



## Master of Professional Studies

### ASSESSMENT – FINAL REPORT

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## Abstract

This project explores the factors pertaining to successful knowledge transfer from the classroom to the workplace in an Enterprise Resource Planning (ERP) context. The project explores the literature, both past and present and sets out to discuss what mechanisms could improve the process. The context of this study is set in organisational learning as applied to Enterprise Resource Planning software implementations. This type of study, with respect to ERP learning has not been explored before and hence the study is novel.

Various theories have been examined and reflected upon (to argue the case of knowledge transfer), and identify the factors that determine the transfer.

In this study, I consulted with my participant and conducted structured interviews to identify an area of complexity and challenge to the organisation. A need was identified to create a learning mechanism (termed as a job aid), that would assist in the knowledge transfer process I drew upon the content development theory to create a suitable prototype in an organisational setting, that serves to illustrate an example for consideration and adoption.. The prototypes were created and shared with the subject matter expert from the organisation and were assessed as a successful model upon which to base future learning interventions.

Knowledge transfer may be attributed not only to the key factors identified by various researched literature but could also incorporate the creation of an environment conducive to learning, and deep thought given to the introduction of relevant knowledge transfer collateral at critical stages of an ERP programme. I therefore utilised the Grossman and Salas model, (within the confines of the study) to identify the factors that needed further development must be present in the training programme to aid in the adoption and usefulness of the prototype that I had produced for this ERP programme. Through a process of critical reflection I have increased my own knowledge and level of practice, and will embed this new level of understanding into future design and implementation programmes.

The study has created two learning interventions, that if adopted and used in conjunction with the identified environmental support factors could improve the rate of training transfer for this ERP programme. It is acknowledged that the previous studies conducted showed no congruency and hence present a challenge to identifying major factors in knowledge transfer.

**Keywords:** *ERP Training, Learning (Cognitive Scaffolds), Performance Support, Job Aids, Training Transfer, Change Management*

## Project Executive Summary

This research project aims to study the design and implementation of effective knowledge transfer mechanisms within the context of enterprise transformation project. Typically a change initiative is embarked upon by an organisation's stakeholders, who create a vision for the organisation to uptake new technology and improve processes in order to remain competitive in the business world.

Enterprise Resource Planning (ERP) software is implemented in many organisations throughout the world, and as such, there is a huge demand for training corporate employees in the use of this technology.

In implementing complex solutions, where processes synthesise with the system, I argue that organisations seldom take the time and effort to perform in-depth studies to comprehend how learning takes place efficiently and effectively, and to understand which mechanisms can aid in this effort. More importantly, they fail to invest in quality training; instead, their focus is on cost-effective training.

Kapp notes, *"the most expensive resources an organization possesses — human resources — have not had the same systematic approach (as other business functional areas) applied toward keeping them productive and efficient"* (Kapp et al., 2016, p. xviii). A possible reason for this, notes Kapp is *"no integrated model for undertaking such a formal approach to organizational training and education has previously existed"*, (Kapp et al., 2016, p. xviii).

It is noteworthy to mention that change management programmes are rarely successful, research citing such programmes as failing by over 70%, (Griffith, 2001). So, what can research inform us about this, and how is training made successful? In the specific case of ERP implementations Kapp suggests that, *"many Enterprise Resource Planning (ERP) training plans are haphazard, ill-conceived, and focused on the wrong topics — if they exist at all"*, (Kapp et al., 2016, p. 1).

Kapp notes that ERP implementation literature has always catered for the requirements of the system, ensuring the accuracy of various functional areas, e.g. accounting, rather than the educational aspect of ERP implementations. Kapp notes that *"Education is the single most important indicator of successful ERP implementations"*, (Kapp et al., 2016, p. 4).

Kapp notes that during the many failed ERP implementations, the organisations failed to understand *"how to develop a sound structure for conducting the training required to make ERP a success"*, (Kapp et al., 2016, p. 10).

Since the conception of my research, and various inhibiting factors presenting themselves, the scope of this study has extended from the initial concept. I now believe that there may well be a holistic approach to the transfer of knowledge using various interventions that may improve performance. this would include structural support elements together with more thoughtfully designed training material and ongoing learning support in the form of cognitive scaffolding.

Using first person action research and critical engagement with available literature on aspects of training transfer I evaluated my own approach to the design of training interventions for ERP implementations and examined in a more holistic way the various impediments and roadblocks to transfer. Then I took a specific case of a complex organisational process and employed principles drawn from Merrill's content development matrix to create a prototype job aid, this I jointly designed with the intended target audience.



## Chapter 1: Introduction

I have worked as a corporate training consultant for many years, implementing training programmes on various Information Technology (IT) and Enterprise Resource Planning (ERP), programmes. I have, via informal learning, experiential learning and learning by performing (doing), acquired the skills of instructional design (curriculum design and content development). In the context of large ERP implementations, I have repeatedly been hired to perform job and process analysis to create bespoke, existing and or new, technical courseware to align to the particular and unique process training requirements within my contract environment and for the contracting organisation embarking on a new ERP transformation programme.

The landscape of training projects has undergone an unprecedented change in terms of the sophistication and diversity that is required. We have moved on from pure training delivery, to increased complexity that is concerned with seeking and exploring *multiple ways* of upskilling employees, to obtain the maximum benefits from the newly implemented system. Organisations seek, much more complex and refined solutions from the training consultant and demand that their employees learn in many ways rather than just become proficient at performing standard data entry and key strokes.

My solution design, more often includes the complete design of a training programmes using the areas of requirements gathering, analysis, design, development, rollout of training and implementation of a training programme evaluation. I also incorporate the post go-live support for organisations and consider performance support mechanisms in my design.

In my experience, whilst working for many blue-chip companies, I have concluded, that many organisations and their leaders, have underestimated the difficulty and complexity of changing working practices to obtain the best out of these complex software systems, and are often reluctant (due to increased costs), to support rich learning programmes that could be very beneficial, to both the organisation and their employees.

The complexity of the training environments has produced new challenges for me. I have become aware of my lack of detailed understanding of learning design principles and aspects of adult learning theory that could improve the impact my proposed solutions.

As a change agent, my work involves assisting an organisation that is embarking upon a change or transformation programme to create a robust training programme. I am working for a property management company that is undergoing a major ERP transformation project.

My role is that of the training lead responsible for the creation of ERP training to prepare employees for the use of the software to perform their roles.

The aims and objectives of my original project were not achieved due to the organisation changing their intended go-live planned date and the non-availability of my intended user community, who would have provided valuable assistance in the research project.

The above named issues led me to re-adjust my project aims and objectives and focus my research into a more reflective first person inquiry into my own practice as a training designer and developer. This refocusing led to a wider engagement with literature and the adoption of a more holistic review of the organisational issues impacting the transfer of learning. The new [Aims](#) and objectives are set out on page 21.

According to Haskell, (Haskell, 2000), transfer of learning is defined as the use of previously learnt knowledge to acquire and apply to existing or new experiences. An analogy may be considered as, in the case of a sportsperson, if they can strike a ball with a hockey stick, it can be inferred that the skill or action of striking can translate to the use of other sports implements, e.g. golf club and then a further transference can also be possible, e.g. for motion oriented objects such as a baseball pitched at a person or a cricket ball approaching a batsman.

Baldwin et al., (Baldwin and Ford, 1988), observe that research on transferring the knowledge from the classroom to the workplace always focused on making the training programmes better, through consideration of learning principles. They identify four such principles: identical elements, general principle teaching, the variability of stimulus, variability in the practising conditions.

Kirkpatrick, (Kirkpatrick and Kirkpatrick, 2005, p. 5), emphasise level 2 as asking, to what degree has learning taken place?, and suggest three points that can be achieved in a training program: comprehend the “concepts, principles and techniques”, acquire new skills and improve on them, and “change attitudes”. They, define level 3 of their evaluation model as “to what (degree) has on the job behaviour changed.” The Kirkpatricks note this stage as “the most difficult to measure and..the most important”. They suggest some guidelines for evaluating this behaviour: evaluate pre - and post-event, allow sufficient time for a behavioural change, survey all concerned, repeat as needed and consider the usage of a “control group”.

Stolovitch et al., (Stolovitch and Keeps, 2004), reiterate transfer as utilising the classroom-based knowledge back in the workplace. Stolovitch et al., (Stolovitch and Keeps, 2004, p. 106), note a hindering factor in the transfer could be “environmental or emotional-political “

type of issues. Stolovitch, et, al (Stolovitch and Keeps, 2004, pp. 112, 116-117), note the following which were used by the authors as providing improvement in performance: “*Natural experience, experiential learning, on the job training, structured on the job training, simulation, role play, lab training, classroom and self study*”.

In an organisational context, the influences that shape any learning project arise from various sources, e.g. stakeholders, corporate goals, budgetary constraints, type and degree of change. The degree of change includes working culture, team leader support, tolerance of mistakes, and the company reward system. In an ERP implementation cost is usually the deciding factor in determining which types of interventions can be created and to what depth.

When an ERP implementation takes place, training is treated less favourably than the implementation itself, Kapp (2016), quotes “*training is treated like a poor second cousin*”, (Kapp et al., 2016, p. 1), They also observe that, “*companies spend very little energy, time, resources, or dollars on formal, systematic ERP training and education*”, (Kapp et al., 2016, p. 4).

In my experience ERP implementation projects continue to focus, on the installation (implementation) of new technologies, and often neglect the knowledge acquisition and transfer elements of their employees. It is widely acknowledged that system training is required on the new system so that the employees can use the system effectively to perform their daily roles, and training does indeed occur, but much training knowledge is eroded from the time a participant (learner, delegate, employee) leaves the class and returns to work. I observe that the knowledge gained in a classroom setting is inefficiently applied in the workplace due to various factors; some of which are structural in nature, associated with the organisational approach to supporting employees undergoing technical change, whilst others are to do with individual learning and the composition of training materials. It is arguable that on the individual side of the equation a critical element is the lack of reinforcements and allowable practice on a test system, by the organisation. To quote Kapp, “*Each year thousands upon thousands of training dollars are wasted by organizations on misguided training on the wrong topics at the wrong time delivered to the wrong people*”, (Kapp et al., 2016, p. 109).

The purpose of this project is to Explore the factors impacting knowledge transfer (in the conduct of training during ERP systems implementation).

## Chapter 2: Knowledge landscape

This project reviews key factors impacting knowledge transfer, with a focus on ERP implementation programmes. To do this I explore the following areas of literature:

- Structural – those elements of organisational and social support that may help to create a more receptive and supportive environment within which training transfer can occur.
- Individual aspects of learning transfer

### 2.1 Structural Dimension

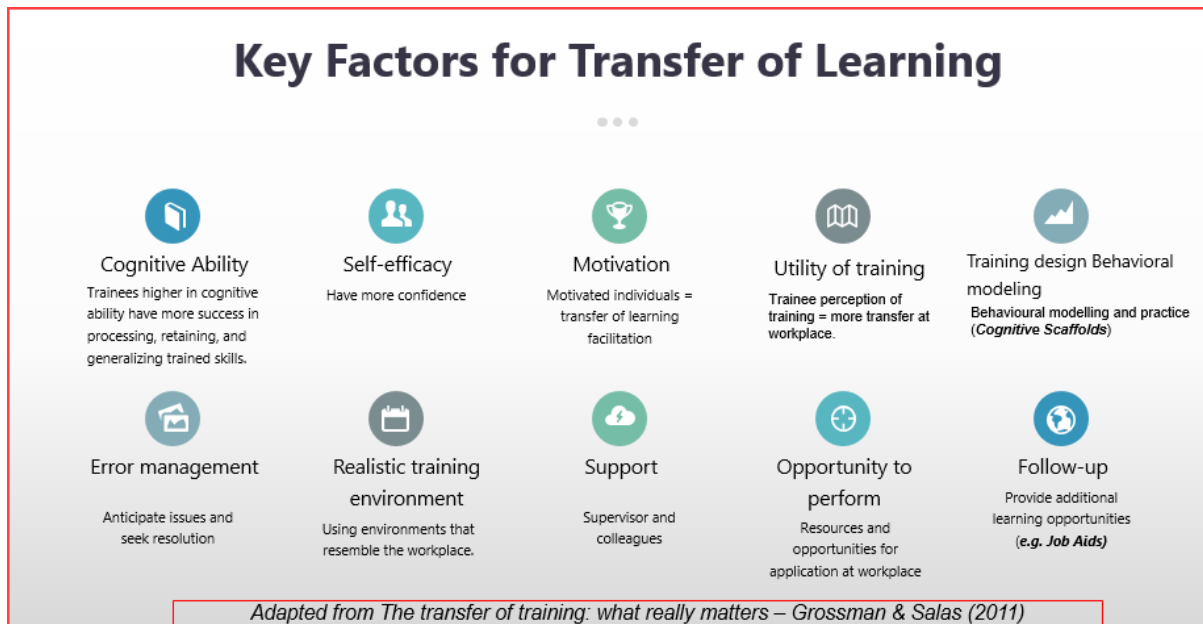
As learning is a diverse activity, there is a body of evidence-based knowledge that demonstrates the ability of an individual to learn depends on various factors such as, how motivated they are, their ability, social and peer support, organisational and other support mechanisms. I commence this review of knowledge by examining research that looks at this more holistic view of impediments and support to learning.

Burke and Hutchins (2008), identify three categories to create their research on transfer. Firstly; *learner characteristics, intervention design and delivery, work environment*. The authors claim that the models of Baldwin and Ford and Broad (2005), were conceptual in nature and that their proposed model is evidence-based.

The second major category model used by Burke and Hutchins (2008), in their research was based on the work of Broad and Newstrom (1992), and the authors cite before, during and after activities that cite transfer, (Burke and Hutchins, 2008), and finally the third category also used the work of Newstrom and identified the categories highlighting the key players in the entire process (training consultant, learner, supervisory support).

Following on from the work of Baldwin and Ford and others, much research has been conducted in understanding the transfer problem, the results of this research have proved to be inconsistent, resulting in difficulties identifying critical factors (Grossman and Salas 2011).

According to Grossman and Salas,(Grossman and Salas, 2011), the following key factors contribute to the transfer of learning and are depicted in the diagram below:



*Figure 1: Key Factors for the Transfer of Training*

The above factors, as noted by Grossman and Salas, after their review of the overwhelming literature, are relevant to the transfer of training issue because they summarise all essential features that must either be present fully in an ideal situation or a greater majority of factors in the successful transfer of knowledge. From my own experience I have used some of the above factors, that have yielded positive results in the knowledge transfer process, for example in a training programme setting, if I did not provide adequate guidance in the form of demonstrating key software principles, then the individuals would find it difficult to model some behaviours (training design behavioural modelling), In preparation for the change, all impacted personnel are communicated to by the change team, to obtain buy-in, in my work setting, the organisation is not a learning organisation but a commercial one and mistakes are tolerated but the individuals possess close support from their peers.

This Grossman and Salas model expands on the work of Baldwin and Ford (1988), who studied (in depth) the issues pertaining knowledge transfer, the fact that existing literature was of little value, and that their model was used as a basis for further work. I also observe their work was very comprehensive and used a wide variety of sources. (Baldwin and Ford, 1988).

I believe that the Grossman and Salas model provides a very good basis to understand the full breadth of the knowledge transfer process, in ERP settings in the absence of any other methodology. I personally was aware of some areas of the support of transfer models, but none at this level as there was no perceived need recognised by any organisation that I had worked for. A view echoed (Burke and Hutchins (2008).

## 2.1.1 Instructional and Job Aid Design

Organisations, frequently fail to design effective ERP instruction, notes Kapp, (Kapp et al., 2016, p. 142)

The author David Merrill sought to expand on Gagné's ideas (learning conditions for specific learning) and created a model, referred to as the **Component Display Theory** (CDT).

Within this theory, is a model referred to as the **Performance-Content Matrix**. This, according to Merrill, in Reigeluth (Reigeluth, 1983, pp. 285-286) is an extension of the categories proposed by Gagné.

### Performance Category –

- ◆ **Remember** – is used to remember an idea previously stored in our memories, for recall and use
- ◆ **Use** - “apply/(ies) a type of abstraction to a specific case” (Reigeluth, 1983, p. 287), e.g. raise a transaction for 6k.
- ◆ **Find** – create new abstractions – this dimension does not apply to the current project

### Content Category –

- ◆ **Fact** – these are unpredictable information types and can ask the learner to identify or recognise some symbol or piece of information
- ◆ **Concept** – these can be groupings of some information, occurrence, or representation, sharing common or similar traits. This asks the learner to draw inferences from the learning materials, e.g. What are the approval limits? Which is the lowest approval limit? Etc.
- ◆ **Procedure** – are a logical, sequential set of steps that the learner must perform in order to accomplish a task on the system. E.g., what are the steps to enter a purchase transaction of the magnitude 7600GBP?
- ◆ **Principle** - these are ideals or standards that shape beliefs. These are “*cause and effect or correlational relationships*” that make sense of “*events or circumstance*”. (Reigeluth, 1983, p. 288)

I was not previously aware of this model and its background and application are new to me. It has exposed me to a new way of thinking about the detailed construction of learning materials in general and user centred training aids in particular

### 2.1.2 Supporting memory to aid Learning

Paas and Sweller (2005), note learning as “any change in long -term memory involving an accumulation of information”, (Mayer and Mayer, 2005, p. 41).

In order to address this question, one must consider the safety and emotional security of the learners, within the learning environment, (Sousa, 2016). If the participants “feel physically safe and emotionally secure”, (Sousa, 2016, p. 50), then they can devote their efforts to “cognitive learning (the curriculum)”, (Sousa, 2016, p. 50). He continues “emotions interact with reason to support or inhibit learning”, (Sousa, 2016, p. 50).

Setting the climate should also be factored in for adult learning. The authors of Adult Learning, (Knowles et al., 2015), created a table of process elements of andragogy, that constitute to the overall success of a learning event (See Figure 3: Elements Of A Successful Learning Event)

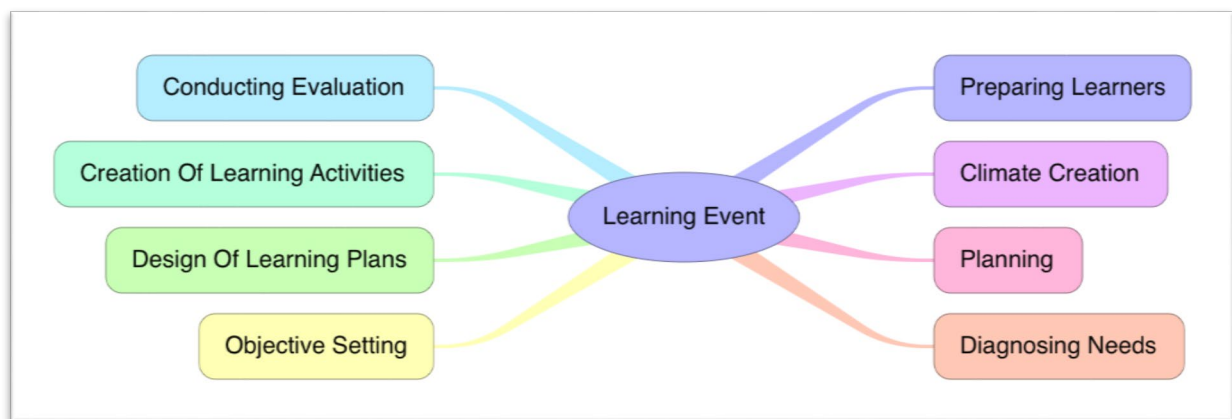


Figure 2: Elements Of A Successful Learning Event

My own opinion is that all the principles may be useful but are dependent upon context. In a work-oriented setting, the goal is to train and impart the knowledge as **quickly** and as **cost-effectively** as possible.

In the next section, I review mechanisms to avoid knowledge erosion over time and why Knowledge gained within a classroom environment is not retained by learners, I also review the work of Ebbinghaus and his theory of forgetting

### 2.1.3 Mechanisms to avoid knowledge erosion over time.

The work of Ebbinghaus, (Ebbinghaus, 2013), describes the forgetting curve (this was referred to as the Ebbinghaus curve of forgetting). This curve used the dimensions of **recall**,

**recognition** and **savings**, (Erdelyi, 2008). Ebbinghaus used himself as a subject to conduct his research on nonsense syllables. Using nonsense syllables meant he would find associations difficult and thus impede the process of retention.

Kapp draws on the work of advertisers and notes that messages must be repeatedly communicated for them to be effective, (Kapp et al., 2016, p. 112). So in order to increase retention of ERP knowledge, *“the basic concepts of the class must be presented by several methods, such as meetings, videos, audiotapes, and through the corporate intranet. The goal of the organization (sic) should be to present the message in a manner that is congruent with a variety of employee learning styles”*, (Kapp et al., 2016, p. 113).

Once information has been taught, the learner should be allowed to practice the skill as in the case of a procedure, a number of times, to **reinforce** the learning, Kapp (2016), notes that *“over time most people internalize procedural knowledge and are able to perform the procedure fluidly without thinking of the discrete steps”*, (Kapp et al., 2016, p. 168).

In the next section, I review cognitive scaffolds as mechanisms that support learning and state job aids can be thought of as cognitive scaffolds.

#### 2.1.4 Cognitive Scaffolding

A scaffold, as described by Wood, (Wood et al., 1976), is a mechanism that could be used by enhancing that ability via the aid of a more knowledgeable and learned individual.. In this project, a scaffold is both the guidance of a teacher and the learning materials, as noted by Reisman (Reisman, 2012), in Sawyer, (Sawyer, 2005).

A scaffold can be described as an *ancillary* support mechanism that may be used to enhance learning in any given setting, for example, in ERP transformation programmes post implementation of a new system. A few examples that qualify as scaffolds could be an instructor's, exercise, or quick reference guides, videos, webinars, and so forth.

Scaffolds (such as job aids), noted by Boyd, (Boyd, 2005, p. 2), provide several key benefits, (See *Figure 3: Job Aid Benefits*)



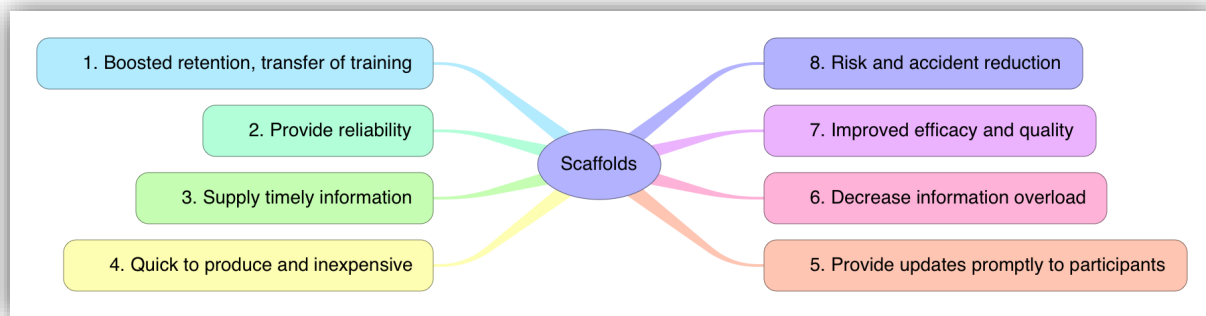


Figure 3: Job Aid Benefits

I will now review how scaffolds can aid in learning and facilitate the creation of an independent learner by the gradual withdrawal of scaffolds.

### 2.1.5 Learning and Scaffolding

A scaffold is a form of assisted learning. According to Wertsch, (Wertsch, 1979), this could be the facilitator assisting the learner. Wertsch observes that over a period, the guidance is gradually reduced, which results in “*fading scaffolding*”.

A scaffold is based on the premise that the learning activities or events are a shared undertaking between the learner and the learned, and that it not only is an enabler in the performance of complicated tasks but is a facilitator of learning from experience, as observed by Sawyer, (Sawyer, 2005).

Having looked in some detail at the structural elements that can impact learning transfer I now turn my attention to how individuals learn and examine a range of theories of learning.

## 2.2 Individual aspects of transfer of learning

An instructor imparts (teaches) the desired knowledge so that the workforce may become efficient in the use of technology to be able to perform their job, but individuals have to attend to their learning. They must perform activities that will allow them to retain, remember and apply their learning to their specific contexts.

### 2.2.1 The Learning phenomenon

Gagné et al. describe learning, as a “permanent change in human disposition or capability that is not ascribable simply to processes of growth”, (Gagné and Medsker, 1996, p. 6).

Learning, notes Gagné et al., (Gagné and Medsker, 1996), was categorised into some of the following models: Association, Classical conditioning, Trial and error, Insight

It is interesting to observe that the rate of learning differs from one employee to the next, notes Kapp, (Kapp et al., 2016, p. 109). Also, Kapp (2016) notes that “a different approach must be taken toward educating each of these individuals about the ERP system because they each have a different learning style”, (Kapp et al., 2016, p. 110).

Clark (2011), observes that a procedure is “a series of...defined steps”, (Clark, 2011, p. 60), resulting in the completion of a task and goes on to suggest that procedural learning “can be learnt at the remember and application level”, (Clark, 2011, p. 61). This implies remembering how to perform the steps the very first time before practicing the performance of the procedure. She draws a distinction between ways of teaching procedures and ways of dealing with concepts, which she defines as “a mental representation or prototype of objects or ideas that include multiple specific examples”, (Clark, 2011, p. 82)

Process-related learning is also in the domain of my project as processes and procedures are interrelated. According to Clark (2011), “procedures are directive and processes are descriptive”, (Clark, 2011, p. 126), i.e. the why and the how. Clark (2011) proceeds to decompose the processes and even goes as far as categorising them into business, technical, scientific, (Clark, 2011, p. 126). In my research, I review business processes, that contain many “stages performed by different employees”, (Clark, 2011, p. 126),

The next section discusses the conditions of optimal learning and how these conditions are brought about and sustained

### 2.2.2 Optimum learning conditions

To learn intellectual skills, Gagné notes that there must exist “mastery of prerequisite skills”, (Gagné and Medsker, 1996, p. 37). There is a need to appreciate rules and concepts (as noted by Gagné). Gagné also notes that there are two conditions of learning: internal, i.e. what the learner must do or have, and the external, i.e. what the instructor or an external factor will do in the learning phenomenon. In so far as the internal condition for intellectual skill is required, all prerequisite skills can be recalled instantly and in the person's memory, (Gagné and Medsker, 1996, p. 37).

### 2.3 Summary

In summary, I have reviewed various research and conclude that there are factors that influence knowledge transfer and if these factors are implemented at the instructional design phase of a programme, then meaningful training collateral can be devised, that supplements the individuals learning and thereby aiding transfer into the workplace. In this endeavour the Grossman and Salas framework represents the amalgamation of previous models and could be used as the basis for further research in this field. Whilst this may be true for the general transfer, there still exists the gap of ERP training application and knowledge transfer, but in my own opinion the models already presented, could be adapted in a practical setting to aid in this effort.

## Chapter 3: Methodology

It was my intention to conduct an Action Research style project working with small groups of subject matter experts drawn from key work streams in the ERP implementation project. The focus was to have been on the individual aspects of training transfer as I co-created prototype learning materials and job aids to improve learning transfer, retention and ultimately user performance with the new ERP system. However, changing organisational priorities and delays to software implementation meant that the proposed locus for my research was no longer available and subject matter experts previously identified as critical for my user engagement phase of research could not prioritise working with me.

I amended the focus of my project and re-structured my work as follows:

- I broadened my work to explore more generally the issues related to learning transfer in ERP training implementations this involved conducting desk research on the transfer of learning and the known impediments to learning transfer.
- I used my work setting as a case study to explore the issues, both structural and individual, that shape training transfer in an organisational setting. I employed the Grossman & Salas (2011) learning transfer typology as the basis for this review.
- I engaged deeply with theory regarding the construction of learning materials and sought to apply this theory to the construction of a prototype job aid. This involved:
  - negotiating access to and gained the support of a work stream leader in a key implementation accounting process and elicited process knowledge that would allow me to build a pilot job aid
  - negotiating access to the live software environment to personally test the resulting job aid.

I have restructured my aims and objectives as follows and the remaining chapters of this report speak to these new objectives.

**Aim:** to explore knowledge transfer factors in ERP training initiatives

**Objectives:**

- To research and use literature to discover which types of training interventions could be used in my project

- To apply the Grossman and Salas model for training transfer to my specific ERP training project in order to develop my own practice and understanding of how to better specify and develop training implementations in the future.
- To employ aspects of the Content Development Matrix approach create an effective intervention (job aid), for a specific core process in my implementation project

The following questions shaped the research presented within this document:

- ◆ How significant is the problem of training transfer?
- ◆ What are organisations getting wrong?
- ◆ Why does learning not take place effectively?
- ◆ Why can the participants not take their classroom learning and apply it to their workplace?
- ◆ Why is there no comprehension of the training matter?
- ◆ Why do the participants fail to recall material in the live environment?
- ◆ Why do participant fail to learn to apply and transfer their learning?
- ◆ Why is ERP classroom training ineffective?
- ◆ What can help the learners to overcome these barriers?
- ◆ Why are learners unable to apply and transfer their knowledge from the classroom to their work settings?
- ◆ Why can learners never remember a significant amount of classroom knowledge?
- ◆ How can learners be aided in selecting the correct learning interventions (job aids) to aid the remembering and transfer process?
- ◆ How can job aids be created that meet the requirements of different learning needs (styles) and business process requirements?
- ◆ Which job aids will the employees find useful?
- ◆ How can learners prevent knowledge erosion?

### 3.1 Desk Research

This research was not a traditional research as such but research that is considered a secondary inquiry i.e. desk research, where I took the literature and used it to further explore this area and use the knowledge in making sense for my area of inquiry. I consider this to be a valid form of inquiry.

In this research, I reviewed the literature and focused on the Grossman and Salas model, due to its distillation of previous eminent scholars and their research as the basis of this project. Their model represents the succinctness of previous research as it applies to the knowledge transfer issue.

I negotiated access to appropriate personnel for this study by firstly approaching the learning and development director and then the project stakeholders, explaining the need for such an inquiry and the usefulness of it to the organisation. I explained that after the training is completed, knowledge will deteriorate unless some mechanisms are considered and explored linking the possibility of creating appropriate and suitable interventions.

In attempting to identify and create an intervention that could prove useful in the knowledge transfer issue, I obtained assistance from a subject matter expert in the organisation that I worked for. I jointly identified the area that was problematic and hence in need of such an intervention and then I set about designing and creating a prototype.

Grossman and Salas identify the model for factors in transferring knowledge and I used their identified factors in the design of the prototypes. The factors were used as the basis of consideration as to what should be designed. Two themes of the model resonated with this project training design behavioural modelling (cognitive scaffolds) and follow-up processes where further learning opportunities were explored in the form of job aids (interventions). Some other factors were advised to the client, but they refused adoption due to the organisation considering such other areas for improvement as too ambitious.

The factor that was implemented to aid in knowledge transfer was the follow-up as this is where a risk was identified in the overall learning process. Job aids were many in design and type, and I narrowed down the possibilities with my SME. The SME also agreed the need to produce a job aid, that would help in the overall remembering process. I went further by also creating a set of work instructions as a further form of scaffolding.

### 3.2 Understanding Qualitative research

Research can be thought of as a form of inquiry that seeks to inform us about a certain phenomenon and involves inquiring in a methodological way (Merriam and Tisdell, 2015). Qualitative research is a type of research that seeks to understand a phenomenon in great depth, in all its facets and every dimension, and to explore and ask in depth and sense-making questions to gain a richer understanding of the subject matter. In my study, I value a subjective understanding of human experience of the learners and myself rather than attempting measurement.

### 3.3 First Person Action Research

Somekh (Somekh, 2005), notes, that action research is a form of research that seeks to identify a problem (impacted issues) and adds to the research methodology to understand all factors that affect change. It is a method that can take action, transcending the basic level of “theorizing social practices”, (Somekh, 2005, p. 1), and the work is then conducted in collaboration with the research participants to improve their ways of working. I outline certain characteristics of action research as noted by Somekh that apply to this project: that there is a collaboration element between the researcher and participant, and that the knowledge created is one of a kind, this uniqueness is explained by the term’s insider and outsider access to knowledge, where knowledge is more available to an insider rather than an outsider. There is a high level of reflexivity in this type of research, Somekh notes that individuals aim to improve what they do at the “working processes, relationships” and outcome level, (Somekh, 2005, p. 7). The knowledge that provides the input to this research comes from various domains and contextual meaning is drawn and validated to add to the body of knowledge.

### 3.4 Qualitative case study approach

A qualitative case study is a process or a method that allow for the scrutiny of a problem as applied to the area of interest and is used properly aids in theory development, programme evaluations, and creating tools to assist in change (Baxter and Jack, 2008), and that the case study allows for the scrutiny of research areas using many sources of substantiating data. In my project context, utilising the factors of knowledge transfer model by Grossman and Salas, who provide factors that have been noted from various researchers, which are used to understand the knowledge transfer issue of my project.

In my project, my case or “unit of analysis”, (Baxter and Jack, 2008, p. 545), is to explore the factors in knowledge transfer, and defined as “... a type of ...used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes”, (Baxter and Jack, 2008, p. 548).

## Chapter 4: Project activity

### 4.1 Engaging with literature on training interventions

#### 4.1.1 Training interventions

My research objective: **to research and use literature to discover which types of training interventions could be used in my project**, is addressed by this section.

An intervention is any “*purposeful act designed to solve a problem, change behaviour (sic), improve performance, increase outputs, and improve outcomes. Examples of interventions are introducing programs, adopting new technology, changing the structure of the organization, redesigning jobs, and **training**”, (Hale, 2006, p. XXV).*

In my project context this is the introduction of a new ERP system and changes in process, which impact the workforce to improve their performance and learning, and thus enable them to be able to do their job.

A **training** intervention relates to training the workforce (and includes the front-end analysis, design and development of instructional interventions), and may use many instruments and mechanisms to fulfill such a task.

Training is based upon the acquisition of **knowledge** and therefore it is important to remind oneself what knowledge is.

Knowledge is defined according to Milton, 2007, as “(the ability, skill, expertise), to (manipulate, transform, create), (data, information, ideas), to (perform skilfully, make decisions, solve problems), (Milton, 2007, p. 4).

#### 4.1.2 Knowledge considerations

Knowledge may be classified into two **types**, e.g. procedural or conceptual knowledge. For procedural knowledge, e.g. I know how to operate a machine, implying that this shall have “processes, tasks, and activities”, (Milton, 2007, p. 4). For conceptual knowledge, e.g. I understand that a car is faster than a bus. Milton explains this as “the ways in which things (referred to as ‘concepts’) are related to one another and about their properties”, (Milton, 2007, p. 4).

Nonaka (1995) notes that knowledge is about “beliefs and commitment”, and both of these converted into some “action”, (Nonaka and Takeuchi, 1995, p. 58). The **action** element, in my context is transferring the learning from a classroom setting and **applying** the gained knowledge to the working environment.



On the other hand, **Explicit** knowledge notes Nonaka, “*is transmittable in formal, systematic language*”, (Nonaka and Takeuchi, 1995, p. 59).

#### 4.1.3 Human performance and improvement

Rothwell (1995), notes that traditional training approaches minimises the transfer of learning, (Rothwell, 1995). He argues that the customers who procure training, are delusional in their thinking that training improves performance, and advocates the “*application of human performance enhancement strategies*”, (Rothwell, 1995), and one such strategy is aligned with the work of Grossman and Salas that I address in the next section : Job aids or “performance aids”, (Rothwell, 1995, p. xxii).

To summarise, engaging with the above ideas has enabled me to consider what style of intervention would be useful to co-design with my subject matter expert. The natural conclusion to my decision was the construct of a job aid which could be prototyped and proposed as a viable proposition for my organisation.

As a result of both the literature that I have read, and the models of transfer and factors in the knowledge transfer arena, I am able to utilise these ideas and consider performance strategies for inclusion and consideration in my practice to aid knowledge transfer.

#### 4.2 Grossman and Salas Model

My objective: ***To apply the Grossman and Salas model for training transfer to my specific ERP training project in order to develop my own practice and understanding of how to better specify and develop training implementations in the future***, is addressed in this section

The Grossman and Salas model seeks to highlight key factors in the knowledge transfer process. Each factor represents an area of earlier research, conducted and based on empirical studies, to establish factors which affect knowledge transfer. The prior researchers, whilst conducting research in many vast and varied fields, all came to similar conclusions, that are highlighted in the model.

Training develops important competencies for the employee in the organisation, and training that works is said to provide *many* benefits to both the organisation, i.e. sustain the organisation and the individual by creating a positive work environment and reducing mistakes, (Grossman and Salas, 2011).

Having identified the above rationale for training, the problem of training transfer has perplexed many parties, from researchers to organisations. The purpose of training is to improve performance so why is it that employees cannot transfer their training to their workplace? Grossman and Salas argue that learning is insufficient to make employee training effective. The authors add that transfer involves “*generalisation and knowledge maintenance*”, (Grossman and Salas, 2011, p. 104).

If the tasks are not performed accurately and in sequence, for example, the system may produce erroneous results, requiring rework and error resolution – another factor identified by the Grossman and Salas model. The authors argue that if employees are given error training and the mechanisms to identify and resolve those errors, then their knowledge transfer would be greater than those groups who were not given this type of training.

The authors suggest that having identified all the factors in their model, the focus should now be to “*examine the conditions that under which the factors are most important*”,(Grossman and Salas, 2011, p. 117).

In my project, I have considered and proposed one such factor (job aid), but supplemented it with a work instruction, that impacts transfer. I believe a job aid is a viable intervention that assists an employee to remember the salient parts of a process or procedure, where there is a deeper level of complexity required or where an employee is required to perform the exact (e.g. twenty) steps (error-free)that are required to complete a task on the system.

I created a job aid on a process that was perplexing a subject matter expert who participated in my research question. I held a series of meetings with him to establish what was an area of concern and why this problem is worthy of study. He informed me that due to the transformation programme, there were new ways of working being introduced, which would impact the workforce, e.g. the introduction of the new technology requiring a deeper understanding of how a certain process would work and the teams requirement and his expectation to understand how to perform those tasks and processes in the context of the programme.

I learnt that there are factors that can either aid or hinder knowledge transfer and now have an awareness of how these factors may be employed in my future training programmes. A job aid can alleviate the burden of remembering a lot of information and thereby freeing the demands imposed on the memory of an individual, (Rossett and Schafer, 2006).

### 4.3 Content Display Matrix as a tool in Job aid design

My objective: ***To employ aspects of the Content Development Matrix approach create an effective intervention (job aid), for a specific core process in my implementation project***, is addressed in this section

In order to design useful instructional aids, I had to consider, concepts, principles and procedures.

A concept is a “*phenomenon that can be conceptualised (i.e., grouped or categorized (sic), in many alternative ways*”, (Reigeluth, 1983, p. 12).

In order to have an appreciation of instructional theory, I was introduced to Merrill’s component display theory (CDT). According to Reigeluth (1983), this theory “*integrates knowledge about learning and instruction from all three major theoretical perspectives: behavioural, cognitive, and humanistic*”, (Reigeluth, 1983, p. 281).

CDT attempts to categorise learning **objectives** on “two dimensions”:

- ◆ “Type of content (facts, [concepts](#), principles, [procedures](#))
- ◆ Desired level of performance with that content (remember, use, and find)”, (Reigeluth, 1983, p. 281).

#### **Performance Category –**

- ◆ **Use** - “apply/(ies) a type of abstraction to a specific case” (Reigeluth, 1983, p. 287), e.g. raise a transaction for 6k.
- ◆ **Find** – create new abstractions – this dimension does not apply to the current project

In my example, I have identified the following **concepts** that could be taught:

- 1) approval limits
- 2) routing transactions to appropriate approvers
- 3) validation failures
- 4) possible remedies of validation failures

To classify the concept at the **USE** level, the following performance content classification may be considered:

- 1) In the Job aid process diagram, identify where a system hold is placed?
- 2) What are the three types of holds placed?
- 3) In an AP invoice hold, is there a correspondence used for resolution purposes?

- 4) On the diagram, identify where the hold is resolved?

To teach the concept at the USE level, I would

- ◆ Create a **definition** of what a transactional hold is. A **definition** is “*a statement of the critical features associated with a concept*”, (Clark, 2011, p. 86). In my example, a workflow is a system representation for routing approval transactions
- ◆ Create an **example**. An **example** “*is an instance of the concept*”, (Clark, 2011, p. 87). In my example, a workflow transaction of 6K GBP will be routed to John Smith.
- ◆ Create an analogy. An analogy “*is a representation that corresponds with a concept or form, but which is otherwise dissimilar*”, (Clark, 2011, p. 89).

Teaching a concept in a classroom setting (USE LEVEL) entails the following approach, as suggested by Clark (2011):

- ◆ Show an example of a workflow – see [Appendix 1 Prototype Job Aid Process Flow Diagram](#)
- ◆ Provide an analogy, e.g. a workflow could be thought of as a piece of paper requiring your approving managers signature. If the manager is absence, you will seek out his/her manager to approve your request
- ◆ **Create an exercise direction, e.g. identify the AP transaction holds, state when a supplier intervention is needed, state actions needed to GRN transactions**

To classify the concept at the **FIND** level, the following performance content classification may be considered:

- 1) Place all orders in a category of approval levels
- 2) Sort orders from receipted to non-receipted
- 3) Which flow chart box describes the hold that is placed due to purchase order lines issues

Teaching a concept in a classroom setting (FIND LEVEL) entails the following approach, as suggested by Clark (2011):

- ◆ Ask a question: what is a workflow?
- ◆ Create a definition

- ◆ Show an example of a workflow – see [Appendix 1 Prototype Job Aid Process Flow Diagram](#)
- ◆ Provide an analogy, e.g. a workflow could be thought of as a piece of paper requiring your approving managers signature. If the manager is absent, you will seek out his/her manager to approve your request
- ◆ **Create an exercise direction, e.g. create a series of transactions that meets all approval limits**

### **Job aid design**

In the design of a job aid, I considered the following approaches, with the department head, as noted by Boyd, (Boyd, 2005):

- 1) Ascertain when a job aid is to be used – I conducted interviews with the department head to identify areas of complexity or concern that perturb the users in their interaction with the proposed ERP solution. The factors helped me to categorise the job aid include: complexity, business goals, the incidence of the task, sequencing, the stability of information, job environment and target audience,(Boyd, 2005, p. 3)
- 2) the following factors were considered in deciding whether to use a job aid for a given scenario:
  - a. *if a task is infrequently performed,*
  - b. *there is a requirement for very high accuracy in data entry,*
  - c. *and the consequences of executing the task incorrectly will be a significant risk to the organisation,*
  - d. *involves many steps and decisions,*
  - e. *method of performance is probable to change,*
  - f. *training time and budget is limited,* (Boyd, 2005, p. 3)
- 3) Select the appropriate job aid to use – there are many job aids that could be proposed and a list is presented here for illustrative purposes:
  - a. *Decision trees,*
  - b. *Checklists,*
  - c. *step-by-step instructions,*
  - d. *Flowcharts and map graphics,* - The department head wanted a flowchart to be created, which was what I was about to embark upon, but after reflection and project time constraints I was only able to prototype the product only.
  - e. *look up tables,*
  - f. *worksheets,*

- g. *forms*,
  - h. reference sources, adapted from Boyd, 2005, (Boyd, 2005, p. 5).
- 4) Select the medium – the medium can be print-based, computer-based, or multimedia based, and will depend on many factors such as cost, whether computer access is available, job aid content is stable or evolves due to changes, frequency of updates, aesthetically pleasing, accessibility, adapted from Boyd, 2005, (Boyd, 2005, p. 5)
  - 5) Implement and evaluate the effectiveness of the job aid – in this; I present the prototype to obtain feedback

#### 4.4 Summary

To summarise the activities of creating a worthwhile training intervention that would help in the retention of knowledge that is gained after a classroom training session, I negotiated the time and gained access to a workstream that was impacted by the change programme. In this programme new ways of working were introduced by the organisation and with the introduction of a new software system. The processes were changing from the as is state to the to-be state and the software would need to allow the fulfilment of those processes using the new technology. System users were required to gain the software knowledge and be able to apply that knowledge in the context of their work environment.

I identified the areas of study with my workstream lead and taking into consideration the theoretical literature and utilising adult learning theories, and the use of the Grossman and Salas model of factors that impact knowledge transfer, I was able to create a couple of prototypes for consideration and adoption by the organisation. I also used the content display matrix to think deeply about how this matrix could be used in the design of the intervention and improve my own thought process to become more efficient in future endeavours.

## Chapter 5: Project findings

In this section, I review and reflect on my learnings and how my practice, about instructional design, has changed and improved and shall continue to change as a result of my first-person action research.

Within the context of my project, it is beneficial to understand the phenomenon I am trying to address; in this case, the factors pertaining to knowledge transfer. I understand the importance of having a sound plan and to identify the anticipated delays (risk governance), and to ensure such risks are minimised and addressed at the earliest possible opportunity.

In my experience, systems training in organisations involves teaching the processes and then demonstrating the new process with clear step by step procedures (provided in an intervention such as a user reference guide) to back and demonstrate the principal learning but lack the incorporation of knowledge retention methods.

I hope to use the principles, theory and models outlined in my paper to improve on this aspect of performance support and ensure my training endeavours and interventions are more quality and context related.

I noticed that organisations fail to understand “*that existing business processes will likely need to change to fit the ERP software’s design standard*”, note Kapp, (Kapp et al., 2016, p. 57), and as such there is always a need to create robust training programmes, that not only instil learning but promote transfer and retention of that learning.

The teaching can encompass the following categories: facts, concepts, processes, procedures and principles, notes Clark, (Clark, 2011, p. 55), but in **practice**, some of the categories may be used and not all, due to time and budgetary constraints of a project. These categories are also in *alignment* with Merrill’s content display theory and matrix, that I will leverage in my practice on future workplace settings.

According to Clark (2011), instructional design “*involves providing clear information, giving practice with feedback*”, (Clark, 2011, p. 132). I believe my interventions support this statement in that they are clear and concise and direct the learner to apply the knowledge to their workplace setting.

In this project, the following learning interventions were created:

- ◆ A **process flow diagram** as a job aid. A flow chart is defined as “*visual road maps to illustrate a process or procedure and are useful when there are alternatives or decision points*”, (Boyd, 2005, p. 5) – see [Appendix 1](#). According to Saven noting

(Lakin et al., 1996), “a Flowchart is defined as a formalised graphic representation of a program logic sequence, work or manufacturing process, organisation chart, or similar formalised structure”, (Aguilar-Saven, 2004, p. 134).

- ◆ a set of **work instructions** or procedures – see [Appendix 2](#). This a procedural guide that aids the learner in performing the necessary steps in order to complete the task on the system. I have attempted to provide a comprehensive example.

In order to teach the procedural aspect of training, Clark (2011) notes this as, “learners will typically have a record of the steps in a training manual, view an instructor demonstration, and (reinforce the learning by) practice the steps in a hands-on made using (the appropriate) equipment... in completing the procedure”, (Clark, 2011, p. 62). Clark suggests that procedures are aesthetically presented in “action and decision tables”, (Clark, 2011, p. 62). I have not used this before and hope to adopt this in my practice in the future. I have noted that Clark’s, decision tables are like the process flow diagram that I have created and will use. This is recognised as “a more space-efficient alternative to decision tables”, (Clark, 2011, p. 66).

The teaching in action would be composed of the construction of a user guide that contains modules, sections and topics. Each module would contain such a process flow diagram to provide a high-level overview of the process to indicate the flow of the transaction. These would then be talked through in terms of which people role the transaction would make a touchpoint to indicate the relevant impacted employees’ action. I call them the “actor”. The ‘actor’ will perform an action whether it is on the system or off system by way of a manual process, e.g. file a document in the cabinet.

The **work instructions** shall make up the seminal content in the learner’s user (reference guide) at the task level, as the guide shall contain all the procedures that the learners shall adopt in the course of the classroom and at the workplace.

This guide serves the purpose of being the “go-to guide” for replicating the procedural steps in the performance and completion of a task within the Voyager system. It is the intention that users need to know how to perform the procedures to understand the knowledge of how to input, process, and complete transactions within the system.

I believe that while engaging with the Content Development Theory and producing iterative and interactive examples of the job aid design, this process has refined my instructional design thinking approach. In the future, I intend to use the theory more in terms of considering the design as this is design with a **purpose**. To quote from “In Alice’s Adventures in Wonderland by Lewis Carroll, the cat said, “If you don’t know where you are going, any road will get you there.”(Holman et al., 2007, p. 17).



Clark (2002) observes that “*Learning occurs by the encoding of new information in permanent memory called long-term memory. According to a theory called Dual Encoding, content communicated with text and graphics sends two codes— a verbal code and a visual code. Having two opportunities for encoding into long term memory increases learning*”, (Clark, 2002, p. 3). Both of my interventions have a mixture of graphics and text, in the hope of increased leaning.

Clark identifies six principles that lead to active learning. Although these refer to e-learning, they can apply to any learning setting:

1. Multimedia - adding **graphics** to words can improve learning
2. Contiguity – placing text **near** graphics improves learning
3. Modality – explaining graphics **with audio** improves learning
4. Redundancy - explaining graphics with audio **and redundant text** can hurt learning.
5. Coherence – using **gratuitous visuals**, text and audio can undermine learning
6. Personalization - use **conversational tone and pedagogical agents** to increase learning”, (Clark, 2002).

## 5.1 Application of the Grossman and Salas model to my case

The Grossman and Salas model depicted in Figure 1 on Page 14 summarises the factors are considered the gold standard to achieving a very high-quality training intervention transfer.

The knowledge transfer factors and their application or omission to my current programme are highlighted as below:

- **Cognitive ability** – my attendees, in this organisation have a range of mixed cognitive abilities, therefore the individual that possess a higher cognitive ability shall be able to transfer their learning more than the ones that have a lower ability
- **Motivation** – in my organisation I feel the workforce is not really motivated to learn and hence I believe that their learning transfer will be impacted by this factor
- **Utility of training** – in my organisation’s ERP programme, there is a mixed feeling about training being valuable, some individuals value the training whilst others do not. The one that value the training, will have successful knowledge transfer as compared with those that do not value the training
- **Error management** – in this organisation this factor simply does not exist and hence this factor will represent a risk to knowledge transfer

- **Realistic training environment** – this organisation has provided a training software environment for the workforce use, to reinforce and practice the knowledge gained within a classroom setting and hence aid knowledge transfer
- **Support** – this ERP programme, has minimal colleague and managerial support. The colleagues themselves are in search of knowledge and therefore represent a low base of knowledge. The same applies to their managers and therefore the support factor for knowledge transfer is low
- **Follow-up** – in this organisation there is no follow up support factored in and therefore represents a major risk to the knowledge transfer process

I would emphasise to the organisational leaders the need to incorporate the factors to minimise the transfer issues, and that the factors are incorporated into the design of the programme backed by research, to present a holistic proposition for adoption and to overcome resistance to the outlined approach.

I understand how an argument is constructed and the associated merits and opposite viewpoints. I have come to realise that there may be no perfect solution to any problem or issue.

In practical terms, several factors are beyond the control of training (cognitive ability, learner confidence, learner motivation) and hence will impact on the final transfer. Due to cost factors, organisations are generally unwilling to consider every factor to be deployed at every training programme to promote transfer of learning (Grossman and Salas 2011)

I have learnt that research participants may withdraw their participation and hence it is astute to ensure a back-up plan is in place.

In my previous ERP training design endeavours, I never considered how adults learn and what would be the best way of designing instruction. After having exposure to the adult learning theory, as a direct result of my research project, I now have a more rounded and richer understanding of the adult learning process and how best to customise any learning event to the learners specific needs, taking into consideration, how adults learn, and which instructional design model will work for them. I also now understand that if the design is weak, then their mental faculties could be overloaded, and hence, special consideration should be given to reduce the cognitive load and hence aid learning.

I also learnt that graphics should be displayed as they are easier to use and understand.

I now appreciate that to teach the facts concepts, process, principles and procedures, requires a change in perspective and the use of different ways of creating instruction.

I have learnt that job aids can be an excellent addition to the standard training collateral produced, as the aids facilitate the memory and recall of instruction to be used in the workplace setting. The most significant difficulty in organizational learning is the lack of reinforcement activities at the workplace or the encouragement thereof by the organisation.

Kapp notes that an *“effective tool for minimizing the complexity of the ERP system in the eyes of the general users is to develop “cheat sheets” containing quick reference information that can be distributed to the users. The sheet should contain a reference to which keys are for help, exiting, saving, and deleting”*, (Kapp et al., 2016, p. 193). This is what my subject matter was referring to when I conducted the initial interview with him to ascertain his workstreams requirements.

Gottfredson and Mosher (2011), (Gottfredson and Mosher, 2011), note that obtaining a single skill is just the first step to competency and not considered performance, which in their opinion, needs *“integration of personal and collective skill sets in a collaborative work environment”*, that is never static,(Gottfredson and Mosher, 2011, p. 38). They note that a learning approach must factor in the following areas, the workforce must work collaboratively, their skills must be maintained, learners have to learn new skills instantaneously, not all learners can learn everything imparted to them, when the knowledge is ready to be applied, more support must be provided, further support should be considered when learning fails and cannot be applied for any number of factors,(Gottfredson and Mosher, 2011).

Gottfredson and Mosher, note that to address the above, there are *“5 MOMENTS OF LEARNING NEEDS”*, (Gottfredson and Mosher, 2011, pp. 39-40), these being:

- New and more, used in many training programmes,
- apply – when the learner is needing to do something at their workplace setting using the acquired knowledge,
- resolve and troubleshoot issues as they arise,
- addressing change.

When ERP training is conducted, it is usually a few weeks or months ahead of the go-live date. The result of this is that the workforce forgets 90% of the learning. To alleviate the dilemma, training should be conducted closer to the actual go-live and selective content should be taught. (Gottfredson and Mosher, 2011), making training more impactful but without incurring any costs.

To summarise, if an ERP implementation is to be successful, then one must “*conduct a proper analysis to determine the **strategic** and **learning** objectives of the organization*”, (Kapp et al., 2016, p. 58).

## Chapter 6: Outcomes and recommendations

This outcomes section reflects on the research objectives to state whether these objectives were met and to what extent.

The results of this project are summarised in the following matrix:

<b>Objective</b>	<b>Objective met and degree</b>
To research and use literature to discover which types of training interventions could be used in my project	Yes fully
To apply the Grossman and Salas model for training transfer to my specific ERP training project in order to develop my own practice and understanding of how to better specify and develop training implementations in the future.	Yes fully
To employ aspects of the Content Development Matrix approach create an effective intervention (job aid), for a specific core process in my implementation project	Yes fully

*Table 1: Matrix of Objectives*

I was successful in creating two prototypes, which I am certain the organisation will find useful in implementing for the future. I also intend to use the same approach in future assignments as I believe I have matured in my chosen area.

In the beginning, my approach was readily excepted by the account's payables workstream lead as he was aware of the change that was occurring within the organisation and the impact this change would have had on his team. He agreed with me in creating a useful learning intervention (he referred to this as a crib sheet).

As a result of exposure to a wide variety of professional literature, which has changed my way of thinking, I intend to use the knowledge gained to improve my practice, by concentrating on areas that could add value to the training field. In the instructional design area of my work, I have read literature that forces me to think in different and detailed ways; I now will ponder on and apply the appropriate literature theories, looking at both sides of an argument, to design meaningful training interventions that promote knowledge transfer.

## Chapter 7: Reflection

During this study, I have developed several vital and useful skills, that will help me advance in my professional and personal journey.

I have learnt to

- Engage with literature and understand that there are many sides to an argument. I have learnt to use evidence in decision making and to weigh up all the evidence presented before deciding for or against a presented argument.
- Be critical in my assessment of the literature and that understanding the context is very important. I am now able to select appropriate texts within the presented literature I have read. Some literature was more comfortable to assimilate than others. I now can discriminate what constitutes appropriate text for my scenarios by reviewing the text and the evidence presented to help me write more effectively.
- Understand what research is and how to conduct the research, by participating with the subjects, respecting their views and having an awareness of ethics.
- Be disciplined in my work and respect the timeframes of endeavours both professionally and personally by ensuring that work is prioritised and completed on time – no excuses.

My work is more reflective in that my thought process has improved, it is not acceptable for me to perform the work, I now ask myself more profound reflective and critical questions, and I seek better answers from myself and of my colleagues.

I believe that as a result of this programme, I have matured professionally and have developed a rounded set of skills that can transfer into my professional life.

This programme of study was very challenging in that trying to achieve a balance between work and studies was very difficult. The programme ensured I was able to be disciplined enough to complete the readings, engage with the text and engage with my writings while sacrificing my time. I needed to make the decisions as to what was important to me. I believe I have become more decisive in my actions.

At the beginning of this study programme, I had reservations as to:

- how I would cope with the work/study balance,
- how I would make time to read the materials
- how I would research a particular phenomenon
- also, how I would write the research reports,

however, with my professor's guidance and support, I was able to continue with my study journey.

I have formed the conclusion that when researching a subject, to ensure the aims and objectives are clearly defined as this shape the research that is undertaken. From my experience, it has become evident that even the best plans do not proceed according to plan and that changes are inevitable, due to delays or other factors.

My research project proved to be challenging as I had planned to conduct the project in one way, but due to unforeseen circumstances, I had to rethink and adopt a new approach.

My project at the workplace suffered many delays and issues and underwent many leadership challenges, and the timelines and various other factors were incongruent with my study project.

The process design was incomplete; processes never obtained final sign-off and approval; the system configuration was not completed on time; there were changes to the project management team.

ERP training has always presented itself as a challenge for any instructional designer because of time and budgetary constraints. The instruction that is created misses its mark because not enough time and effort is allocated to its creation. I believe if organisations invest the time and allow for that time to be incorporated into the overall project plan, then a good design could be created that proves to be beneficial to the organisation and its employees.

For instance, you cannot have an ERP system without processes and vice versa. Organisations now must rethink how they do things and whether the things they do can be improved upon. Organisational leaders need to ask questions, such as how can this process be improved? Can it be improved? What benefits can be realised? How long will it take to realise those benefits? What challenges will be encountered on the journey? How are the challenges to be addressed?

During system implementations, I would see managers perplexed about how to approach systems training; they relied heavily on **external** consultants to guide them because "they had done that sort of thing with other organisations". Organisations would and still conclude (assumption) if its "done" in one organisation then it must be an industry standard and so *best practice*, and hence the model should be adopted also – I think of this as the blind leading the blind. The external consultant copies the previous solution and provides no real benefit in the training endeavour.

In my reflection, organisations neither have the time, inclination or budget to perform any professional training or learning activity. Organisations think an implemented software will be the magical answer they seek and that all their issues will be addressed.

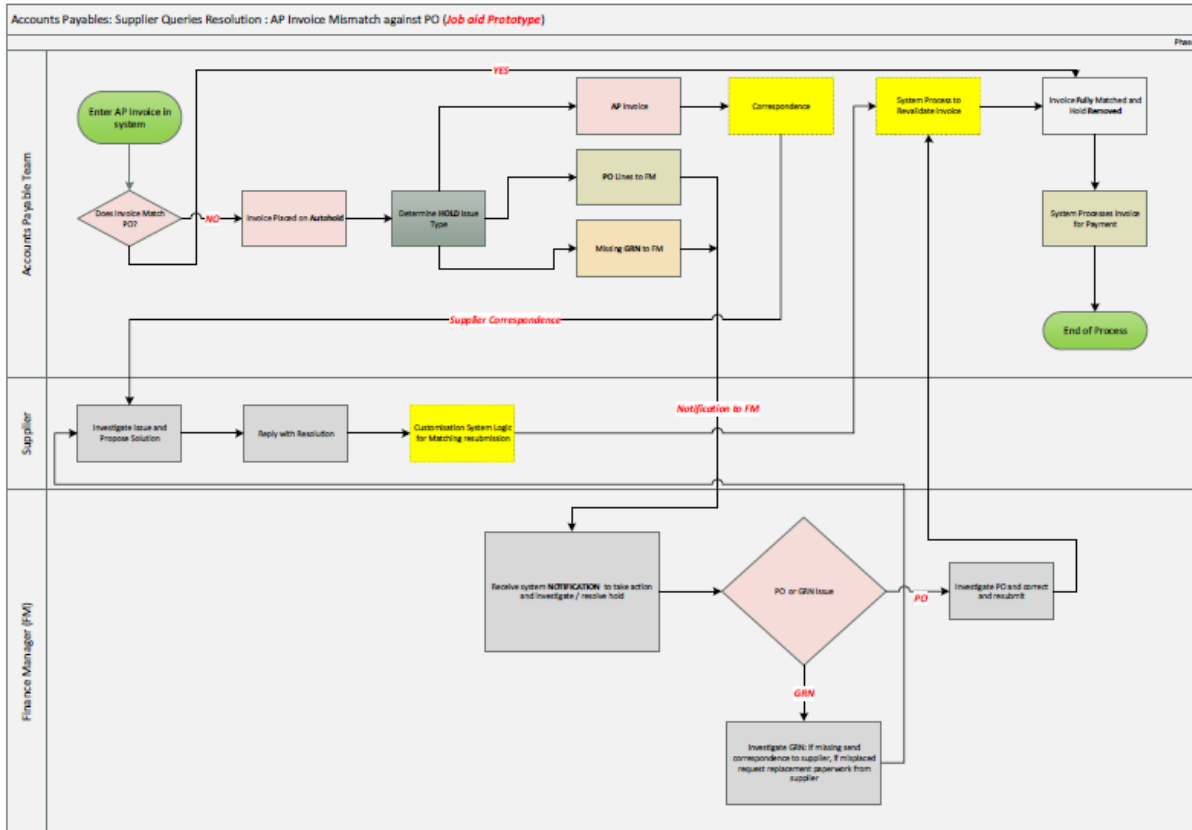
In literature, there has never been a focused study of ERP appropriate training as no one has studied this phenomenon. I have devised, created and taught numerous ER training courses to participants, and when I come to support them after go-live, I find their knowledge has eroded, and that they have difficulties remembering even the basic of concepts learnt in class – in short, they could not **transfer** learning from the classroom environment to their workplace.



# Appendices

## Appendix 1: Prototype Job Aid Process Flow Diagram

Please note this appendix contains an embedded word document file that can be double-clicked upon to view in an Adobe application.



Visio-AP Invoice Query Job Aid Proce

## Appendix 2: Prototype Job Aid Work Instruction

Please note this appendix contains an embedded PDF document file that can be double-clicked upon to view the document.



Work Instructions  
AP Query FINAL.pdf

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