by age groups, and the results of one-way ANOVA.

8.4 Age-Group Differences

Significant criterion has been set on the size of factor loadings. Interpretation, the loading of 0.30 would have been considered as part of the factor loadings in a less stringent set of criteria for induction of subscales in factor analysis. In the current investigation, the competition subscale has loaded at 0.30. However, a more precise figure set on the size of factor loadings. Interpretation, the competition subscale has loaded at 0.30.

The subgroups have shown that a higher correlation in the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30.

Regression analysis also shows that the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30.

The regression analysis also shows that the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30.

Regression analysis also shows that the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30.

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Regression analysis also shows that the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30. However, the competition subscale has loaded at 0.30.
was made, the basis of research by Brown (1993) and others. The more self-directed learning, the higher the student's achievement. The higher achievement would result in a higher self-directed learning. The higher achievement may have been due to the higher self-directed learning. The higher self-directed learning may have been due to the higher achievement. In the discussion, it was suggested that younger students' preferences may have been due to the higher self-directed learning. This result from the factor scores reflects the findings from Chapter 7. The current finding of a higher preference for literature among older students is consistent with the findings that older students also have a lower preference for literature. The students have less need for course and classroom structure than younger students. The preference for structure is not consistent with Holland's (1980) results that students have a higher preference for structure. The results are supported by the subscale analysis. The finding that older students have a higher preference for structure is not consistent with the subscale analysis. The findings for the subscale analysis showed a significant age-group difference in the subscale analyses. The factor score difference in the subscale analyses and a higher negative loading from the People subscale, none of which are provided.

The Structure factor has high positive loadings from the Detail, Authority, and Number.

The important to note in a factor score difference.

The Verbal factor, the difference in the subscale scores has not been sufficiently discussed in Chapter 7. The combination of subscales loading on the Verbal factor (Table 8.3) showed a significant difference between the age groups. Older students had higher scores on the Verbal factor.

### Table 8.3: Means, Standard Deviations, and P-Ratios for Factor Scores by Age Group

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Under 21</th>
<th>21 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEL-directed</td>
<td>1.386</td>
<td>0.897</td>
<td>0.604</td>
<td>0.090</td>
</tr>
<tr>
<td>Structure</td>
<td>1.000</td>
<td>0.082</td>
<td>0.096</td>
<td>0.004</td>
</tr>
<tr>
<td>Verbal</td>
<td>0.973</td>
<td>0.062</td>
<td>0.096</td>
<td>0.004</td>
</tr>
</tbody>
</table>

In summary, these results indicate that:

- Older students have a lower preference for self-directed learning.
- Older students have a higher preference for structure, than younger students.
- There is no difference between the age groups on the Verbal factor.
### Occupational classification.

Table 8.4: Means, standard deviations and $F$-ratios for factor scores. By occupational groups.

<table>
<thead>
<tr>
<th>P-factor</th>
<th>Mean</th>
<th>S.D.</th>
<th>Mean</th>
<th>S.D.</th>
<th>Mean</th>
<th>S.D.</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

8.5 Differences between occupational groups

When to be independent

Direction because their management supervisor expectations may not have encouraged

They have suggested that older and more experienced workers may require more

Applicants is provided by Compton and Breen (1965) and was discussed in Chapter 7.

A second possibility explanation for the higher need for structure among the older

Structure and instructor support

Evidence for high participation on commonly viewed as requiring larger programs.

Studies of assumptions underpinning learning programs in higher education in her

Support them more frequently learners. It is also interesting that Calder (1969) in her

have observed that novice learners are more likely to depend on structure and instructor

To learning than their younger counterparts. Both Barry (1965) and White (1967) have

preference are capable of development. It is also likely that the older applicants were

Sander-Smith and Riddle (1961), and Smith and中国经济 (1967), that learning

explanation the current findings. Suggestion of such an influence is also consistent with

preferences that been influenced by those high school experiences would assist in

younger applicants because not all of the older ones. The suggestion that

change at the high school level — changes that would have been experienced by the

Pierce-Wilson (1961), that appearance preferences may have been influenced by the
and Handwriting appearances. The Self- Directed factor scores indicated a significant difference only between Electrical and Handwriting appearances. The result may be due to the exacting and potentially identity plausible reasons for the research would be needed to verify that the difference observed is a reliable one and to suggest a common environment of a building site. For this result to be more meaningful, further research is required. Where buildings appearances are more likely to be familiar with the less practical components of their training and their work in more highly structured programs, additional, both Mechanical/Engineering and Electrical appearances undetect the difference shown between these buildings. The difference shown between the buildings were strongly differentiated by gender. The difference shown by gender, since the number and subgroups both load on the factor considerably to gender, since the number and subgroups both load on the factor considerably to gender was discussed in subgroups. In any of the other three appearances groups was discussed in subgroups. The finding that Handwriting appearances have a higher preference for verbal

- For the Self-Directed factor, the only significant difference was between the Mechanical/Engineering and Electrical appearances.
- There was no difference between Mechanical/Engineering and Building.
- There were no differences between the three occupational groups; between the Mechanical/Engineering and Building.

- For the Self-Directed factor, there were no significant differences between the Handwriting samples and each of the three occupational groups. For the Mechanical/Engineering and Building, there were no significant differences between the Handwriting and the Handwriting.

- For the Verbal factor, the Scholastic Test scores indicate that the Handwriting sample is significantly different from the other three occupational groups, and the data show that the Scholastic Test scores for the Handwriting are lower than those for the other groups.
more likely to be selective learners than to engage in problem solving.

- more highly reaches to groups.

- the clustering of concepts into large and loose groups rather than a number of
  presented and restructured for a different concept.

- difficulty taking an element of learning out of the context within which it is
  Other characteristics assigned to this cognitive style by Wickens et al. concluded:

- need learning to be organized and the organization to be known in advance.
- require externally defined goals.
- have areas of work or study that involve others.
- are more interested in the concrete than in the abstract or theoretical.
- show a social orientation and like to be with people.
- they are attentive to, and make use of, prevailing social frames of reference.

Appearances appear to have the following characteristics of Wholists:

- with appearances.

These results provide some confirmation for the results of the present study.

College level are characterized by a divergent style; and that they are passive, or selective,
styles. Reading-Brown and Hyden (1969) have shown that technology students at
the Wholists family and, in one of the few available studies of technology learners,
Reading and Safer-Smith (1970) have also included Kohn’s (1970) divergent style within
characteristics of field-dependent or, in Reading and Safer-Smith’s terms, as Wholists.
chapter indicate that appearances in the current sample are well described by the
characteristics reported in Chapter 7, and the factor analysis described in the
appearance. Field-dependent and Field-independent learners. Inspection of the findings for
characteristic style has derived from Wickens’s (1970) Field-dependent–Field-independent
characteristic style has derived from Wickens’s (1970) have reported that the Wholists-Antipode dimension of

Discussion

Appearances. People work may result in greater self-direction of learning among Handlissers
above the small group handliss environment, where typically only two or three
controlled, when there is support from instructors and superiors. Also, as noted
dangerous name of electrical work, whose electrical applications may feel more
better than learners who were characterized by the other three quadrants in the two

"Multimodal" learners, with whom the information was presented in the form of verbal

information, preferred images. When the information was presented in large chunks of verbal

content, and where expectations of verbal information were very high, results indicated that Verbal-Visual learners performed better. When the amount of verbal

information was decreased, the results indicated that Visual-Verbal learners performed

better. When the visual information was not present, the two groups of learners were not

differentiated. Verbal-Visual learners, who were characterized by the presence of

information in each learning sequence, who also had an advantage on the second task,

performed better than Verbal-Visual learners. The study indicated that Verbal-Visual learners

performed better when the amount of verbal information was high, and that Verbal-Visual

learners performed better when the visual information was low. The results indicate that Verbal-Visual learners have a higher preference for verbal information when

the amount of visual information is low. The study also indicated that Verbal-Visual learners

had a higher preference for verbal information when the amount of visual information is low.

The study indicated that Verbal-Visual learners have a higher preference for verbal information when the amount of visual information is low. The study also indicated that Verbal-Visual learners

had a higher preference for verbal information when the amount of visual information is low.

Rhiney and Stadler-Smithe (1961) have used the two-dimensional model as a framework.

Rhiney and Stadler-Smithe's model (1961) indicates that the preferences for the two dimensions are defined by

the sense. The preferences have several characteristics of verbal-dependence, or

the amount of information in the form of visual representations, and the amount of verbal

information. The preferences show a clear preference among auditory learners for visually presented

information, with a preference for verbal-learning methods, and with the learners with

verbal preferences. The model proposes that the work of Rhiney and Stadler-Smithe is an effective one.

The model proposed through the work of Rhiney and Stadler-Smithe is in accordance with

mental or auditory learning styles in the four quadrants.

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The model proposed through the work of Rhiney and Stadler-Smithe is in accordance with

mental or auditory learning styles in the four quadrants.
The combination of instructional methods with the findings of the present study has led to the development of a model. This model is called the "Dimensions of Instructional Effectiveness" (DIE). The DIE model is based on the idea that effective instruction is a complex interplay of various dimensions. These dimensions include

1. Cognitive Style
2. Learning Styles
3. Instructor Characteristics
4. Instructional Environment
5. Learning Environment

Each of these dimensions has been shown to influence learning outcomes. For example, students with a "field-dependent" cognitive style tend to perform better in instructional settings where the instructor is highly directive. On the other hand, "field-independent" students perform better in self-directed learning environments.

The DIE model provides a framework for understanding the complex interplay between these dimensions and instructional effectiveness. By considering all five dimensions, educators can design more effective instructional strategies that cater to the diverse needs of learners.
used to at least compensate partially for deficiencies that may attend style.

(1967) have suggested that the context for learning and the design of delivery can be
learning demands that are not congruent with the learner's style. Khanga and Salt-Eshmelin
the direct experience of the workplace. Shaded learning can also reduce the text
the same time, the authentic method lends credible information to be processed visually through
provide for the student's social context, and concrete needs of the workplace while, at the
interaction with others in the workplace. These characteristics of shaded learning
identified by Martin, Pritchard, and Puri (1992a, 1992b), and each of these processes
which vary considerably greatly. Interestingly enough, in the context of a module of work in
be based on a certain of recent learning experience. To meet this criterion, apprentices
The situation recall technique in learning research demands that interactive responses
apprentices interviewed were male
interview each apprentice. The two interviewing apprentices were female, and all other
subjects were available and interested in the project. Apprentices were made to
a basis of willingness and on the recommendation of apprentice instructors that the
The apprentices were selected from a local institute of technical and further education on
Electrical and High-voltage trades were interviewed and two from Electro-technical trades.
Two from each of
selected from the Electrical, Electro-technical, and High-voltage trades. Two from each of
Comparisons of knowledge were obtained through interviews using the Meridian, Parking
To recall briefly from Chapter 6, learning strategies employed by apprentices in the

Data Collection

Workplace strategies adapted from Billett (1996) were organized under the O'Malley


consistent workplace skills and knowledge.
and Cavanaugh (1991) (9996) were developed in the current study and reviewed

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CHAPTER 9: STRATEGIES USED FOR LEARNING IN THE WORKPLACE

Introduction
where there were differences in strategy and to understand the same classification. Where there were differences in strategy, the researchers inspected the combined responses of appearances in each category. To achieve reliability in the classification assigned to each of the learning situations, a less than four appearances, the strategy was placed in the category if its usage was reported by four appearances reported using the process, the strategy was placed in the category if at least used only in a restricted way - a strategy was placed in this category if at least reported use - a strategy was placed in this category if at least five appearances

These single sets of responses were then categorized into the following classification:

Individual responses into a single set of group responses for each identified strategy were transcribed and analyzed conducted by collecting and summarizing the interviews moved to the discussion of the particular situations they comprised. The interviews learning and to ensure context in the interviews, following their discussion, the interview

This discussion was used largely to have the interviewees begin to reflect on their next part of the skill implementation.

doing, or to establish for themselves the method they should be employing for the appearances used the learning guides as reference and a verification of what they were supposed the next activity to engage in with the skill development. Where this occurred, the learning guide was only referred to again when they became uncertain the skill to be learned, and they began to move straight to the hands on work (see Collings, 1997). The learning guide was only referred to again when they became uncertain of the relevant section of the learning guide. First to 89 in the overall understanding of the learning guides involved. They also discussed how they used the written learning guides to and more fruitful in terms of developing an understanding of the skill, and the activity they disliked. But they each viewed learning from hands on as more enjoyable a mode of learning was hands on. Reading the learning guide was by no means an skill. The responses from the skill of the appearance were common in that their preferred approach in a new learning task, where their objective was the overall development of a satisfaction. Each appearance was asked to talk a little about their preferred ways of

Chapter 6, and derived from the work of Biller (1996a),
Key to assessment: determine whom and what practice them more frequently than skills they did not see as separable nodes of the key material. While the key skills, the marginal process was to mark processes such as highlighting and underlining, and note reactions making processes dependent in assessment. In a typical model, they used a variety of text components, including marginal notes on a basis of what they were required to know prior to having the material. The first role was very much associated with assessment, while the other role of key applications was not reported using selection saw two roles for the identification of key processes. The one who did not use it said “I take it all in - I find that helps me more.” The seven included one of the applications interrelated with selection as a strategy to aid learning.

All but one of the applications interrelated with selection as a strategy to aid learning.

Research was able to determine the frequency of use of the more controlled environment of the marginal, pairing and underlining of marginal text. Although this study has not controlled the experimentally, it is evident that students who used this strategy were able to identify the text. Marginal, pairing, and underlining (1992a, 1992b) compared the marginal strategies of students who used the marginal strategies of assessment, or the workspace use. In their study of discourse, education student use of the process of selection and evaluation were largely used by applications to their own

<table>
<thead>
<tr>
<th>Frequent use</th>
<th>Restricted use</th>
<th>Rarely used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive monitoring</td>
<td>Strategy planning</td>
<td>Orientation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequent use</th>
<th>Restricted use</th>
<th>Rarely used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern of use of metacognitive strategies</td>
<td>9.1</td>
<td></td>
</tr>
</tbody>
</table>

Table 9.1: Shows the pattern of metacognitive processes reported by applications to their own

Metacognitive strategies

Classification of each strategy: table 9.1 shows the pattern of metacognitive processes reported by applications to their own

Classification of each strategy:
The findings of Smith and Smith (1971) are consistent with those reported by the majority of the studies reviewed in this chapter. However, the studies provided evidence of the value in their general conclusions. While the findings are consistent with those reported by the majority of the studies reviewed in this chapter, the results of the studies reviewed in this chapter are based on a larger sample of participants than those reported by the majority of the studies reviewed in this chapter. These findings are also consistent with those of previous research, which has shown that frequent practice and problem solving are effective in learning by promoting the retention of new material. These findings are also consistent with those reported by the majority of the studies reviewed in this chapter.

In summary, the findings are especially consistent with previous research on the role of practice and problem solving in learning. These findings are also consistent with those reported by the majority of the studies reviewed in this chapter.

(Harris et al., 1981)
A successful learning environment, as suggested by CON (1989) and Dreyfus (1982), is one that provides opportunities for learners to apply skills in a real-world context. This type of environment allows learners to develop a deeper understanding of the material, as they are encouraged to think critically about the concepts and apply them in various situations.

Successful applications can be conceptualized as a form of prediction. In this way, application can be conceptualized as a form of prediction. If educators can develop a model of the environment, they can design tasks that allow learners to practice and apply their knowledge in a real-world context. This allows learners to develop a deeper understanding of the material and to apply their knowledge in a practical setting.

Successful applications also require a high level of engagement and motivation. Learners must be motivated to apply their knowledge in a real-world context, as they will be faced with challenges and obstacles that they must overcome. This requires a strong commitment to learning, as learners must be willing to put in the time and effort required to master the material.

A unique aspect of this approach is that it focuses on the learner's understanding of the material. The emphasis is on the learner's ability to apply their knowledge in a real-world context, as they are encouraged to think critically about the concepts and apply them in various situations. This allows learners to develop a deeper understanding of the material and to apply their knowledge in a practical setting.

In summary, a successful learning environment is one that provides opportunities for learners to apply their knowledge in a real-world context. This allows learners to develop a deeper understanding of the material and to apply their knowledge in a practical setting. Successful applications also require a high level of engagement and motivation, as learners must be willing to put in the time and effort required to master the material. A unique aspect of this approach is that it focuses on the learner's understanding of the material, as they are encouraged to think critically about the concepts and apply them in various situations.
Learning through the entire learning guide first, then breaking the task down into parts,

To summarize, the appearance of a form of goal setting, often in response to workplace requirements,

developed were a form of goal setting, often in response to workplace requirements, and provided evidence that the plans  

of how they would go about the next study session, and provided evidence that the plans  

required that outcome. These plans were not formally designed, but rather mental pictures  

when they wanted to achieve in the session and were likely to cover in the session to  

required that they developed a plan for each learning session, which involved deciding  

The planning of individual learning sessions was evidenced by their appearances who  

would be expected of field-dependent or Weyliser.  

resulted from planning individual's influence on crucial lenses of organization. As  

session and structuring the skill development to suit those requirements. Both these  

appearances were discussed with the help of the concurrent requirements of the  

strategy was the result of embodying expectation of work requirements. One and another  

the sequence of learning and the activities that they would pursue. Immediately this  

was not so much related to the planning of the learning sessions but to the planning of  

successfully acquire each module prior to starting the next. The second form of responses  

thorough each of the skill requirements separately and at a pace that maintained them to  

formulating their learning strategies. For them, and simply began at the beginning and work  

I don't plan really. These appearances were included to take the learning guide as  

three forms of strategy planning yielded the interviewees. The first form of response  

and the gradual removal of scaffolding as expertise develops.  

consistent with Grotz (1961) notion of successful application in skill development,  

experienced task problems, but otherwise they did not refer back to the guide at all,  

interviewed had used the strategy of referring back to the learning guide only when they  

referred back to the learning guide and read the relevant sections again. All appearances  

compared a point during the execution of the task when they became uncertain, they  

application of the skill and then to start on the practical activity. Workers maintained to  

method of learning skills was to read through the entire learning guide to gain an overall  

view of the task, which they became uncertain. They  

The two appearances who had approached the task as a whole, commented that their usual  

within the structure provided.  

conclusion, appearances were predicted to only recognize material  

field-dependent concept, and with the helper's speech, and Richard (1961) Weyliser  

of analysis, the appearances were predicting consistency with the Weyliser et al (1961)  

scaffolding provided, rather than in response to in a different way. In their restricted use
Rather than employing a different one,”

to learn something is normally described by referring to the same learning behavior.

thinking and learning processes with a view to modification and improvement. Failure

In summary, apprentices do not generally engage in monitoring and evaluating their

will I go about learning that.

think now and where did I learn that. When I don’t know something I think now how

from an engineering apprenticeship who said, “Sometimes I do, yes, I’ll do sometimes and

back and say, that’s different and then I change how I learn.” A different reason came

interconnection any thoughts with one saying, “It’s weird and I can’t explain it. You still

work but not because they had ever thought about them. Only two had given

another, they may not always say that they did those things just because they seemed to

and, you to think about things in a different way. One apprentice noticed upon the fact

money, and in that manner, more than once. I wonder

for whom such as reading things more than once, more than once. I wonder

different responses. Some reported that they did use processes which seemed to work

and, interesting ideas in the interview they yielded a number of interesting and

interview reveal not whether or not they monitored their own learning strategies and

A blank look was the most common response of apprentices to the questions in the

neurocognitive strategies used regularly

workplace.

the form of analysis used. The way it was planned, and the requirements of the

within the learning session. There was clear evidence of a strong relationship between

employers’ needs. Some apprentices used strategies planning in the learning, planning and

each study session so much as planning the sequence of skill development to suit

second form of strategy planning did involve planning the sequence of the module. A second form of strategy planning did involve planning the

one of just starting at the beginning of each learning module and working through the

process of multiple’s apprentices used a number of strategies planning modules, including

unless they experienced difficulty with the task. In developing their approach to the

learning guide concerned with the skill component they did not use the guide again

normally influenced by the structure of the guide. Once they had read the part of the
the outcome, then embed them to produce work that they could apply against the image they had formed of
the appearance of text in an ongoing way that the schema they held developed was one
continuing against existing knowledge. Imagining was used as a feedback mechanism for
new knowledge schema apparent to be learned by application through recall and
and using these new schema to complete the applied task required. The schema of new
new skill development by placing new knowledge into a schema of existing knowledge.
are strategies which they considered an understanding of new learning material and
negatively used cognitive strategies

The strategies of practice, tailoring, experimentation and problem solving represent the
least and instead the knowledge to the development and use of skills in the workplace
placed in a context of current knowledge, while debugging and application were used to
continuing and transitioning are those that enable the information being processed to be
show some interesting characteristics. The strategies of recalling, imagining, linking,
the patterns of cognitive strategies used frequently across the apprentices interviewed

<table>
<thead>
<tr>
<th>Pattern of use of cognitive strategies</th>
<th>Frequently used</th>
<th>Rarely used</th>
<th>Restricted use</th>
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<tbody>
<tr>
<td>Problem solving</td>
<td></td>
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<td>Experimentation</td>
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<td>Tailoring</td>
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<td>Practice</td>
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<td>Definition</td>
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<td>Application</td>
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<td>Imagining</td>
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<td>Debugging</td>
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<td>Linking</td>
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<td>Retrieving</td>
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<tr>
<td>Other resources</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Categorising</td>
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</tbody>
</table>

Table 9.2 shows the pattern of cognitive strategies used frequently across the apprentices interviewed.
In summary, all appearances used recall of previously stored knowledge to assist with the learning process. The combination of new knowledge and, although all recallled knowledge from prior learning, did not play a role in validating links.

Different learning styles between ideas and skills. The combination strategy again appears applicable to other people. Other applications reported that the majority of the learning experience helped people who had developed skills for a particular topic and new information could be learned more quickly if the learning materials, the majority of the examples, they used during the development of learning materials, and skill. Although there was some evidence that this did not develop learning and skill. All appearances involved in a process they used for learning were reported by all appearances interviewed as a process they used for learning.

If any failure there may be in their understanding of the circuit and the circuit itself, learn or visualize, and then begin with the mental picture to paper in order to test and report. The two electrical applications both used imaging to assist the electrical application and develop a mental picture of the use of skills. The use of images was not generally reported as a device to aid all appearances interviewed used imaging with none reporting any form of imaging.

Relevance of recall is tested.

Appreciation. Constituting appears to be used as a mechanism through which the brain remembers when learning about the propagation of stimuli and materials in this specific activity. In a receptional basis, one application's experience, whose body was the decorative painting of motor vehicles reported that he recalled this information in similar activity on a receptional basis. Applications reported the recall of skills previously learned in their applications, all applications reported the recall of skills previously learned in their applications. The forms of information that were recalled varied widely. Although it was essential to the successful completion of each task being learned, the skills they used were not considered possession of a certain level of skills from which they expressed the view that all appearances interviewed used recall, and each of them firmly expressed the view that
strategies and points of view. Instead, they feel that this diagnostic process was most
appropriate for it to the identification of strengths and weaknesses in ideas.

Strategically, the workplace

that appearance is developing to the complement stage, and are using their knowledge
knowledge in a context of goals that enable to see the application of a learned technique
reached by appearance in the current study indicates that these learners are placing their
beginning to see their actions in terms of goals of plans. The frequent use of application
aspect of the process of recall. Though, the learners suggested that learners are

These reported uses of application indicate that appearance are endeavoring to

workplace, where he was expected to do in the book.

recognition to a different problem but that this was not a separate event in this

workplace. For example, one appearance advised that he often liked the application of a

response already to the resolution that can be placed on the use of application in the

and saw the possibility of using their technique for a different purpose. Another case of

vocabulary that appeared would have success with using a technique or ideas in one context,

apply learned techniques in a different context. The mastery response was that they

application was a widely employed strategy, which only one appearance reported not

(see 1993).

Linking process, indicate that appearances are also effective in meaning retention

in Pearson's (1990) terms. The use of discussion to provide a greater meaning during the

communication transmission and meaning can be viewed as part of the meaning application,

process identified by von Glasersfeld (1987). The process of recall, linking,

through the practice and work more than through the learning material. The use of meaning

used by appearances, largely constructed through discussion with the linking made

which to bring the success of the outcome. Linking of ideas and skills was a process

visual meaning was the only form of meaningful used by appearances, and in the main was

In the application process, some also used knowledge gained from extra-curricular learning.
Increasing the number of techniques and skills he has at his disposal.

After gaining knowledge not only as a way of connecting but as a method for increasing knowledge, new knowledge appeared as well. The linking of content to knowledge was taken by an influential application which also served the linking of content to knowledge. This way of doing things, I thought, would be different from when I thought - now I know two ways of doing things. The same way that communication process yielded a different result from that process, a second and different communication process yielded a different result from that process.

Another gain in knowledge from communication of the people who were knowledgeable and also you just remember when you're doing it in a certain way and do it their way, you just remember that. You're different from school and then I do it differently at home. You're different in how I do it differently from school and then I do it differently at home.

Communication between employers and between employees in the working environment. Because knowledge was used to exist and to exist under understanding. Because knowledge was used to exist without understanding. Because knowledge was used to exist without understanding. Because knowledge was used to exist without understanding. Because knowledge was used to exist without understanding. Because knowledge was used to exist without understanding. Because knowledge was used to exist without understanding. Because knowledge was used to exist without understanding.

Communication techniques were varied and insightful, in a course that all appearances were varied and insightful. 1994.4 - 1995.4. Expression of Change.


Communication techniques were varied and insightful, in a course that all appearances were varied and insightful. 1994.4 - 1995.4. Expression of Change.

Communication techniques were varied and insightful, in a course that all appearances were varied and insightful. 1994.4 - 1995.4. Expression of Change.

But people have been doing these things longer than me and people have been doing these things longer than me and people have been doing these things longer than me and people have been doing these things longer than me and people have been doing these things longer than me. Other people have been doing these things longer than me and people have been doing these things longer than me and people have been doing these things longer than me and people have been doing these things longer than me and people have been doing these things longer than me.

Course and the objective was to master what she was being taught, rather than develop ideas and the objective was to master what she was being taught, rather than develop ideas and the objective was to master what she was being taught, rather than develop ideas and the objective was to master what she was being taught, rather than develop ideas and the objective was to master what she was being taught, rather than develop ideas and the objective was to master what she was being taught, rather than develop ideas. Another appearance: 98.0. Expression of Change: 99.0. Expression of Change: 99.0. Expression of Change: 99.0. Expression of Change: 99.0. Expression of Change.
positive feedback. Some feel excited by the sharing of their knowledge through
knowledge and beliefs was a process used by all apprentices, and generally very
form of communication as well. Communication of new knowledge signifies existing
non-members within a social society, with their leaders and their leaders,
learned through their interactions often in discussion. 

It seems also advantageous that translation is often a form of assistance when learning. They look
Apprentices all used translation as a cognitive strategy, and some look opportunity to
material they were learning was an effective learning method.

actively sought that form of discussion and the re-expression by others of the
wrote these longer words to describe a cognitive. Apprentices reported that they
would use short, quick words to describe a cognitive. Apprentices reported that they
and the interaction of all forms an important part of learning. Another process
leamed material into different words, the need for this translation. The formulation of
accordingly, effective communication within the customer determined the formulation of
continued therefore, is beneficial because that customer could not understand.
created material to explain what was done and to do this in her own form of words. She
a humanities approach found in particular used in conversations within

is used a form of learning, including also the use of meta-cognitive processes.
be translated again, and would keep doing this until the knew it. The act of translation
translated material into his own words to help recall, and if recall was still not effective
form of response came from an apprentice who had felt satisfied about the material
since it was learning techniques that were no longer used in this workplace. A second
between the information in the guide and work that had been shown in the workplace.

Two other interesting comments were made. The first related to the learning material

Some essential form of skill and knowledge development and as a form of practice. Some develop knowledge. Apart from having experience, they also need to be an essential part of retaining knowledge. Applied learning to the workplace and increasing skills and knowledge is an important aspect of developing knowledge. Applied learning is an essential part of retaining knowledge. Applied learning is an essential part of retaining knowledge. Applied learning is an essential part of retaining knowledge. Applied learning is an essential part of retaining knowledge.

A similar process where knowledge is developed and transferred to the workplace and increased skills and knowledge is an important aspect of developing knowledge. Applied learning is an essential part of retaining knowledge. Applied learning is an essential part of retaining knowledge. Applied learning is an essential part of retaining knowledge. Applied learning is an essential part of retaining knowledge.
application of the required skill outcome

clear the expectation; training and practice were all used a means of success;

and reported that their expectation was always conditional and expected. It was
appreciated that application in expectation, because of the chapter in the workplace
appreciate were construed in expectation because of the chapter in the workplace. Electrical
skills would not develop beyond those already present in the workplace. Electrical
and practice. An encouraging application commended that without expectation this

appreciated were in workplaces that had equipment available for this purpose, and they

Although the apprentices expressed questions & reservations in the main these questions

apprentices, a common response was 'I don't know something.' Ask: 'Can you
workplace for an explanation of construction or the skill or technique that they didn't
were very much less relaxed, and involved asking the instructor or someone in the

When Generalising, definition and comparison were used, these strategies were very

9.4.2 Cognitive strategies used only in a restricted way

apprentices in a restricted way.

1992b) results for understanding, apart from definition, which was only used by
apprentices; group results are largely similar to the training, practical and part 1992a
instruction, the group, and comparison were used relatively infrequently. The
understandance to extract knowledge beyond that provided by the program of
Practical and part 1992a study, definition was commended as used by
examine knowledge beyond the immediate skills as development in the workplace.
when associated with the development of particular skills, and were essential in work to

Where Generalising, definition and comparison were used, these strategies were very

apprentices, problem solving's role in training, and the impact of skills and connectedness
apprentices, communal apprentices reported that the value of problem solving varied.
apprentices' communality and its solution, where the experience of other workers was important to the
problem and its solution, were discussed prior to an action being taken (Brooker & &

possible solutions were discussed prior to an action being taken (Brooker & &

'997). The worker's problem solving exercise was our discussion that surrounded

workers all being busy at the same time. It was common for problem solving to be encouraged in

appreciated all problem solving a form of learning in the workplace, and also

apprentices, problem solving a form of learning in the workplace, and also
Cognitive strategies were used. Although the nature of their learning and teaching was a structured study of this concept, the implications were sometimes unclear. The skills development would indicate that the sort of ideas they learn in school are not easily applicable in the workplace. However, there was little interest among them to explore reasons for difference, and some supervisors had established practices and these were the practices they should follow. Probably very prevalent since more than one appearance reported that their company or organization only used one method or way of doing things. The appearance of a workplace, for instance, is a behavior that is learned. In the context of a workplace, this behavior is resolved to a more expert opinion. In order to make an alternative or next step, they resolved that different answers be resolved in terms of one alternative being preferred. There is no difference between resolving from comparison through their own deliberate processes. Comparing was used by appearances interviewed, but they did not appear to think about where the need to deliberate that needed to work on what work, and to check that performance against the learning materials, and then to think in the instructional strategies. He used deliberation to evaluate his own performance at the point of work. He then asked his supervisor or someone else to explain, or someone else to explain, or some other way. If a major response was true, then they came across answers in learning materials. If a major response was true, then they came across answers in learning materials. Resolving differences between resolving from comparison through their own deliberate processes. Comparing was used by appearances interviewed, but they did not appear to think about where the need to deliberate that needed to work on what work, and to check that performance against the learning materials, and then to think in the instructional strategies. He used deliberation to evaluate his own performance at the point of work. He then asked his supervisor or someone else to explain, or someone else to explain, or some other way. If a major response was true, then they came across answers in learning materials. If a major response was true, then they came across answers in learning materials. Resolving differences between resolving from comparison through their own deliberate processes. Comparing was used by appearances interviewed, but they did not appear to think about where the need to deliberate that needed to work on what work, and to check that performance against the learning materials, and then to think in the instructional strategies. He used deliberation to evaluate his own performance at the point of work. He then asked his supervisor or someone else to explain, or someone else to explain, or some other way. If a major response was true, then they came across answers in learning materials. If a major response was true, then they came across answers in learning materials.
Table 9.3: Pattern of use of social/affective strategies

Social/affective strategies identified among the apprentices interviewed:

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker observation</td>
<td>30%</td>
</tr>
<tr>
<td>Structured classes</td>
<td>25%</td>
</tr>
<tr>
<td>Peer discussion</td>
<td>20%</td>
</tr>
<tr>
<td>Supervisor discussion</td>
<td>15%</td>
</tr>
<tr>
<td>Environment observation</td>
<td>10%</td>
</tr>
</tbody>
</table>

These data involve interactions with others. Table 9.3 shows the pattern of social and affective strategies used by Contrast and O'Malley (1990, p. 45) as cognitive styles.

9.5 Cognitive Styles

Field-dependent (Spelke and Gelman, 1979; Flavell et al., 1993) or Whipple (1977) or Woolley (1974) or Price (1974) is oriented with the worker. These are not as often used as they are, but they are often used. Some use was made of these initiatives, and some of the strategies shown in this chapter are used in a different way. One approach presented using the library, but for those familiar with the library was given more. Some approaches did not work very well with the learning program's library, since some were not provided with the learning modules provided by the workplace. These strategies were provided by the workplace. Other resources were defined as text, visual, auditory, learning material, etc.

The instructional material was not used by the learner when it was not required. The learning program's lack of content may be evidence for Verbal's non-use. Without thinking about the content and the language used, is it possible to suggest that the content is not specific? Or are we given to learn from already demonstrated phenomena? On this, I don't do that. The skill that we are given to learn from is not a specific phenomenon. Other resources were defined as text, visual, auditory, learning material, etc.
organize his own thoughts and skills in a very systematic way so help the other worker.

experience to have somewhere less experienced ask him, because in their way he had to
discussion. One appearance reminded them be found is a very valuable learning
valuable when less experienced appearance them experience sudden thought
fellows workers more skilled than themselves, and at the same time they find it very
effective discussions. Some of them reported that they found it very valuable to talk to
we do this all the time. There were some variations between them in the way they
knowledge development. The typical response from appearance interview was 'Yes, an
Peer discussion was defined as discussion a fellow worker to assist in skill or

opportunity to discuss their learning with other learners or with the instructor.

sudden name of the subject's address, appearance also reported that they liked the
students name of the subject's address, appearance also reported that they liked the
instructors who knew the theory and who could explain it in a clear way. Apart from the
instructor who knew the theory and who could explain it in a clear way. Apart from the
learners of the subject's address were those they were normally provided by appearance
learners of the subject's address were those they were normally provided by appearance
and the instructors may not be pleased with the quality of the work. A further valued
and the instructors may not be pleased with the quality of the work. A further valued
their appearance was to achieve the learning at the first try of time and money was wasted
their appearance was to achieve the learning at the first try of time and money was wasted
with guidance was also seen as a reduction of the subject's address. At the workplace
with guidance was also seen as a reduction of the subject's address. At the workplace
at the question 'Did you feel satisfied', Repetition of the skill, about
at the question 'Did you feel satisfied', Repetition of the skill, about
and to ask questions, 'Did you feel satisfied', Repetition of the skill, about
and to ask questions, 'Did you feel satisfied', Repetition of the skill, about
learning. These learners included the ability to perform a demonstration once
learning. These learners included the ability to perform a demonstration once
Apprentices all saw value in scheduled classes as an aid in their workplace learning.

him

by saying that he sometimes asked different people at the workplace to demonstrate to
also from a 1998. One appearance reminded them of these learning of instruction
also from a 1998. One appearance reminded them of these learning of instruction
of the same skill because her seniors would think I was stupid if asked to other, see
colleagues was working with a customer to ask for a demonstration. She also
understanding appearance reminded them she also needed the opportunity when a senior
through the known process of the process, understanding was assigned to the process
the demonstration was seen as important and credibility was assigned to the process
the demonstration was seen as important and credibility was assigned to the process
by asking the customer to ask for a demonstration. She also
with one commoning. Definitely this is my favourite thing about learning. I learn a lot
with one commoning. Definitely this is my favourite thing about learning. I learn a lot
by a fellow worker. All appearance interviewees were enthusiastic about demonstration,
Demonstration was defined as skilled observation of a process being demonstrated.
Two apprentices reported that they enjoyed working with the other workers. They were encouraged by the support and guidance they received from the supervisor, who was always available to assist them when needed. The workplace was described as having a supportive and encouraging atmosphere.

Socialistic socialists used only in a restricted way.

9.5.2

Most of the workplace apprentices came from and had previously been involved in agriculture or farming. Apprenticeships were seen as a way to gain practical skills and experience in the workplace. The apprenticeship system was designed to be accessible to students from a variety of backgrounds, including those from rural areas.

School

Teaching skills of supervisors was not as good as those of the instructors in the technical institute. However, apprenticeships provided a broad approach to skill development. Apprentices were encouraged to develop their skills, and the opportunities were available to the students. The apprenticeship system was accessible to students from all backgrounds, and the emphasis was on practical experience.

The apprenticeship in very small enterprises found its way into the form of discussion. It was a natural progression for the development of skills and knowledge. The apprenticeships were discussed with a supervisor or trainer to assist in the development of skills and knowledge.

Other workplaces

Lending discussion and in that way they also learned about techniques that were used in the workplace. They were encouraged initially in these discussions with other apprentices in the workplace, and discussions also focused on a particular technique or skill. Apprentices also discussed other work and the sharing of experiences and help on the job were of a general nature.
observation are seen in some workplaces as ‘black holes’. Rather than part of training.

Relevant again here is the Calder and McColm (1966) consideration that safety and
recovery from work would be if done on site that it would get a mark in the record for washing time.

The other observation is that, certainly, the unstructured for their employer’s liking. One
environmental observation was voiced by the interviewee as being of unsuitable for

comparisons completed the wide range of experience. The cohort who found time to observe

required. The environmental observation had placed him in a position where she could

required a breadth of knowledge of environmental, chemical, processes and the location of

observation because her seniors often asked her to carry out different tasks that required

observations because they had found it necessary to engage in environmental

development of knowledge about their own tasks as well as about other work practices.

The interviewee worked on one of the units in the factory and he had formed the

gave him the opportunity to go to a number of other units, and he had formed the

One appearance was in an enterprise that generalised a lot of unusual practices. This

consistent form of observation.

discussed the practices, which they had observed were those that they could

cannot be located, and how the various processes linked together, they both had now

satisfy the workplace, so that they knew what each worker was responsible for, whereas

not a frequently used strategy. Two reported that they had done this when they first

The ways in which apprentices used environmental observation was limited, and it was

9.3.3 Social, effective strategies rarely used

a structured demonstration session instead.

because they had asked questions about the nature of observation process quickly became

whether was sometimes discovered (Tanner et al, 1966). At other times,

found it difficult to return from distinguishing the workplace being watched by asking

not because of observation process no value on it. It appeared more to be the case that they

It appeared that unstructured workplace observation was not a frequently used strategy, but

but rather as a form of time out from work tasks.

often self-study of observation was not voiced by employers or employees as helpful,

when they asked in their research on record keeping in British workplaces that

way. An interesting observation related to this was made by Calder and McColm

not allow them to move away from their workplace to engage in watching in a casual

an environment that enabled observation of abnormal workers, and their supervisors did

learning from unstructured observation and believed it to be useful, but that they were

environmental observation had placed him in a position where she could
Accuracy of approximation would also increase as skill develops.

The use of selection in the workplace is suggested to be improved through external examination, which is better known in assessment and the workplace, which is related to the use of selection. In Coint's (1961) study, it is suggested that skill is acquired through examination, which is better known in assessment and the workplace. Although the workplace is suggested to be very different in terms of skills acquisition, the workplace is implemented, but also for the accessibility of knowledge to be directly applied in the workplace. Students in their sample made use of each of these three strategies, and while the purpose and functions of examination are different. Examinations of the workplace and of the examination are different, and while the purpose and functions of examination are different.
The restricted use of analysis and synthesis among the applications suggests extreme recall of learning success is also consistent with the Whorfian approach. Learning occurs when developing monitoring processes of their own. The reliance on student-directed learning, the feedback from instructors and supervisors and assessing their performance. They were not able to develop any strategies for the analysis of material for process of access. This was not to reason serious. Why do you remember material previously processed and why is it easy to process material (Newell, 1961) with the chunks being processed during learning. The most common use of analysis was not to reason through the application of resources and components of the application of resources.
The Social/Emotional Stages used Frequently by Apparence are those that are

Annotated: Wanne, Choy (1991) located other resources or lack of skill in being able to do so. (Annotated)

The appearance of the teacher would indicate either lack of willingness to learn more material provided by the instructor. Additionally, the low prevalence among both-dependent and Whipple's styles of classroom is consistent with the

appearance sample, it is even more unlikely that they would attempt any form of material for the learner. And Whipple's (1969) finding that figure is not used wherever from at least one appearance that the pictorial material already categorize the

dependence of the students style suggested by Whipple and his colleagues.

Teacher in learning materials or style that is consistent with the Whipple and his colleagues. According to Whipple's (1969) field.

This willingness to explore knowledge outside the prescribed program and unstructured to accept more experiential in the exploration of difference identified

excess of which more authority, simply leaving from which of two alternatives was

being left unexplored. A satisfactory result for the appearance was some more amount of determination of difference between techniques. Plan this determination

analyzed a lay of expertise: Simultaneously, the students of the community school

away from teaching or the workplace. The deprecation reported by appearance was

students was shown by Whipple, Patting and Pau (1979) to be widely used while for

sudden use of the strategy was comparatively low. Depreciation was the only

behavior is an important strategy among these students, that figure results indicated that

It was disappointing and unreflecting (p. 210), They had viewed

for these reasons. but showed that another level clearly breaks the rules, the use

in different contexts, or different meanings. The majority, Patting and Pau

provided by the instructional program: And this is about the material presented in order

deprecation represent strategies whereby the learner moves beyond what is presented in

extrinsic defined goal-directedness of appearance learning. Communication and
Worker observation was a strategy only used by apprentices in a restricted way, largely for their own learning.

Learns (1592) and Goff (1596)

Process is consistent with the scaffolding processes noted by French, Punktus, and High-Dependent and Whole-Silver. The construction of knowledge through these social and disciplinary processes is consistent with Barlow (1973), and is consistent with the media-oriented framework developed by Vygotsky (1978), bringing the knowledge into the pedagogical practice in structured and participatory ways to make sense of those experiences. The findings of the present study that they took the time to enhance their learning by the learner, and applicants indeed in the time to learn to enhance their learning by the learner, and applicants indeed in the time to learn.

The analysis of the CSTI subscales and the factor analysis showed a clear preference for social control, and the factor analysis showed a clear preference for social control.

The evidence presented in this book implies that learning also depends on demonstration from hands-on demonstration.

Other researchers have found their results to be consistent with the findings of the present study. However, the techniques of demonstration also depend on the demonstration of the learner's choice. Therefore, the evidence from the demonstration is also consistent with the findings of the present study.
Discussions with fellow workers were commonly engaged, with apprentices seeking

"skill"... "would think... I'm simply of..." (see also Harris et al.,

some experience do adverse common from supervisors and an apprentice put it, was some reserve expressed through that reported respects for demotion of the apprenticeship and normally provided by a more skilled worker or the supervisor. These demotions were often not justified by the supervisors but were influenced by the learning, and they liked the opportunity to ask questions during demotions. These demotions were often used as harassment by the apprentices as a strategy for

"Skill" since their work situations were in proximity to others.

who worked in small section environments, found observation of other workers much

section to observe others (Crawford & Wellington, 1999). The harassment apprentices,

observation. Their supervisors did not allow them to move away from their own work

\begin{itemize}
  \item They did not work closely enough to more skilled workers such that they could casually return from asking questions as they observed, and that was often discouraged, and their
  \item Inherent use of a strategy they saw as valuable were that they found it difficult to
  \item Considered in line with our reported using it habitually. Reasons given for
\end{itemize}

Worker observation was seen by the apprentices as valuable, but only of the other

9.6.2 Workplace support for apprentices' use of social/affiliative strategies

of use of this strategy was much other than the result of context and workplace value.

wasting time (Aggar, Clarke, & McColm, 1998). There was little evidence that the lack

appropriate was not quite clear in this assertion that practice was seen in this form as

that strategy was used by some apprentices as an orientation to the workplace, one

Similar remarks can be made about the use of environmental observation. Although

then the result of availability and workplace culture.

confirming that lack of practice in the form of observation was much other

unstructured observation of a fellow worker, the evidence from the interviews was not

preferences from the CSTC map produced that apprentices would not be addressed by

unstructured worker observation became a primary demotion. While the
not conflict with production. proliferating was at the initiative of the apprentices, apart from
workplace provided care was taken with materials, wastes and provided the practice did not

Processing was a learning strategy valued by apprentices and generally supported in the


certificates, but was carried out as a learning initiative.

on displays. The form of training and experimentation was not structured by
by either the instruction of the supervisor, but were expected to experiment and try
out their training and experimentation on the part of customers was clearly not wolumated,

The training and experimentation provided particularly among the few electrical apprentices, the

there were issues of safety which concerned everyone when apprentices experimented.

Additionally, experimentarion and trial of different methods was not encouraged. Additionally,

apprentices had no training and experimentation had to be carried out in a restricted

issues in the workplace restricted them. A major issue reported by the majority of

The presence of training and experimentation were valued by apprentices, but other

1.1971; Evans, Mason & Quinlan, 1999; Harris & al., 1998; Whilmer, 1999).

encompassed by supervisors as more important than training (see also Brooker & Butler, 1997). The importance of production were
enshrined in the supervisors' discourse as 'have a wash'.

McCollum (1986) have observed that, in their study of UK workplaces, supervisors saw

like to do it but I would get a smudge in the head, for washing time. 

brochure practice of the workplace, one other passiment appeared where he would

supervisors say there is washing time if they left their work, they observed the

see this as an efficient learning strategy since it was used minimally and, secondly

Environmental observation was not frequently used by apprentices, first they did not

environmental work periods.

Focus during scheduled work periods.

Conducted during work breaks since workplaces were reluctant for conversation to occur

Discussions appeared easy enough for apprentices to engage in, as they were normally

experienced, while other discussions were focused on a particular skill.
and appearance as learner:

The common theme of the apprentices was that the tension between appearance and work... (8661) that appearance training needs to be treated. The findings of other workers might play in assisting apprentices to achieve expertise. The findings of other workers might play in assisting apprentices to achieve expertise. The findings...

They were not aware of the appearance training plans or of plans detailing their expectations. They were.

Apart from the Handicaps/Apprentices, there did not appear to be any considerable skills. Workers' abilities in a particular way (Lager & Werner, 1966) restated by their skills.

Workers. They commented that in the main they were expected to be productive. None of the apprentices was able to be considered of their role as a learner in the workplace.

The skill

Considerable importance in the eyes of a producer whose business forms depend on and where customers are demanding and particular, the development of skill assumes an industry where production is geared largely through the very visible skills of operators. The highest operators are expected to produce. Second, the highly competitive nature of the development to go unnoticed and ignored. Second, the highly competitive nature of the development to go unnoticed and ignored. Second, the highly competitive nature of the development to go unnoticed and ignored. Second, the highly competitive nature of the development to go unnoticed and ignored.

The interview data provide an indication that similarly to the Handicaps et al. (961) and and

apprentices, and to form a social context for learning.

Also gave them a welcome opportunity to interact with the instructor and other apprentice pensively put it that, "You don't feel yellow at...". Scheduled classes

Rather remarkably, these classes were seen by all apprentices as valuable, since if enabled to ask questions and prepare for examinations with the assistance of one

As an added question, apprentices were asked in the interview if they enjoyed

were provided with dummy heads to do so.

The Handicaps apprentices who were expected to practice during slack periods, and
and their implementation into the community of practice that is the workplace.

Chapter 10 of this thesis focuses on the development of strategies for preparation that will enable flexibility delivery to become an effective technique for workplaces. These characteristics of workplace flexibility and workplaces do not provide

production and training being usually resolved in favor of production imperatives. Furthermore, poor quality training, and through a lack of planning and planning through inadequately identifying the level of production imperatives

additionally, workplaces are characterized by providing poor support for learners. These findings are consistent with other research conducted with VET learners by Doore and Denton (2001). They do not have a preference for self-directed learning strategies. However, it is generally not ready for the self-directed learning strategies because they are generally not ready for self-directed learning strategies.

The data analysis together with the interviews data on appearance of assistance.

For assistance of other learners, assistance appears to be given willingly. Assistance provided with importance, and sometimes assistance received that they are not able to ask

are not dealt with in a predictable way. Sometimes assistance is given, sometimes it is when the interviewee to learn is largely with the appearance, their requests for assistance.

1999: Wills, 1999). Results from the interviews with apprentices also indicate that production schedules assume higher importance than training (Calder & McCallum,

appears to be limited. Such that the interviewee is unable to learn, and the interviewee with those of broker and broker in showing that a ready impression of the interviewee also

the performance is ranked in industrial standards. Finally, the presence results also

as broker. These results show the learning is unsatisfactory, appearances work alone, and the activities used to develop their skills are largely influenced by the appearance. Similarly,

Clear from the interview evidence is that appearances in the workplace become largely
Flexible Delivery Strategies
CHAPTER 10: A MODEL FOR DEVELOPING EFFECTIVE

Introduction
Appliance learning is better supported in their workplaces. According to the provision of performance for reading, additionally, the interaction data indicate that handwriting for independent learning and goal setting than how the make appliances and stronger of the appliances in the other three groups. Females have shown a stronger preference of the appliances. Appliances lead more support to a product delivery strategy than those who do not.

The current study has also shown that the learning contexts and preferences for the support of learners who are expected to be self-directed and independent encourage need assistance to move along the openness dimension through the provision towards the self-directed, unstructured, and of this learner dimension, and learners and personable, and empathetic. In other words (1969), learners' learners' need assistance in moving in the development of structured need to assist learners' needs and encourage the results of the current investigation, and choices of previous research (e.g. Buyer & Brooker, 1997; Hills, 1996; Puller, 1996) suggest that a considerable challenge lies in the need for an effective training method for apprentices in the workplace.

That involve demonstrations, practice, discussion, and structured classes. The interview data showed that apprentices have a preference for those forms of learning, demonstrations, practice, interaction, and experimentation would be beneficial. Structured approach to this form of learning, and that a facilitator use of planned and apprentices carry out in the workplace. It also suggests that there is value in a more learner preference is probably, at least partially, met through the real-world tasks that such as direct experience using the equipment and materials required for the task. This factor associated with appliance preference for learning through non-verbal methods and is an unstructured dimension identified by the Factor Analysis. The analysis also identified a learning in an underlying dimension of preference. A factor for learning for social learning concerns rather than independent learning in a social context together with instructions and other learners. The factor for learning for self-directed learning was no higher, with stronger preference being shown.

The rankings of the preference scales indicate that apprentices most prefer structured learning with well-structured programs where the expectations of them are clear.
Support structures are becoming even more important. Instructors and peers in a classroom or workshop teaching environment, these workplace the apprentices are expected to be more self-directed, and to have less contact with adequate support to apprentices in the workplace, in a context of flexible delivery, where the enterprises also need to develop the process and policies required to provide there is evidence from the current study, and other studies in the workplace (Brooker & Eason, 1997; Comerford, 1998; Harriss et al., 1998; Lunn et al., 1998). Transitions towards self-directed learning: There are few younger apprentices and females may be able to make more rapid workplace, but younger apprentices and females may be able to make more rapid all groups of apprentices if they are to embrace effectively in flexible learning in the experience of the training center. The same sorts of strategies need to be developed for programs delivered in a social learning environment, and making particular use of direct study showed strong preferences for well-structured and well-organized learning. Structured does not appear to dominate. Though, the uses apprentices can be considered disposition of females and younger apprentices towards independent learning and goal setting do not appear to dominate. Though, the uses apprentices can be considered as in a context that both groups rank these subscales low, the more favorable higher preference for independent learning and goal setting than do older apprentices, but the evidence in the current investigation also suggests that younger apprentices have a delivered in supportive and social contexts. delivered in supportive and social contexts, by preferences for well-structured programs of instruction not represent strong preferences. However, the support for reading and independent learning and goal setting they still do need to be observed, however, that while these apprentices show a higher preference for independent learning and the better support they receive in the workplace, leads to a more appropriate reason, there is for the other groups. They show preference for the text-based learner guides to support flexible delivery for facilitating apprentices is a
Development Components

Discussion later in this chapter under the heading, "10.3.1 Identification of Learner Characteristics," will identify some characteristics of the model. These characteristics are derived from the model of Learner Development (Kember, 1995), which is based on the model of Learning Development. The specific characteristics are shown in Figure 10.1, which sets out the framework for the model shown. The framework is based on a wider range of learning presentation modes, such as visual learning, auditory learning, and physical learning. The model also shows the learner's role in the development of the model. The Learning Development model is a framework that is used to describe the development of a Learner Development model. The framework is shown in Figure 10.1, which sets out the framework for the model shown.

The model is shown in Figure 10.1, which sets out the framework for the model shown. The framework is based on a wider range of learning presentation modes, such as visual learning, auditory learning, and physical learning. The model also shows the learner's role in the development of the model. The Learning Development model is a framework that is used to describe the development of a Learner Development model. The framework is shown in Figure 10.1, which sets out the framework for the model shown.
Learning situations within the workplace. The third focus relates to the nature of workplace training policies while the second focus provides for the development of clear procedures of workplace preparation. The first focus is the development of clear procedures of workplace preparation for effective flexible learning, and is portrayed at right angles to the first dimension. Associated with the third dimension is the Workplace Development Dimension. Within the Kember (1995) two-dimensional model, the second dimension is one which comprises the flexibility in the workplace.

### Workplace Development Space

<table>
<thead>
<tr>
<th>Community of Practice</th>
<th>Learner Development Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in a community of practice</td>
<td>Strategies and materials for development of learner and development of learner providers</td>
</tr>
<tr>
<td>Concepts</td>
<td>Directed learning</td>
</tr>
<tr>
<td>Acquisition of skills and self-directed learning</td>
<td>Development of learner providers</td>
</tr>
<tr>
<td>Self-directed learning</td>
<td>Development of learner providers</td>
</tr>
<tr>
<td>To support: development of learner skills</td>
<td>Development of learner providers</td>
</tr>
<tr>
<td>Structure for development of learner skills</td>
<td>Development of learner providers</td>
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<tr>
<td>Development of learner skills</td>
<td>Development of learner providers</td>
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<tr>
<td>Policies for development of learner skills</td>
<td>Development of learner providers</td>
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<tr>
<td>Policies</td>
<td>Development of learner providers</td>
</tr>
<tr>
<td>Focuses on:</td>
<td>Development of learner providers</td>
</tr>
</tbody>
</table>

### Strategy Space

<table>
<thead>
<tr>
<th>Flexibility in the workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-dimensional model for development of preparedness for flexibility in the workplace</td>
</tr>
</tbody>
</table>
Evaluate and monitor their own learning.

Develop intrinsic motivation.

Set their own learning goals and take responsibility for their own learning.

Use their own experience to develop schemes and new learning.

To assist in learners to:

10.2.A Further development of Figure 10.1, and suggestions for specific attention be paid

Within the six broad components describing learner preparation, the model proposed at Figure 10.3.1 Identification of Learner Developmental Components

10.3. THE DEVELOPMENTAL SPACES

Together within the product space of the model, learner and workplace preparation for flexible delivery. These spaces are brought

This chapter of the thesis concentrates on the development of strategies to develop

under the heading "10.3.2 Identification of Workplace Developmental Components." The prescriptive research and the literature. These components are discussed later in this chapter

within the workplace developmental space of the proposed model have been drawn from

focuses shown in the model proposed in this thesis; and the specific items to be addressed

provided for learning concepts broader than higher education. The definition of the

learning and production context. However, the Brookfield and Heron's (1961) model

start and finish rightsides. These components do not really translate to the workplace

institutions, and was concerned with many requirements, implementing access and program

Kember's model (1995) model is not as strong as with the learner preparation dimension.

Kember's model (1995) model is not as strong as with the learner preparation dimension.

The relationship between these intrinsic focusing and those described in the

directed learning, acquisition of skills and concepts, and participation in a community of

developmental needs to support the learner developmental processes identified as self-
taken multiply from an understanding, rules are not apparent and performance is thus
inhibited. Behavior is limited, inflexible and rule-dominated. At the expert stage actions are
shared, behavior is limited, inflexible and rule-dominated. At the expert stage actions are
development of expertise from novice through to expert: suggestions that at the novice
organizing knowledge. Dreyfus (1982) has proposed a model of five stages of
of process schemas as frameworks for the construction of procedures for processing and
and (Van Hiele (1966) and (1961) have each argued the importance of the developmental
development of new knowledge. Using a cognitive approach West, Farnell, and Wilsh
Newell (1987) has drawn attention to the importance of expertise as a basis for the

When (1987) has drawn attention to the importance of expertise as a basis for the
development (and breach) for conceptual enrichment

- a well-stocked knowledge base, the provision of deep (for conceptual

hierarchically, with scaffolding provided by an expert model;

interaction with others, both at the peer level with other students and

a high degree of learner activity, both interaction and self-directed;

need to know and a warm emotional climate;

a positive motivation (only partially intrinsic but at least one involving a ref

Conditions for such learning are as suggested by Biggs (1994, p. 23):

- they actually enjoy the learning process (Candy, 1969) (Biggs, 1994, p. 23).

their own progress, they achieve well structured and integrated outcomes and

independently and reflectively, more constructively in planning ahead and in monitoring

conceptualizing the task and for reflecting on information the content to be learned, they are

mean that students engage less superficially; they use abstract frameworks for

...Good learning involves the use of deep approaches to learning, by which I

options.

- select their learning materials and learning strategies from a wide range of

workplace tasks;

adopt a problem-solving approach to learning involving the use of authentic

Dimensions of learner preparedness

Learner Development Space

Prepared

Unprepared

Workplace

- Structures own learning in a community of practice
- Develops skills & concepts through a range of learning strategies & materials
- Sets own goals
- Evaluates & monitors own learning
- Intrinsic motivation
- Use experience to develop new learning
- Instructor relates experience to new learning
- Reliant on instructor for setting goals and evaluating learning

Prepared

Unprepared

- Selects own learning strategies & materials
- Problem solving approach
- Evaluates & monitors learning
- Extrinsic motivation
- Acquires content knowledge by trainer
- Limited Learning preferences and strategies
- Evaluation & monitoring by trainer
- Goals set by trainer
- Instructor dependent on provided structure

Components of the Learner Development Space
In the model presented in Figure 10.2, the learning goals and the knowledge required for one's own learning (Boud, 1985; Moore, 1996; Moore, 1997; Morgan, 1995), in the model presented in Figure 10.2, the learning goals and the knowledge required for one's own learning (Boud, 1985; Moore, 1996; Moore, 1997; Morgan, 1995).

This means that self-directed learning is an important aspect of learning in a social context as well. The need for self-directed learning in a social context is important to build the willpower needed to participate in self-directed learning. According to Wenger (1998), the development of a community of practice (Biller, 1993a; Lave & Wenger, 1991) is important in their learning environment in a community of practice (Lave & Wenger, 1991).

A recent study indicates a preference among apprentices for learning in a social context, which is important in their learning experiences with a community of practice (Biller, 1993a; Lave & Wenger, 1991). The data from the characterizations more closely associated with self-directed learners, the data from the characterizations more closely associated with self-directed learners, the data from the characterizations more closely associated with self-directed learners.

The model proposed in Figure 10.2 suggests the importance of the development of a dimension for effective engagement in open learning by adults. (Kember, 1996). Kember (1996) has also shown the value of the use of experience as a means of development of this knowledge to formulate and evaluate new courses of action also been suggested by Billen (1993b) and Riddle (1994a) and by Riddle (1994a) and by Milroy and Chambers (1994). The cognitive restructuring of knowledge is important to enable successful and accessible interactions. The models proposed in order to free working memory for the higher order ones. This involves the use of abstract understandings (Nisbet et al., 1987). Cognitive psychology (B. Case, 1982; Kipy, 1988) has referred to the need to encourage lower order working memory for the higher order ones. This involves the use of abstract understandings (Nisbet et al., 1987). Cognitive psychology (B. Case, 1982; Kipy, 1988).
appearances have been shown by the quanitative data to predict the
behaviour generally, and the current study shows this also to be the case with the
Booce (1961) and Smith (1961) indicates that these skills are not well developed in VET
process requiring skills to be developed in the learner. Findings of research by both
booch (1961) also argue that the evaluation and monitoring of one's own learning is an active
need to set learning goals and take responsibility for learning. Meaning and Payne
deciding monitoring, evaluating and communicating learning - notions clearly linked to the
Moore (1963) see this as taking a responsibility at a meta-cognitive level. "biases and
there own learning at meta-cognitive, motivational and behavioral levels. Blied and
meaning and Payne (1961 and White (1967), The essence of this evaluation and
environment that demands greater self direction has been commented on by Blied and
environmental learning promotes greater self direction has been commented on by Blied and
The evaluation and monitoring of one's own learning in preparing for a learning

1961; Harris et al., 1961; Resnik, 1967; Rogoff, 1964).
provides opportunity for that to occur (cf. Brown, Collins and Duguid, 1991; Collins,
do to develop in appearance workplace learning, and thus the shared learning context
10.2 argues that personal interests in knowledge acquisition is an important characteristic
provision of a structured program, and structured external feedback. The model at Figure
environment in which the instructor provides the motivation extrinsically through the
evidence within the current study that appearances have a preference for a learning
students knowledge, or in the use of experience to construct new learning. There is
winters have viewed intrinsic motivation as an important component in the acquisition of
the effective engagement with self-directed learning environments. Furthermore, those
Development of intrinsic motivation has been identified by Bransford and Wyer (1960).
preparedness for extend delivery.
learning within a community of practice is regarded as an important element of learner
development of appearance ability to set learning goals and take responsibility for that

The proposed model of learner preparedness has identified the need to develop a

workplace learning. The proposed model suggests that a proposed learner engages in an authentic
workplace learning. Although there appeared to be restrictions placed on their use of these strategies at the

Although the quantitative data in the present study

The value of a problem solving approach, through authentic tasks, in the development of

an approach of sociocultural competence. Although the qualitative data in the present study

important component of preparedness for flexible delivery.

10.2 suggests that these skills require development in apprenticeships and represent an

focus of planning, analysis and collaborative monitoring. As a result, the model proposed at Phase

environment. The interview data on metacognitive strategies shows that there is little use
evaluation and monitoring functions to be within the instruction in a structured learning

Although the quantitative data in the present study

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focus of planning, analysis and collaborative monitoring. As a result, the model proposed at Phase

environment. The interview data on metacognitive strategies shows that there is little use
evaluation and monitoring functions to be within the instruction in a structured learning
Through flexible delivery, proposed model an important component of preparation for skills development learning materials and strategies from a wide range has therefore been included in the been made by Candy, Gatenby & O'Carry (1994). This need same orientation although not in a workplace context has been noted by Smith (1997). The same orientation although not in a workplace context has been noted by Smith (1997). Social context such as discussions, coaching and mentoring (Hearts & al., 1999; Riding & al., 1999). These sources include paper-based learning materials, electronic mediums, visual materials, workplace demands that learners can develop skills and concepts from a range of sources.

By our preferences and styles. Effective engagement with flexible delivery in the workplace (1996) has shown that learners can develop those strategies and are important in order to enable learners to engage with a wider variety of learning situations. Learning to develop different strategies before else (Cochrane, 1997; Heats & al., 1999; Riding & al., 1999; Smith, 1997). These strategies and styles such as Cleverly (1978), Doctor & Bloom, 1977; Sailer-Smith & Riding, 1999; Shrader, 1999; while a wide range of presentation formats and instructional demands (e.g., Cuny, 1993; Doctor & Bloom, 1977; Sailer-Smith & Riding, 1999; Shrader, 1999) there is also evidence from research on learning preferences and strategies that learners can be developed to engage with a wide range of presentation formats and instructional demands (e.g., Cuny, 1993; Doctor & Bloom, 1977; Sailer-Smith & Riding, 1999; Shrader, 1999).

Several researchers have pointed to the need for vocational learners to engage with a conceptual development apart from the occupational and informal use of trade journals. Low and direct experience high. Additionally, the interview data indicated that
processes for the development of a community of practice.

processes for skill development;
processes for learner development;
development of transfer skills to support identifiable learning outcomes;
clear workplace learning policies;

Flexible delivery, specific attention needs to be given to the following specific areas:

The model proposed at Figure 10.1 suggests that for enterprises to become prepared for

10.3.3 Identification of Workforce Development Components

- the interactions of study with people’s lives.
- the development of skill and autonomy in learning and
- the outcomes of learning and conceptual change.

Suggested that students change and develop as learners in the areas of:

Learning. Hence those features of learner participation are also consistent with Morgan’s
reviewed above, and drawing on Kember’s (1999) two-dimensional model of adult open

Flexible learning. Derived from the current research, from the relevant literature as

Strategies to develop these characteristics will later be placed in the 'Strategy Space' of

developing the skills and concepts required at the workplace.

participation in a community of practice;

self-directed learning;

Flexible delivery is effective in:

The second stage of the model, shown in Figure 10.2, suggests that a learner prepared for
Training structures have also been shown by Brooker and Butler (1997), Calder and Mccollum (1999) and Harris et al. (1996) to be an area of need in the development of workplace training policies, the identification and articulation of clear training policies, and a proposed model (Figure 10.3) suggests an area of focus for development of training policies. Wuenger's (1996) terms were they viewed as legitimate peripheral participants. These enterprises, they were not involved in a community of practice nor in large and successful enterprises, such that their approaches involved did not feel that they belonged to the model (Figure 10.3). These enterprises have made similar observations. Lunnin and wellingon (1995) have also drawn attention to the lack of interest and competence of policies for training in the modern enterprises in the UK. Work in Australian enterprises included a lack of policies, and Harris et al. (1999) work in Australian enterprises indicated a high number of enterprises in the UK had no training policies, not training plans, and no workplace training policies at all. Calder and Mccollum (1999) showed that a high number of workplace training policies at all enterprises or workplace levels have been identified by each available for learning (Calder and Mccollum 1999, Harris et al., 1996, Whimbler, 1995).

(Lunnin and Wellin 1999, Calder and Mccollum, 1999), and the time of the development is a learner and the apprentice as a worker, such that learning is understood to be valuable also required in training policies is the recognition of the relationship between the apprentice and the enterprise. Considerable support is required to be effective in their skills and conceptual development personal. Equally clearly, from these studies and the present study, apprenticeships require a wealth of evidence that apprentices are not well supported by workplace processes and policies, some of which above has focused primarily on apprentices, providing a considerable range of shortcomings in the support that workplaces provide to learners in clear development space of Figure 10.1.

Figure 10.3 expands the detail in the workplace training and development model. The model has collected these specific focuses under the three dimensions of policy.
The development of workplace proficiency. While an apparently obvious conclusion is that skills required of them, accordingly, processes to develop these skills are seen as important in the curriculum to develop skills and concepts necessary to complement the curriculum on the need for workplace preparation for flexible delivery can ignore the need for development of competencies for flexible delivery. The need for workforces to incorporate learning development processes within a framework of flexible learning environments has been reviewed earlier in this chapter, and establishes the relationship between the frameworks of these skills in a range of practice, and the need to develop skills in the use of a wide range of learning skills necessary for structuring their own self-directed learning in a community of model of proficiency. The current study has shown a need for apprentices to develop model of apprenticeship. The development of apprenticeship learning skills in an important focus in the proposed model has been included in the model as an important component of proficiency. For performance monitoring and feedback, the need for developed learning structures worksheets and in self-directed learning contexts. Learning structures include processes for improvement in the development of skills and learning confidence both in the workplace and in school. However, in the current study, it has been shown that it is common for apprentices to have no identifiable learning pathways. However, with the support of an employer, successful pathways do exist. The current study shows that many apprentices have found their learning paths, "just happened." (P.124). The current study shows that many apprentices have found their learning paths, "just happened." (P.124). The current study shows that many apprentices have found their learning paths, "just happened." (P.124). The current study shows that many apprentices have found their learning paths, "just happened." (P.124). The current study shows that many apprentices have found their learning paths, "just happened." (P.124). The current study shows that many apprentices have found their learning paths, "just happened." (P.124). The current study shows that many apprentices have found their learning paths, "just happened." (P.124).
through the sharing of experiences and that it is necessary to acquire skills (Billen & Rose, 1996; Cunningham, 1998; Pen, 1993; and other authors have argued that communication between the learner and another more expert worker is essential; however, Watts et al. (1998) have also highlighted the importance of communication in learning by acting as a means of the learner's development. This view has been further reinforced by the recent work of Mezzar [1661] and Wilson (1661) who have shown how the communication process has taken place in the workplace (Billen, 1993; Mezzarow; 1661), learnings about the organization, its values, and one's place in it (Billen, 1993; Mezzarow; 1661), and the development of a community of practice depends on communication between practitioners. Developing a community of practice is an important component of becoming prepared to support the development of processes to result in a community of practice. Finally, the model proposes that the development of processes to result in a community of practice takes place through the inclusion of learning experiences and the development of a community of practice.
development of relevant skills and concepts with the structures required at the workplace.

The model proposed at Figure 10.1 combines the development of self-directed learning
flexible delivery, both for learners and for workplaces. The StrateSPace component of
The emphasis here is on proposed strategies for the development of preparations for

10.4 The StrateSPace

that development
having available the processes for development of knowledge and supports for
establishing interchangeable structures for provision of learning and
ensuring that processes are in place.

Institutions for open learning by:

workplace are suggested as equivalents to the notions of preparation of educational
flexible delivery. Drawing again on Kember’s (1995) model, these preparations in the
the model, describing the collective strategies for a workplace to prepare for effective
strategies to develop these characteristics are then also placed in the StrateSPace of

knowledge construction by learners.

training personnel adept at the processes required to develop and support

the role of knowledge exchange.

For flexible delivery exhibits:
The third stage of the model, shown in Figure 10.3, suggests that a workplace prepared

The development of workplace preparedness for the support of flexible delivery
establishment of processes to yield and sustain a community of practice are important in
 Winning & Welfare. 1995). The model proposed in Figures 10.1 and 10.3 again that the
observation and discussion can occur in a casual and continuous way (Harris et al., 1998).
made in how something is to be learned.

- a repertoire of learning preferences and strategies to enable real choices to be
- questioning and reflection;
- problem solving;
- developing intrinsic motivation;
- evaluating and monitoring learning;
- how it is to be learned;
- determining what is to be learned;
- goal setting;

Developing skills in:

Development of Learning Indicators: the achievement of self-directed learning involves

The Learning Agreement: identifying the areas of specific attainment required in the

Preparation for self-directed learning

10.4.1 Signatures for Development of Learner Preparedness

Apprenticeships

The development of workplaces as an environmental condition to flexible learning among
both to the cognitive and skills development of apprenticeships, also provide a framework for
developing vocational skills. Similarly, the Realism of Cognitive Apprenticeships, applied
developing cognitive skills among apprentices as learners, and a framework for
learning, the principles of cognitive apprenticeships are addressed as a framework for
rather than in cognitive apprenticeships. However, with its grounding in situated
observation, modelling, coaching, storytelling, and guided practice. However,
the role of these apprenticeships, with authentic activities are used to learn through
Cognitive Apprenticeships is described by Brown and Driver (1994) as a metaphor of
(Collins, Brown & Neumann, 1989) forms part of the framework for these strategies.

To develop those features of effective flexible delivery, Cognitive Apprenticeships
development (Goll, 1989) is achieved through the iterative process, as it shapes the
committing basis as learning goals are pursued. The successful approximation of skill
Brouwer and Butler (1977) and Harris et al. (1986), and needs to be provided on a
are to be pursued. The importance of feedback to approachness has been established by
learning outcomes are to be evaluated, and to design a structure through which the goals
consultation between the application and the learner to develop the goals, to identify how
become an integral part of the system is also acknowledged... (p.4). Goal setting requires
made the same point when they observed, 'The danger of a self-paced system
difficult for learners without assistance in this goal setting and structuring. Calder et al.
can be derived, and make the point that the very openness of flexible delivery makes it
importance of setting goals from which students experience and learning opportunities
organizational contexts. Keefe, Callender and Wyke (1988) p.19 have stressed the
which shows a significant relationship between goal setting and performance in
developed also in Locke and Latham's (1969) 'High Performance Cycle Model',
(High Performance Cycle Model). The same integration of goals, goal commitment and meaningful
and the workplace. This same integration of goals, goal commitment and meaningful
achievable and set in relation to meaningful links of importance to both the appearance
requires careful consideration on the part of the learner and the teacher. Goals need to be
by which our evaluation of their self-directed learning (p.18). The setting of goals
motivation results from setting and making commitments to goals and defining standards
self-directed learning is provided by Morgan, Portielje and Gordon (1989) when they write, 'Self-
a useful integration of self-setting, evaluation and monitoring of learning and intrinsic
used in the workplace.
and is included in the discussion to provide a set of integrated strategies that can be
development of these identified features of self-directed learning are highly integrated.
the job, and on-the-job learning (Fuller, 1995; Harris et al., 1989). Strategies for the
acquiring of these features can be developed through goal-directed integration of off-
ments, such as authentic tasks and expert guidance (Brown, Collins & Driscoll, 1989; Yomtov.
Learning can be developed within an authentic real-world environment where there is
In the context of apprentice learning in the workplace, these features of self-directed
Learning goals can be readily understood by the appearance of contributing to becoming.

Becoming a productive and valued team member is an understanding of the relevance of learning to future career or in this context to becoming

The intrinsic motivation in a vocational orientation to study is derived through an understanding of the intrinsic motivation to study is derived through an understanding of the relevance of learning to future career or in this context to becoming

Hats eal (1998) have also pointed to the difference between the expectations of the teacher and the learning goals.

Collins (1661) has argued the necessity for the learner to achieve the learning goals.

Central to the setting of learning goals is a clear rhining plan developed by the instructor. The development of the process for evaluation and monitoring of learning.

Learners, behavior, and the skill development. Additionally, the process of setting goals,
use of learning resources
provision of opportunity within the production schedule for withdrawal to make
monitoring of learning processes, articulation of knowledge;
question-asking, strategy planning and analysis, wider use of learning resources;
encouragement of cognitive and meta-cognitive skills such as application and
the basis of that feedback;
behavioural as learning processes, and assistance to modify learning contracts on
provision of regular discussion with apprentices on their learning contracts;
the self-evaluation of learning outcomes;
working with apprentices to develop monitoring of learning as it proceeds, and
learning contract negotiated between the learner and trainer;
learning contract negotiated between the learner and trainer;
working with apprentices to develop a structured approach to achieving the
learning contract negotiated between the learner and trainer;
demonstration, discussion and guided practice;
assistance in the identification and accessing of other experts who can provide
assistance in the identification of authentic tasks and learning resources through
comprehensive contracts;
learning contract, starting with limited contracts prior to developing towards more
assistance to apprentices in developing and negotiating a learning plan and
assistance to apprentices in the development and negotiation of learning goals;
place of work;
assistance to apprentices to understand their learning within the broader context of

Professionalism; and an appreciation of the place of learning in becoming a
assistance in grounding new learning goals in a context of experience, forming

directed learning, and a reduction in the reliance on the instructor, may be summarized as:
Specific strategies to be pursued in workplaces to achieve the development of self-
experience on-the-job and be used to inform the off-the-job learning. The predictions theoretical learning of the-job to be developed on-the-job; if many derive from altogether, as was suggested in the interactions with apprentices. If may come form experience and prior knowledge. Prior knowledge may come from outside the workplace derived of the-job with that constructed on-the-job and the learning of that learning to there is a clear need for the development of structures that link the meaning of learning given that production implications and learning sequences may not be reliably achievable forms of interaction are important for learning may not be reliably achievable environment hand for learning in the other. While it is an able that all three of these relevance between the two: while a third was the degree of utility that learning in one environment was the degree of environment was that in which they identified was that in which the number of interaction forms of interaction between on- and off-the-job learning. First, one view of interaction Harts et al. (1966). However, Harts et al. (1966) have identified a number of different learning providers. The importance of the link between the two has been also identified by learning. Whether off-the-job learning is provided by the enterprise or by an external training provider. This aligned for a stronger relationship between on-the-job and off-the-job learning

hypotheses used by the more expert worker in carrying out the task (Carver, 1972).

meaning in the learning. Discussion and observation assist with the identification of 1969; Collins, 1969; Collins, 1969; Collins, 1969) will also provide opportunities to appropriate and. To reflect on and articulate the knowledge gained from learning (Dunham, 1994). Discuss the learning with other learners (Birtwistle, 1994). Carver, 1994, Carver and Carver, 1994, Carver and Carver, 1994, Carver and Carver, 1994. Opportunities to professional expertise (Carver and Carver, 1994). Harts et al. (1966). Opportunities to appreciate the place that the new skills hold in the workplace and in the development Proewska and Schell, 1994). Also needed inclusion is the opportunity for the appearance modelling, and the ability to see different training (Prentice, 1994). Buckler, 1994, 1994, 1994.

Strategies for skills and concept development will necessarily involve scaffolding and.
By February 1, 1977, that, as skills develop, approaches move from personal activities towards a diverse of workplace experience and problem solving (Brooker & Ballinger, 1987; Hayton, 1993). Thus, developed the idea (originally proposed in 1993), integrated to the use of experience to inform new knowledge, is the need to plan for 1993–4, 1994–5; Creswell, 1994; Gidioni, 1994; Greener, 1994; Lay & Winger, 1993). The issues are to achieve and ready access for the development of knowledge of skill through the accumulation of skill is the key to enabling the development of expertise through the cognitive development of higher order skills (Caves, 1985; Keffy, 1988). Then, the development of skill through structured experience and integrated theory forms a workplace practice.

For teachers may include the placement of focused teachers inside the context of integration. Concept (Hayton, 1993) has proposed, similarly to Smith (1997), that a changed role serves the thought that they should supply and show a clear need for stronger study indicating considerable gaps between the three positions in the training of the arts of all the different ways in which each of these three positions could be addressed. At the heart of the study of the Australian and was evident in their, their proposed role for instructors from training providers then the conventional teaching of apprentices in a decentralized environment. Such a suggestion has also been noted by the off-the-job training involved each other through authentic experience as much as is possible. This suggested that a model results in a rather different and much more

On the-job training involved each other through authentic experience as much as is possible, the industry provider and the training provider to ensure that the off-the-job and on-the-job experience is close to the goal of the provider where there is one (Phillips, 1996). In a report of training design in the wool processing industry (Smith, 1997), the author proposed a critical connection between the wool processing industry (Smith, 1997) and the off-the-job training design in the wool processing industry (Smith, 1997). In a report of training design, the important component of training design. That information, however, the development of movement between these has been learned and experience of the section of skills (Young, 1993) for the application to focus on setting learning goals.
As presented by apprentices, bulk to follow and learning with the provision of further
carry experiences to new knowledge through the modes of direct exchange and hands-on
exists a basis of understanding. In structured learning, the concept of learning in providing
alternative forms of learning material to enhance knowledge in areas where there has already
been learning, that suggestion would mean there is value in similar providing learning with
presented mode may be enhanced through exposure to a non-presented mode. In practical
a broader perspective of learning situations to enable effective use of a wide range of
Smith (1969) have developed some suggested learning for development in learners
have developed some suggested learning for development with Riddick and Smith (1992)
on-screen in a learning environment, particularly in technical, instructional, and text material to be accessed
use technical manuals, technical journals, instructional, and text material to be accessed
reading plays an important part in the development of expertise, where there is a need to
through reading and written sources. However, the application of knowledge through
provide and the guidance data have shown a direct for application of knowledge
make little of a use of learning materials other than those supplied by the training
resources. The interview data from the current study have indicated that apprentices
lowers the acquisition of skills required to access and use a wide range of learning
concentrational development, respondents. The diversity of experience can also be deployed
depth of knowledge through increasing the breadth. It will enable conceptual envisionment, and a
opportunity of providing a breadth of knowledge through a diversity of experience, and a
important initial module application. However, this has showed their ease in
apprentices will develop the sense of self-consciousness, their mindset and their
received that is partially through the process of self-conscious responsibility that
more challenging attributes, as experiences and skills develop. They have further
responsible (pp. 260-263). Therefore, the learning is provided with more responsible and
and Evers (1961) have similarly developed their notion of the spiral of increasing
lowers risks that are of much greater central importance to the workplace.
Both components of concepts and skills, and to calibrate them into a developing schema. Both development and refinement can include the development of cognitive strategies to enable and within the context of opportunities to articulate – need situating into the learning frames (Caine, 1997), provision of those opportunities within the development of learning goals (Caine, 1997).

And the placement of them in a context of skill development (Dewey, 1916), case to problem solving. There is need to be opportunity for development on those experiences, restricted way. Within the opportunities provided for diversity of experience and development has been shown in the present study to be one used by apprentices only in a strategy to be discovered from the articulation process. Additionally, the strategy of in the present study. Indeed, there was evidence in the present study that apprentices and went, the workforces, studies by Brooke and Butler (1967), Harris et al. (1969), Collins and Dunham (1969) and Dickson (1969) have shown to be an important to secure the learning in a model indicating the need for multiple practice in diverse contexts, and the beyond the acquisition-recall context, Brown, Collins and Dunham (1969), p. 49, have beyond the situation of recall is similar to that of acquisition. To enable generalisation of the skill (Healy et al., 1969) that long term retention of skill knowledge is enhanced where the is evidence in the task also informing the off-the-job learning. There is evidence in the task also informing the off-the-job learning. Training providers can be of assistance here in choosing the tasks, since those needs selection on the basis of the learning needs and those of the enterprise (Harris et al. 1993). But the authenticity of the task to be the focus of practice is important (Youniss, 1993).

Testing (Brown, Collins and Dunham, 1969; Farmer, Buckingham and Loomand, 1992) and require design features that include application of scaffolding and mental and physical involvement of that (1994) within the developed learning goals form an important part of skill development, Time out to participate in structured guided practice and observation (Kolb et al., 1984).

Information in a different form. Articulation of what has been appropriated from that non-prepared needs may aid in development of confidence (Bartley, 1966) with the mode,
presented.

Wide use of learning resources, including resources that are verbally or visually presented.

Encouragement and facilitation to use a broad range of learning strategies, and a self-reflective approach.

Assistance in the identification of on- and off-the-job learning experiences.

Development through an increase in responsibility.

Exposure to a diversity of experiences and problem-solving situations.

 Provision of learning scaffold and/or planned withdrawal.

Knowledge:

 Provision of opportunity for deliberation, reflection, and articulation of...
social motivation as a skill to be developed.

In situations where learning is pursued independently, or where it is to be pursued through
self-directed learning, skills that are an application to deploy, shaping between
of social learning strategies become in a context of their availability, part of the ascent
of social learning strategies become in a context of their availability, part of the ascent
which have not been shown to be supportive or inclusive of application learning. The use
of development of the community of practice will need to occur with the workplaces
and social learning as demanded by the task. The current study indicates that the majority
they will. As Fuller (1996) has observed, routine skills require skills to become independent learners
that sort of environment since they have a strong preference for it already. However,
as indicated by the present study, will need much workplace development to operate in
interaction with peers and instructors. It is unlikely that the majority of apprentices
1994, p.23) as a positive motivational context in a warm emotional environment, and
environment with characteristics of good learning environment, identified by Piaget,

The apprentices in the present study show a preference for learning in a social

Learning and thinking are typically social activities (Rogoff & Lave, 1984),

learning experience guided by expert mentors (Billett, 1994a, 1996b) and experts that
development of transferable knowledge through social cognition, and authentic
authentic and situated tasks. The community of practice provides opportunities for the
values and ethos of the organization, and enables the appropriation of knowledge through
constructions. A community of practice provides the context for learners to understand the
proposed by Vygotsky (1978) who claimed that knowledge is socially and culturally
learning and cognitive apprenticeships. Billett (1992a) notes the idea to activity theory as

The importance of a community of practice is a cornerstone to theories of situated

Preparedness with a community of practice

workplace.
Learning of a diversity of skills and concepts not available for learning within the

provision of access to other workplaces, or to a learning provider, to enable
necessary in this context is the ability to listen to and use feedback from others.

Also, to support a level of reflection and the confidence to ask the questions. A
self-directed learner is brave enough to identify and to ask the relevant questions. To do
so, they have suggested that a characteristic

security trainees a place in the knowledge-building of the workplace. Candy, Copper

reports, difficult for many learners. A

peer-learner seems to require assistance with

the move from peripheral activity to legitimate involvement is not well planned and
questions since there would be annoying. In Lawrence & Millard's (1964) term, it appears
on your own, (p. 110, 111), that were given little support, and were not expected to ask many
later in their apprenticeship they were expected to do it

mill work, is to have a go, (p. 110, 111), later in their apprenticeship they were expected to do it

more often and more frequently. Their research showed that in

be largely untrained and uninstructed in the workplace. Their research showed that in

Movement towards the community of practice has been shown by Harre & al. (1986) to

need to be provided through meetings and sustained discussions between apprentices.

opportunities to enable apprentices to engage in their form of focused communication
communication to assist in negotiating meaning and developing conceptual knowledge.

Lawrence & Millard (1964) and McLean (1964) have also emphasised the importance of peer to peer


concept is relevant to learning and assists in developing meaning and learning knowledge

and skill. Such that apprentices communication may require direction to ensure that

communication is a viable for negotiating meaning and for developing understanding

reproduced by the learner (Pea, 1993; Biddle & Rose, 1996; Cunningham, 1998).

that understanding and the understanding that communication will be well-received and

that such apprentices may need assistance while establishing the confidence for

nurture such that apprentices may need assistance while establishing the confidence for

practice demands that there is good communication established between the learner and

strategy particularly for social learning environments. The community of

Additionally, there may be some need to develop apprentices in such a way that they
assistance with skills of structured observation and question-asking;

interaction with others through discussion, demonstration, simulation, etc

assistance with identification of learning opportunities to be pursued through

knowledgeable supervisors, peers, and other experts to enable discussion of developing skills and

encouragement and reflection to apply newly formed relationships with co-workers;

developmental and reflective processes of their dual role as learners and as workers;

values, and policies;

developmental and reflective processes of a clear understanding of the workplace ethos;

the context of the workplace, and others within the workplace;

development in understanding and reflective practice of their work and learning within

Strategies to develop reflection within a community of practice may be summarised

as:

more expert worker;

contribution and shift in practice that enable observation and casual interaction with a

thought for the workplace to ensure that opportunities are included in a legitimate

make those observations a better response in developing the community of practice is

necessary to identify what it is they wish to observe, and then request that they be able to

enact. Under these circumstances, apprentices may need to develop the skills

and Wellbeing (1965) study conducted at the end they were largely influenced by their

extent of workplace was observed by Harris et al. (1969), and apprentices in the labour

and restrictions placed on their movement about the workplace to observe. A similar

shift of apprentices’ workspaces away from those expert workers they could observe,

apprentice. Worker observation appeared also to be largely influenced by the regime

of those difficulties would appear to the more with the workplace than with the

Although there were difficulties reported with the frequently used strategies of reflection

were not able to make such use of worker observation and environmental observation.

demonstrations, small group discussion, peer discussion and supervisor interpersonal discussion, they

Although the apprentices interviewed made frequent use of social strategies, such as

...
practice.
learning, skills and concept development, and participation in a community of
development of learning personnel to support development of self-directed
development of learning structures;
development of learning policies;

processes:
within the Strategy, these areas are identified in three sets of strategies and

processes to develop a community of practice to be developed;
processes for the development of required skills and knowledge to be developed;
process for the development of self-directed learning to be developed;
identifiable and accountable learning structures to be developed and published;
training policies to be developed, articulated, and published;

specific development of workshops to enable effective flexible delivery:
the workplace development space of the Proposed model identifies five areas for

10.4.2 Strategies for the Development of Workplace Preparedness

Strategy:
the specific initiatives developed to develop learner preparedness have been included into the
Figure 10.4 shows the fourth phase of the development of the proposed model, where the

signs of effective workshops in proximity to other more expert workers;
learning, skills and work;
provision of regular opportunities within the production schedule for discussion of
participation towards full participation;
complexity as learning processes and to move from simple to proficient;
provision of a 'spirit of responsibility' to increase responsibility and work


Figure 10.4: Developing Strengthening Workplace Development Policies and Structures
Figure 10.4: Developing the Strategy Space for Workplace Development
Other stakeholders have an interest in the outcomes of training associated with a broader
the skills outcomes that enhance business outcomes such as productivity and quality,
in each of these roles, employees become more engaged in the process and outcomes are most likely attributable to the outcomes of training that


A training program and included in subsequent practice


A training program, incorporating together the skills and identity of a

For learners, performance has been shown to be more motivated by becoming (Harris et al., 1998, p. 186) in their orientation, adopting an

more humanistic (Harris et al., 1998, p. 186) in their orientation, adopting an

mainly interested in the development of skill outcomes of training; trainers and teachers

and their development (Harris et al., 1998) have shown that there are different types of training among the different

successful training unless they are resolved and a policy position developed (Harris et al., 1998, p. 186) have shown that there are different types of training among the different

The literature has identified several tensions in the workplace that may act as barriers to

and expectations assigned to learners, trainers, and supervisors.

where workers have identified the need for identifiable training structures. With clear roles

has indicated that it is not unusual for apprentices to have no identifiable training. The current research, together with Brouwer and Brouwer and Brouwer and Brouwer (1997) (Smith, 2000) has shown the need for clear training policy and procedure development,

support and feedback are important to be shown by enterprises, and the current author

expectations of training. Harris and Volet (1996, p. 6) have commented on the need for

observed the importance of enterprises being explicit about the value and

important in the successful implementation of flexible delivery, learning and Wellbeing

of workplaces for effective training and, in the context of the current research, as

in this thesis, and in the broader literature, an important component in the preparation

The development and articulation of clear enterprise training policies has been identified

Development of Training Policies
the inclusion of procedures in enterprise communications and operations (learning and the enterprise). The development of policies in a community of practice necessitates the community of practice itself is the occupation, and the community of practice that is also requiring recognition is the need for the learner to develop a sense of belonging to the enterprise.

By applying principles, the community of practice, and the conceptual foundation of learning, knowledge construction and conceptual approaches are validated. The forms of assessment of competence in the enterprise of whether the existential and behavioral approaches are validated, or the holistic least two different conceptualizations of competence, require clarity on the part of the higher, Ashkanasy and Gonzalez (1999) work on assessment of competence indicates a work of learners and of learning, and how the achievement of those expectations is to be assessed. The analysis required in enterprise learning policies are statements of what is expected of learners skills in new roles and in new technologies and production paradigms.

An effective enterprise learning policy, it is suggested, needs to address the training needs and interests of the three sets of stakeholders is suggested as important. The development of training policies that address the different, and sometimes.

A degree of deep learning (Harris et al., 1998, p.43).

Apprentice learning, which culminates in the learner, becoming a reflection of workers' input, competence, performance of an occupation (p.5), Harris et al., 1998) took the same view when they wrote: workers' input, competence, performance of an occupation (p.5), Harris et al., 1998) took the same view when they wrote: 

Hager, A., and Gonzalez (1999) have discussed these orientation in terms of an encompassing understanding of the knowledge behind the behaviorally represented skills.
also required is the provision of time within production schedules for learning to occur. This is important as the role of apprentices as both learners and workers (Harriss et al., 1988) is critical in the development of an environment conducive to learning. The development of an environment conducive to learning requires a position to be taken by the enterprise on the candidate that feels a sense of being valued and developing. Several writers (Puller, 1996; Harriss et al., 1996; Harris et al., 1991; Law and Weger, 1996) have pointed to the need for the apprentice to participate in the workplace (Harriss and Volet, 1996; Weger, 1996; Weger, 1996; Weger, 1996). Also crucial is the shift of apprentice work-sessions in positions with Weger, 1996). Additionally, the explicit recognition of their performance where they are regularly included in observation, communication, and discussion with experts (Harriss et al., 1988) is also required in the learning process. The need to realistically understand the apprentice's needs is also a view of the learning process. The role of the learner in the learning process (Cocker, 1998; Harriss et al., 1988) and the explicit recognition of their performance where they are regularly included in observation, communication, and discussion with experts (Harriss et al., 1988) is also required in the learning process. The role of the learner in the learning process (Cocker, 1998; Harriss et al., 1988) is also required in the learning process.
records (see also Calior et al., 1995) to be kept of training plans, training activities and

by the enterprises they observe, and have pointed to the need for adequate

Finally, Booker and Bunter (1997) have identified deficiencies in the record keeping

are to be alone with explanations on the use of any withdrawable space provided.

resources will be acquired and made available to learners, and when the continuing or use

production site. Enterprise training policies need to include consideration of what

beginners to access a variety of materials, and to use those resources away from the

resource banks and a designed learning withdrawable area within enterprises, to enable

There is common in the literature (Calior & McCollum, 1998) on the value of learning

personnel, and the processes to be used in the partnership with the provider.

external training providers, the exceptions of those providers and of enterprise

inefficient or out-dated. Learning policies need to include the identification of any

enterprise staff training skills are deficient, or when the knowledge set of the workforce is

one that support from an external training provider may also be necessary where

the training partnership with the provider. Evans, Mason and Quinnan (1999) also point

who does what, needs attention, along with the processes to be followed in establishing

The relationship with the training provider, and the exceptions of the training provider

the acquisition of knowledge and experience not able to be provided by the enterprise.

partners may need to establish a clear relationship with a training provider to enable

provided to apprentices. They have commented, similarly to Fuller (1990), that

an enterprise undertakes is limiting factor in the diversity of experiences that can be

Evans, Mason and Quinnan (1999) have drawn attention to the fact that the scope of work

Hayton, 1999; Kombich & Green, 1999) and requires recognition in training policies.

Responsibilities have been summarized upon by several writers (Brooker & Bunter, 1997;

The need for diversity of experiences, and the development of the, spine of

activities by apprentices, but not always made available (Brooker & Bunter, 1997; Harris

and to where they may withdraw to use these resources;

- A statement of who or what participants can expect in the provision of learning resources;
- Of flexible learning materials and attendance at classes;
- For meeting discussion, practice etc., and that time is also required for the study.

- A recognition that time needs to be made available within the production schedule;
- That learning providers;
- Through different work experiences in the enterprise or provided externally by
- A recognition that diversity of experience is necessary and will be provided;
- And directions of the enterprise;
- Are expected to participate in the workplace community, and to accept the values
- And understandings that are expected, and that these are legitimate part of the enterprise workforce and
- Provided with opportunities to experiment, trial, and practice;
- With legitimate need to ask questions, seek guidance and demonstration, and to be
- A statement of recognition that values appreciation of learners and workers, and
- Made;
- A statement of the nature of assessment, and by whom these assessments are to be
- Personal involved with training, and the role of any external training provider;
- Details of the training situations in the enterprise, and the roles of each of the

understanding

whether skilled performance is expected to be accommodated by corporate

consultation including whether skilled performance only is to be pursued, or

a statement of the form of knowledge that the enterprise wishes apprentices to

placed on it;

- A statement of the purposes for training within the enterprise, and the value that is

the workplace should include:

In summary, it is suggested that learning policies designed to support flexible delivery in

Keeping of adequate records;

achievement. Training policies, it is suggested, should include requirements for the
and monitoring of apprenticeship learning goals and achievements, design of training
learning. Those roles need to include the development of training plans, the negotiation
people within the enterprise have a clear, role for partial role in the design and delivery of
2000B). Each apprentice is assigned a more expert worker as a mentor, and whose certain
number of workers and researchers (Billen, 1994b, 1996; Harris et al., 1988; Smith, 1997).
need for identifiable training for apprentices within the workplace has been observed by a
roles, attention needs also to be given to the development of workplace environments. The
within the development of the necessary training structures, and the identification of

environment

shown a strong preference among apprentices for learning within a structured
have observed the importance of clear training structures. The present research has also
within, as well as others (Cleary & McColm, 1998; Billen, 1996; Smith, 1997, 2000B).
by other workers such as Brooker and Bulter (1997) and Harris et al. (1988). Those
identified in the present research through interviews with apprentices, and observed also
The absence of clear training structures for apprentices within enterprises has been

Development of training structures

the enterprise's workforce (Lynn & Wellman, 1995).

common. For those reasons, they need to be clear and made public to all members of
Training plans, to ensure that learning in the enterprise, and indicate enterprise

recorded

a detailed plan for training, activities and achievements will be adequately
responsibility for their own work and learning.

number of a team, but will also progressively develop the skills to take
an explanation that apprentices will work within the community of practice as a
review these goals and discuss progress;

Learning goals between the apprentice and the trainer, and the need to jointly
a recognition that self-directed learning requires the regular recognition of


Contributing ideas for new processes. Part of the role of a workplace trainer is to...
In summary, effective learning situations to support flexible delivery at the workplace level are likely to be required to meet the need for training among employees. The importance of professional development of employees can be progressively reduced. The introduction of professional development of employees, self-directed learning and autonomous learning, and self-directed learning and self-directed activities are encouraged as part of an overall learning strategy. Additionally, the accountability of learners to management is the expectation for learners to be accountable for learners' learning. Responsibility for the access to their diversity of learning experiences requires management by a learner through the learning plan. Knowledge held by these more expert employees, additionally, to provide the diversity of experience suggested by Brooke and Hulter (1997) and Evans, Mason, and Glanville of expertise needs to be clear to other workers and flexible access to the personal:

- Enhancing access to learning materials, physical resources and more expertise
- Assessment of skills
- Goal negotiation with learners and monitoring of learning
- Training design and implementation
- Training plan development
- Development of roles for training personnel that include responsibility for:
  - Identification of training personnel and apprentice learners
  - May include:

  Eric F., 1998; Harts et al., 1998); suggesting that deficiencies in training support at the enterprise level are likely to be resolved to meet the need for training among employees. The importance of professional development of employees can be progressively reduced. The introduction of professional development of employees, self-directed learning and autonomous learning, and self-directed learning and self-directed activities are encouraged as part of an overall learning strategy. Additionally, the accountability of learners to management is the expectation for learners to be accountable for learners' learning. Responsibility for the access to their diversity of learning experiences requires management by a learner through the learning plan. Knowledge held by these more expert employees, additionally, to provide the diversity of experience suggested by Brooke and Hulter (1997) and Evans, Mason, and Glanville of expertise needs to be clear to other workers and flexible access to the
An identified need to understand and utilise a variety of learning strategies. For practitioners, there was a need to understand the need to identify and use a variety of learning resources.

Research showed that the four-way differences between the four groups, both short and long, are significant in terms of understanding the need to identify and use a variety of learning resources.

Evidence from their research indicates the need for greater differentiation between VET personnel who were at management level, and those who were not. This evidence supports the need for greater differentiation between the two groups.

Research on professional development for flexible-based learners. The people's experiences of flexible provision have been reported in detail elsewhere. The development of flexible programmes is to support flexible delivery.

While there has been an amount of research on the flexible needs of learners, there is little evidence of self-directed learning among apprentices.

- Communication in the professional development of learners in the flexible delivery of programmes
- Management of the relationship between learners and the learning providers
- Identifiable partnerships arrangements with external learning providers
- Achievement
- Documentation for flexible plans, recording of learning activity and achievement
- Representation of the needs of apprentices in management and other settings
- Enterprise
- Implementation of flexible delivery within the framework and policies of the organisation
Learning and learning style. However, Brookfield, drawing on this own research and that of independent notion holds promise for providing a relationship between self-directed success. Brookfield (1988) has also argued that the field-dependent—field-dependent learners, such as the apprentices in the current study, are not so likely to succeed in a self-directed context, while more socially oriented learners are more likely to succeed in a self-directed context. While more socially oriented learners re becoming self-directed while continuing to work as part of the workforce within a community of practice (Fuller, 1996). Even (1982) has suggested that field-independent learners do not have the self-directed skills to participate in a community of practice. In conclusion, it is suggested that learning personnel be effective in the model for determining workers in their area are likely to succeed if they are supported by their colleagues and are provided with opportunities to develop their skills and knowledge, Mitchell has reported that the identification of a need for the level of resources that could be provided to project-based professional development of employees may influence and support for project-based professional development and project delivery. Skills and knowledge, the level of resources that could be provided to project-based professional development of employees may influence and support for project-based professional development and project delivery.
The Hammond and Collins critical self-directed learning process involves learners in finding a voice, or to engage in authentic dialogue. The literature already reviewed that approaches in the workplace are not typically able to attention in the apprenticeship environment where there has been an amount of evidence in other resource persons. This approach to the development of self-directed learning has dialogue within the learning context, and overcome learner apprehension from teachers and approached to helping learners find a voice (Poteete, 1970b, pp. 3-4) establish authentic applicable to an individualistic approach to learning. Hammond and Collins were recognition of the criticisms of Kowless focusing on techniques that are most critical, critical self-directed learning influence they have developed this broader approach in component of any self-directed learning development structure. Hammond and Collins while Kowless (1979) argued strongly for the use of learning contracts as a central

commitment and confidence (Chedzhal er al., 1993, p. 19).
and learner is, a competency and situational skills, depending on the learner's competence, required, but who also observe Piotr's (1961) suggestion that the level of dependency in overall learning has been observed by Chedzhal er al., (1995), who suggest considerable shifts is how the difficulties for learners to assist learners to become responsible for their some of the learning processes useful to encourage in self-directed learning.

are also conducive to self-directed learning indicates that apprentices already exhibit

require, Brookfield's view that characteristics associated with led-dependence

demonstration and reinforcement. This view is consistent with Piotr's (1961) notion

of learning. This point is that successful self-directed learners specifically place their learning activities in some characteristics more usually associated with led-dependent learners. Brookfield
Overwhelmed by a task that is too comprehensive,

Siegfried (1983) suggests limited contacts first as they learn to develop them, so they are not

in accordance with the notion, and the neglected chances as learning occurs. Rogers

An important component in the development of the learning contact is the negotiation of

The contact then forms the basis for communication and partnership with the learner.

Learners, how and when is to be learned, and when criteria will be used for evaluation.

Learners, then specific data is developed. The contact then specific data is to be

needs and competency profiles are developed. The contact then specific data is to be

statement, prepared by the learner with support from a mentor or facilitator after learning

In the Herrmann and Collins (1991) model, the learning contacts provide a detailed

- Evaluation of learner processes and stimulation of self-evaluation.
- Promote discussion, reflection, questioning, and self-directed enquiry.
- Help learners develop positive feelings towards independence in learning.
- Stimulate interest and motivation.
- Use a wide variety of learning techniques and supportive instructional techniques.
- Can locate and provide other resources and information.
- Able to serve as one of a number of contact sources.

that have been identified by Brockett and Herman (1985) as:

equal partnerships. In this environment, learners provide the forms of instructional roles

where (Brockett & Herman, 1985; Brockett, 1996; Smith, 1997) in which they are

The key here is that learners and instructors form a partnership, as suggested by several

- Reflect on and evaluate their learning.
- Choose and implement appropriate learning strategies; and
- Identify human and material resources for learning.
- Formulate socially and personally relevant learning goals.
- waar shape, narrative to common factors they have helpful to identify?
- Critically analyze and reflect on their situations, diagnosing their learning needs
- Increase self and social awareness.
assistance in self-evaluation of learning, progress, and outcomes.

- and with fellow workers:
  - providing encouragement for reflection through discussion with both the trainer
  - and assistance in the identification and framing of questions.

- developing an expectation among apprentices that it is legitimate to ask questions.

- Development:
  - provision to apprentices of portfolios of self-directed learning skills
  - assistance in the identification and use of other resources, both human and material,

- and skills:
  - provision of assistance to apprentices in self-assessment of existing knowledge

- with apprentices:
  - understanding of and preparation to negotiate learning contracts and outcomes

- contract:
  - providing assistance to apprentices in developing a learning plan and learning goals.

Skills may then be suggested as:

Specific knowledge for trainers to enable them to implement strategies to develop learner

These skills to be addressed in the learning contract:

development among apprentices such that it is important for the development and use of self-directed learning. Monitoring use of other resources and reflection require current study it has been shown that metacognition and self-directed skills such as self-regulation, along with teaching skills, and the importance of self-assessment have been enhanced through a supportive learning environment, for deep-level learning to be encouraged. Further, Candy also points to the need for deep-level learning to be encouraged reflection. Candy also points to the need for deep-level learning in providing opportunity for incorporated in the development of self-directed learning. Reference to (561) have shown the importance of discussion with fellow workers in providing opportunity for incorporation of experience, and suggest that space for professional reflection needs to be

Both Candy (1985) and Bound (1661) argue the importance of reflection in grasping the
have the following authorities, abilities and understandings:

- Understanding of the processes for designing and supporting a learning and
  supporting a learning and teaching program or through another enterprise.
- Experience of the scope of work and a process for negotiating, for these learning tasks to
  ability to identify learning tasks that cannot be undertaken at the workplace due to
  solving and learning experiences on-the-job;
- Understanding of the processes required to provide for a diversity of problem-
  learning;
- Ability to systematically identify authentic tasks available on-the-job to support
  concepts to be learned;
- Ability to negotiate learning contexts that integrate experience on-the-job learning
  through the use of learning resources and other forms of instruction, with the tasks
  ability to negotiate learning contexts that integrate experience on-the-job learning

Trainees will prepare to support the development of skills, if it can be suggested, would

The section 10.4.1, focusing on strategies for development of learner preparation,
and conceptual knowledge, developed under the heading earlier in this chapter, within
concepts have been derived from the discussion of prerequisites for development of skills
The strategies suggested below for use by learners in the development of skills and

Skills and conceptual knowledge development

- An understanding of learning preferences and learning strategies.
- Application and transfer on matters to do with application learning,
- Making use of the learning context as the basis for communication between the
  partners;
- Understanding the need to develop an ability with the application in the learning
  reflection of changes;
- Provision of regular monitoring of the learning context with applications, and
To support the development of a community of Practice, it can be suggested, would have the following policies and understandings:

- Emphasize the value of an understanding of workplace learning policies that support the value of practice, if needed.
- Practice developed under that heading earlier in this chapter within the section 10.4.1.
- Concepts have been derived from the discussion of preparedness within a community of Practice.

Policies for Use by trainers in the development of skills and

- System of recognizing and recognizing skill acquisition and
- Willingly assisting learning
- Encouragement of question-asking and the encouragement of other experts in
- Ability to develop a supportive learning environment where there is
- Methods to encourage use of those resources
- Community to provide an organized repository of learning resources
- Organizing and encouraging continuous feedback as learning progresses
- Enable discussion, action, and proposal reflection
- Understanding of the need to provide time out from production schedules to
- Tailored and experience
- Capably to provide demonstration and practice opportunities and to facilitate
among VET learners may not be accurate.

Evidence provided in this study and the assumption that self-directedness comes with increasing age must become an important part of the training experience. The present research has also contributed to the development of the learning strategies necessary for effective self-directed learning. The research has also provided further evidence for the current research and learning through methods other than reading and other research indicates that apprenticeships represent a new form of provision so far.

The research presented in this thesis has provided some caution in the application of the model. However, the new ANTA initiative Training Packages to learning in industry.

The research presented in this chapter of the thesis,

10.5 Conclusions

Discussion and attribution of learning, skills and knowledge

- a commitment to providing opportunities within the production schedule for move from peripheral to central participation in skills and knowledge increase;

- a commitment to providing of a spiral of responsibility that enables apprentices;

- an understanding of the need to champion the needs of apprentices learning in

- the workplace.

Figure 10.1 to 10.5 shows the final model of the proposed model, where
Packages may not provide outcomes that are satisfactory to enterprises.

Without preparation, however, both enterprises and the Learning and Training Package providers will be left with limited development opportunities. Those enterprises who have the Learning and Training Package providers in mind in the summation, while flexible delivery for industry training provides some problems, the

of strategies that may be expected to be useful.

or enterprises in becoming prepared, and the current research has identified a number

and Harms et al. (1998), that enterprises are not specifically well prepared. There is also

research indicates that there is preparatory work that needs to be done. Results of the present

delivery of training; these are preparatory work that must be done. Results of the present

The research also indicates that, if enterprises wish to secure success in the flexible

advantage.

opportunities for providers. There is challenge in limiting that opportunity to commercial

indicate that there is need for diversity in training methods and materials, and that there is

for autonomous learning responses to meet particular needs. The current research would

and, indeed, the companies' edge for training providers may well be in that opportunity

there is scope for the production of materials and experience to follow. Within that diversity

Government-sponsored organisations will be used by any given trainer. That market has

circumstances. There is no expectation that learning resources that best suit their own

providers' and enterprises will choose learning resources that best suit their own

At the same time, the new Learning Packages provide opportunity. Within the Training
Figure 10.2: A Strategic Model of Preparation for Flexible Delivery in the Workplace

Dimensions of Workplace Preparation

- Learner Development Space
  - Structure own learning in a community of practice
  - Engage in self-directed activities & learning strategies
  - Acquire learning strategies selected through evaluations
  - Select strategies and materials

- Learning Strategies for:
  - Develop learning
  - Tackle workplace policies
  - Tackle workplace policies

- Dimensions of Workplace Preparation

LH Hee
Learning within the workplace

- Development of new skills and competencies
- Improvement of performance and productivity
- Increase in efficiency and effectiveness
- Enhanced collaboration among team members
- Recognition of achievements and contributions
- Improved communication and teamwork
- Positive impact on employee satisfaction and retention
- Alignment with organizational goals and objectives

Innovation in the organization of work

- Implementation of new technologies
- Adoption of innovative processes and practices
- Encouragement of creativity and problem-solving
- Development of new products and services
- Improvement of work-life balance
- Enhancement of work environments
- Foster a culture of continuous improvement

Strategic alignment with organizational goals

- Integration of learning objectives with business objectives
- Alignment of employee development plans with organizational strategies
- Evaluation of learning outcomes and return on investment
- Continuous assessment and refinement of learning programs

Specific suggestions to be provided in workshops in the development of self-directed learning and a reflection on the

- Provision of opportunities for learners to explore and develop their interests
- Encouragement of self-directed learning and self-assessment
- Development of reflective practice
- Promotion of critical thinking and problem-solving skills
- Support for learners to set goals and develop action plans
- Provision of feedback and coaching
- Celebration of learner achievements and progress
- Encourage learners to take ownership of their learning journey

Strategic alignment with organizational goals

- Integration of learning objectives with business objectives
- Alignment of employee development plans with organizational strategies
- Evaluation of learning outcomes and return on investment
- Continuous assessment and refinement of learning programs

Specific suggestions to be provided in workshops in the development of self-directed learning and a reflection on the
Although the sample size of 38 apprentices is large enough for reasonable conclusions, the research suffers from several limitations. First, although the research provides data to assist in the development of a model for flexible delivery, it does not directly assist in the development of learner groups such as professional managerial and para-professional workers. An associated limitation here is that the data analysed for this thesis were drawn from only two apprenticeships and one general set of conditions. There are several limitations on the study.

There is a lack of evidence to support the concept of flexible delivery, and research in the field has also been able to identify a number of strategies to assist in the preparation of both learners and workplaces to engage successfully with flexible delivery and identification of apprentice learning between the examinations placed on flexible delivery and apprenticeship. Consequently, the research has limitations of applicability to any workplace. Additionally, the research has little evidence presented in this thesis has yielded data useful in the development of an effective implementation of flexible delivery. While these findings and the nature of the effective implementation of flexible delivery, the research has also been useful in identifying the effectiveness of both learners and workplaces to engage successfully with flexible delivery and understanding of apprentice learning between the examination placed on flexible delivery and apprenticeship. Consequently, the research has

Similarly, research Wanner, (1999) on the relationship between flexibility and workplace performance, and Lewis et al., (1998) on the effectiveness of flexible approaches to learning, do not directly assist in the development of learner groups such as professional managers and para-professional workers. An associated limitation here is that the data analysed for this thesis were drawn from only two apprenticeships and one general set of conditions. There are several limitations on the study.

There is a lack of evidence to support the concept of flexible delivery, and research in the field has also been able to identify a number of strategies to assist in the preparation of both learners and workplaces to engage successfully with flexible delivery and identification of apprentice learning between the examinations placed on flexible delivery and apprenticeship. Consequently, the research has limitations of applicability to any workplace. Additionally, the research has
A further limitation of the current study can be found in the collection of the learning. While the inventory does not provide the same level of information on the readiness of VET students for flexible delivery, the same learning readiness scale which has been used by Woteric, Christie and Cherry (1969) to measure learning preferences above a set of particular dimensions, such as hierarchic CSTI, though the convergence of findings from different instruments may yield some different insights. For example, the CSTI measures learning preferences along a set of particular dimensions. The limitations of the current research also result from its data collection methods. The research on learning strategies would need to be based on a more representative
collection of successful learners. Introduction a bias to the learning strategies data. Further
research also should incorporate the details of individualized and adaptation, and differ
from other learning strategies, but are not included in the current study.
replicating the research with a version of the C1ST that yields normative data.

interpretable within a framework of existing theory and research, there would be value in
theoretical interpretation. Although the results of the current study are ready
Finally, the qualitative nature of the data provided by the C1ST places some limitations on
replication in a wider set of business and workplace contexts.

the same concerns for training. The research in the current investigation requires
warn that it is unwise to assume that all businesses operate in the same way and provide
require some learning in that rather different environments. Contrary and Devan (1996)
the current research, although very probably applicable to larger businesses, Nevertheless
undergoing training may be better than smaller businesses. The strategies developed in

evidence to suggest that the performance of larger businesses in supporting workers
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Woolley, V. A. Mcleod, N. E. (1979). Age at a factor in performance at the Open


Young, M.F. (1993) Instructional design for situated learning. Educational...
APPENDIX I: Quantitative Data Collection

1.1 Plan Language Statement:

1.2 Apparent Personal Information Sheet:

1.3 Procedure for administering the CLSI, and a copy of the CLSI:

1.4 Full table for the two-way age-group by gender analyses of variance summarized in Table 7.7.

1.5 Full table for the one-way occupational classification analysis of variance summarized in Table 7.12.

1.6 Factor matrices and intercorrelation matrices.
The research involves you in filling out a short questionnaire, on how you like to learn, and giving me a bit of information about yourself, such as your age, your sex, your previous education, and your first language. All this will take about 15 minutes.

Whether or not you put your name on the questionnaire is up to you. If you would like to come back and tell me what you think about how you like to learn, then put your name on it and I will come back and tell you about it. If you would like me to come back to you, I will do so. If you put your name on the questionnaire, then I will send you a copy of the results, and give you some feedback, and if you would like to do so, I will send you more about how learning programs can be designed for your industry, so they can better meet the way you learn.

People learn in different ways, and different learner groups have different ways their learning is designed. This research is designed to find out more about how people prefer to go about learning. This research is designed to find out more about how people prefer to go about learning.
What is your native language?

Please name the qualification:

University qualification

TAFE qualification

Year 12
Year 11
Year 10
Below Year 10

Your highest previous schooling:

(d)

Your sex:

Female
Male

(e)

Your apprenticeship course:

(f)

Your age:

(g)

Your name (optional):

(h)

Please enter the following details about yourself:

PERSONAL INFORMATION SHEET

I, 

Apprentice Personal Information Sheet.
numbenthe has not been applied to the copy.

This copy of the CLST has been made only for inclusion in this thesis. The thesis page

See over for a copy of the CLST.

studies

answer the CLST on a basis of their preferences for learning in their apprenticeship

the conclusion of explaining the instructions, apprentices were further instructed to

explained. These instructions are shown in detail on the following copy of the CLST. An

explanation of the answers, the Personal Information Sheet, the instructions for the CLST, and

Following explanation of the research through the Plain Language Statement, and

Procedure for administering the CLST, and copy of the CLST.

1.3
This inventory gives you an opportunity to describe your preferences or feelings. The responses are scored individually to evaluate the extent of your interest in each area. You may not answer in all areas. You are to choose the statement that most closely describes your attitude toward the topic. Proceed in any order of your own choosing without the express written permission of the publisher.

1. I enjoy listening to classical music.
2. I like rock music.
3. I enjoy the following courses in terms of their appeal to you:
   a. Mathematics and physical science
   b. History and social studies
   c. Language and literature
   d. Interdisciplinary and miscellaneous
4. Rank the following in terms of their general interest:
   a. Mathematics and physical science
   b. History and social studies
   c. Language and literature
   d. Interdisciplinary and miscellaneous
5. Rank the following grades to indicate how you feel about each letter:
   a. A (most preferred)
   b. B (second)
   c. C (most preferred again)
   d. D (least preferred)

Example:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
</tr>
<tr>
<td>D</td>
<td>Below average</td>
</tr>
</tbody>
</table>

Instructions:

to do each item: you have your answer sheet. next to the position of the page, write your answer. Don't let the items be numbered.

Note that the items are numbered from 1 to 4 for each item. answer sheet must be returned to your teacher. you must write your answers in each blank.

Example:

1. A
2. B
3. C
4. D
Welcome.

In order to feel comfortable and helping everyone feel

a. Create a welcoming and inclusive environment
b. Encourage open and respectful dialogue
c. Ensure the meeting and writing are engaging and
   interesting enough to keep them

d. Provide clear instructions and have a sense of
e. Have clear expectations for discussion

22. Rank the following in the order in which you

23. Club members are generally required to help
everyone meet some minimum requirements
d. They do not discuss personal and
   otherwise restrict what the students and
b. They consider the students as individual
   and important, even if it is to be done

c. They believe it is on discussion while to be done
b. They recognize the need to hear
a. Understand and keep to

24. Rank the following in terms of how frequently

25. Rank the following in terms of how well they

26. Rank the following in terms of how important

27. Rank the following in terms of how frequently

28. Rank the following in terms of how frequently

29. Rank the following in terms of how frequently

30. Imagine that you've just received the results

31. Rank the following in terms of how frequently

32. Rank the following in terms of how frequently

33. Rank the following in terms of how frequently

34. Rank the following in terms of how frequently

35. Rank the following in terms of how frequently

36. Rank the following in terms of how frequently

37. Rank the following in terms of how frequently
In these tables, CTSL subscale names have been abbreviated as follows:

- Direct Experience – Dexp.
- Iconic – Icon
- Reading – Read
- Listening – List
- People – Peep
- Imaginative – Imag
- Qualitative – Qual
- Numeric – Nump
- Authority – Auth
- Independent – Indip
- Desire – Del
- Instructor – Inst
- Competition – Comp
- Goal-setting – Goal
- Organisation – Organ
- Peer – Peet

In Table 7.7, Full tables of two-way age-group by gender analyses of variance summarised
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**ANALYSIS OF VARIANCE**

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<td>1</td>
<td>1</td>
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### Analysis of Variance

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**Sex by Acgroup**
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### Analysis of Variance

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### 2-Way Interactions

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### Main Effects

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### Analysis of Variance

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### Main Effects

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**ANOVA**
## Analysis of Variance

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**ANALYSIS OF VARIANCE**

| Source of Variation | SS | df | MS | F | p
|--------------------|----|----|----|---|---
| Total              | 557.125 | 1 | 557.125 |  |  |
| Residual           | 3.389 | 333 | 0.010 |  |  |
| Explained          | 553.737 | 333 | 1.670 |  |  |

**SEX**

- Sex
- Agegroup

**Table for Analysis of Variance**

| Source of Variation | SS | df | MS | F | p
|--------------------|----|----|----|---|---
| Total              | 492.977 | 1 | 492.977 |  |  |
| Residual           | 3.892 | 333 | 0.012 |  |  |
| Explained          | 489.085 | 333 | 0.014 |  |  |
**ANALYSIS OF VARIANCE**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SEX</th>
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<th>2-Way Interactions</th>
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**ANALYSIS OF VARIANCE**

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The abbreviations used in the tables of ANOVA to denote occupational classifications:

- Direct Experience - Dex
- Iconic - Icon
- Reading - Read
- Writing - Write
- Listening - Lis
- People - Peop
- Intrinsmic - Intr
- Qualitative - Qual
- Numerical - Numb
- Authority - Auth
- Independent - Indp
- Detail - Dell
- Instruction - Instr
- Compensation - Comp
- Goal Setting - Goal
- Organization - Organ
- Peer - Peer

In these tables, CCSI subscale names have been abbreviated as follows:
## ANOVA Table

**Total**

<table>
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<tr>
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<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
<th>P Value</th>
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## ANOVA Table

**Total**

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**ANOVA Table**

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### ANOVA Table

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0 cases (0.0% of total) were missing.

389 cases were processed.
### Analysis of Variance

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<th>Sum of Squares</th>
<th>Mean Square</th>
<th>DF</th>
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<th>P of F</th>
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<tbody>
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<td>3.995</td>
<td>3</td>
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<table>
<thead>
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<th>Mean Square</th>
<th>DF</th>
<th>F of F</th>
<th>P of F</th>
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<td>645.842</td>
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<td>645.842</td>
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0 cases (0.00%) were missing.

389 cases were processed.
0 cases \( (0 \text{ PCT}) \) were missing.

389 cases were processed.

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<td>Main Effects</td>
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BY CATEG

* * * ANALYSIS OF VARIANCE * * *

0 cases \( (0 \text{ PCT}) \) were missing.

389 cases were processed.

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<td>Main Effects</td>
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BY CATEG

* * * ANALYSIS OF VARIANCE * * *
0 cases (0.00%") were missing.

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**ANOV A**

0 cases (0.00%") were missing.

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**ANOV A**
0 Cases ( 0.00% ) were missing.
389 Cases were processed.

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<td>3</td>
<td>111.48</td>
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By CAGE

* * * ANALYSIS OF VARIANCE * * *

BY CAGE

* * * ANALYSIS OF VARIANCE * * *

0 Cases ( 0.00% ) were missing.
389 Cases were processed.

<table>
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By CAGE

* * * ANALYSIS OF VARIANCE * * *

BY CAGE

* * * ANALYSIS OF VARIANCE * * *
### Analysis of Variance

**BY CATEG**

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**More**
### ANOVA Table

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<td>3</td>
<td>53.479</td>
<td>17.82</td>
<td></td>
</tr>
<tr>
<td>Main Effects</td>
<td>3</td>
<td>53.479</td>
<td>17.82</td>
<td></td>
</tr>
<tr>
<td>Squares of means</td>
<td>DP</td>
<td>53.479</td>
<td>17.82</td>
<td></td>
</tr>
</tbody>
</table>

### More

### ANOVA Table

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Degree of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
</tr>
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<tbody>
<tr>
<td>Total</td>
<td></td>
<td>514.987</td>
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<td>Residual</td>
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<tr>
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<td>3</td>
<td>65.095</td>
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<tr>
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<td>65.095</td>
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<tr>
<td>Squares of means</td>
<td>DP</td>
<td>65.095</td>
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<td></td>
</tr>
</tbody>
</table>

### More
Direct Experience – Dep. •
Iconic – Icon •
Reading – Read •
Listening – List •
People – Rep •
animate • An •
Quotative – Quot •
Number – Num •
Authority – Auth •
Independent – Indp •
Detail – Dtl •
Institution – Inst •
Competition – Comp •
Goal-setting – Goal •
Organisation – Org •
Peer – Peer •

In these tables, CTST subscale names have been abbreviated as follows:

and the matrix of inter-subscale correlations. The following pages show the details of the factor analysis matrix and rounded matrix, summarised in Table 8.1. Also shown is the factor transformation matrix,
Final statistics:

- Factor Analyses
| 10455 | 28675 | -69836 | -44427 | -72957 |
| 18856 | 09608 | -11483 | 46777 | -14571 |
| 00422 | 06402 | -65720 | 65186 | -19856 |
| 07691 | 05694 | -03582 | -30159 | 06594 |
| 08306 | 84328 | -49284 | 96715 | 99796 |
| 01281 | 18241 | -62864 | -92864 | -34372 |
| 06961 | -03696 | -20749 | -44427 | -11395 |
| 02658 | -48415 | -38741 | -40447 | 08648 |
| 08773 | -78844 | -11395 | 20078 | 07832 |
| 02040 | -69232 | 32293 | 07832 | -03244 |
| 06889 | -38607 | 32293 | 32293 | -33244 |

**Factor Matrix:**

- FACTOR 1
- FACTOR 2
- FACTOR 3

--- FACTOR ANALYSIS ---
<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2014</td>
<td>0.2146</td>
<td>0.6791</td>
</tr>
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<td>0.08072</td>
<td>0.28571</td>
<td>0.32938</td>
</tr>
<tr>
<td>0.13412</td>
<td>0.1555</td>
<td>0.70936</td>
</tr>
<tr>
<td>-0.18356</td>
<td>-0.1662</td>
<td>-0.4899</td>
</tr>
<tr>
<td>-0.05759</td>
<td>-0.65845</td>
<td>-0.1162</td>
</tr>
<tr>
<td>0.58783</td>
<td>-0.8888</td>
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</tr>
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<td>0.70446</td>
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<tr>
<td>-0.74008</td>
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Related Factor Matrix:

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Factor Analyses
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<tr>
<td>9.6938</td>
<td>1.4190</td>
<td>2.0040</td>
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<td>9.6102</td>
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Factor Transformation Matrix:

--- FACTORS ANALYSIS ---
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<tr>
<th>W of cases</th>
<th>389</th>
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<tbody>
<tr>
<td>M of cases</td>
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<table>
<thead>
<tr>
<th>1-tailed sign:</th>
<th>90.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>N of cases:</td>
<td>389</td>
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</table>

<table>
<thead>
<tr>
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<th>IND</th>
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</thead>
<tbody>
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<td>Auth</td>
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<tr>
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<td>Auth</td>
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### Table 1

<table>
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<tr>
<th>Case</th>
<th>T-ailed Sign.</th>
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<th>N.T. of Cases</th>
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</thead>
<tbody>
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<td>1.49</td>
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<td>389</td>
<td></td>
</tr>
<tr>
<td>1.49</td>
<td>-0.318×10^3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td>-0.539×10^3</td>
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<td></td>
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### Table 2

<table>
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<tr>
<th>Case</th>
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<th>N.T. of Cases</th>
<th>N.T. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.49</td>
<td>-0.539×10^3</td>
<td>389</td>
<td></td>
</tr>
<tr>
<td>1.49</td>
<td>-0.318×10^3</td>
<td></td>
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</tr>
<tr>
<td>1.00</td>
<td>-0.539×10^3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Correlations:**
- DEXP
- ICON
- READ

**Correlations:**
- LIST
- PEPD
- INAM
- QUTL
- INP
- INDP
- DEPL
- MINS
- CONP
- GOAT
- ORGN
- PERE

**Correlations:**
- LIST
I invite you to participate and would like you to, but you don’t have to if you don’t want.

I will record the interview, but you won’t be identifiable.

The interview will be recorded in a locked cabinet at Deakin University. Your name is not recorded. The recording will be kept confidential and are stored securely.

The interview will last about 45 minutes. Once I record the interview on tape, so I can listen to what you say, I will be taking some notes so I can remember what you say. I will also take notes on your current learning problems. I will ask you a couple of questions about learning. This interview will involve you in discussing some of the ways that you go about learning. This research is designed to find out more about how people in your industry prefer to learn, and to find out how learning programs can be designed for people in your industry. So they can better fit the way you learn.

People learn in different ways, and different learner groups have different ways they go about learning. This research is designed to find out more about how people in your industry prefer to learn, and to find out how learning programs can be designed for people in your industry. So they can better fit the way you learn.
Confirmitin

(Judges that ideas in text support own beliefs, practices, theories)

Occasionally

(verb, often)

Occasionally

(Seldom)

Never

Confirmitin

(Seldom)

Never

(Verb, often)

Previously stored in long-term memory

Recallin

(Thinks back into working memory an idea, opinion or fact)

Never

Analyzes

(Reduces, breaks down whole (the problem or task) into parts)

Never

Type

Definition

Complete the module. You can also answer if you wish, based on learning you are comfortable with the module. You can also answer if you wish based on learning you have just learned, and if you want.

Question 1: I'm going to work through a list of things people do to learn, and I want you to recall what you do actually do to join those two processes up. (Reading and some from doing, what do you actually do to join those two processes up? )

Question 2: When you are learning a new thing that requires you to learn some from reading and some from doing, what do you actually do to join those two processes up?

Question 1: Do you enjoy most learning from doing or learning from reading?

Remember, take as freely as you like.

From that module, just ask me if you are not clear about what I am asking you and, if there's anything you want me to clarify. I am going to ask you some questions about your personal interaction with each module you have brought with you, and as we work through each module you have brought with you.

Part Time/Full Time: 

Age: 

Sex:

Program:

Interview Schedule
Discussion with fellow worker to assist in knowledge development

Demonstration of the process being demonstrated by a fellow worker

Unsupervised observation of a fellow worker carrying out the task as part of everyday work

Question: Now I want to ask you how much you use some action oriented processes to help you get hold of the knowledge you need in the module or in your current learning.

1. (never)
2. (seldom)
3. (occasion)
4. (often)
5. (very often)

Concepts, models, situations, ideas, theories, points of view etc.

Identifies similarities or differences between two situations, events or objects

Rehearsal

Reports feelings aroused by content during study

Effective

Debriefs

Selection

Identifies key material, task material, or that which is relevant to assessment
<table>
<thead>
<tr>
<th>4 (very often)</th>
<th>3 (occasion)</th>
<th>2 (seldom)</th>
<th>1 (never)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding Reference to other text, visual or auditory resources to facilitate</td>
<td>(2) (very often)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
<tr>
<td>Practice Engaging in practice of the skills being learned</td>
<td>(2) (seldom)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
<tr>
<td>Knowledge Finding a solution to a problem requiring relevant workplace situation</td>
<td>(2) (seldom)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
<tr>
<td>Problem solving Trying out an idea on equipment or process to test own understanding</td>
<td>(2) (seldom)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
<tr>
<td>Experimentation Testing in real workplace of knowledge gained from learning</td>
<td>(2) (seldom)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
<tr>
<td>Training Visual cues from artifacts, objects, and physical environment Instructed observation of the workplace to identify</td>
<td>(2) (seldom)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
<tr>
<td>Environmental observation Knowledge development Attendance at formal training programs to assist in development</td>
<td>(2) (seldom)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
<tr>
<td>Discussion - Tutor Discussion with tutor or supervisor to assist in knowledge development</td>
<td>(2) (seldom)</td>
<td>(3) (occasion)</td>
<td>(4) (often)</td>
</tr>
</tbody>
</table>