ANDRAGOGY - THE ART AND SCIENCE OF TEACHING ADULTS

A PERSONAL STUDY OF OCCUPATIONAL HEALTH AND SAFETY EDUCATION IN SOUTH KOREAN SHIPYARDS

by

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Figure 1. Frederick Guirguis, With Nigerian Students Attending an Occupational Health and Safety Training Session. Samsung Heavy Industry Shipyard South Korea 2016.

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Abstract

Unfortunately, occupational deaths and diseases will always be with us in the workplace. Eliminating workplace accidents by totally eradicating hazards and risk is an impossible task. Annually Worldwide, there are over one million work-related deaths with hundreds of millions of workers suffering from workplace accidents and occupational disease.

Regarding training issues arising at the adult workers level at the workplace, the study does not distinguish between adults with and without tertiary education; Neither does the study discriminate between heavy industries; My hypothesis, bases on thirty years of educator work is that applying andragogy assumptions to training adults in Occupational Health and Safety (OH&S) could help sustain and possibly improve OH&S in the workplace. To date, the majority of studies dealing with OH&S adult training in industry have restricted themselves to single issues, thereby not always addressing educational concerns as a whole of OH&S education. Issues should not be viewed separately because practical adult training in industry is interconnected.

The purpose of this study is to examine the training methods used in shipbuilding in South Korea to train adults in OH&S. The research thesis first considers training adults under current standards in Korean shipyards and analyses how effectively this training was carried out at the time of the survey 2014 to 2016. Secondly, the thesis considers the educational matters of using the six Andragogy assumptions to improve the training of adults in the shipbuilding industry by examining the history and success of andragogy from inception to the present. Conclusions are then drawn to improving educational practice in workplace OH&S within heavy industry.

The lack of minimal research in adult OH&S training in shipyards challenged and hampered this study at times. The disadvantages of the selected methodology, document study, and participant survey questionnaire are that this research cannot be completed with regards to each possible detail of the topic at hand. Because of this, the study took a pragmatic approach where practical constraints limit the discussions. Interpretation and applications of this study are of relevance to South Korean shipbuilders because issues arising are related to the possibilities of enforcement of OH&S laws currently in use. The study's results are conclusive and leave little doubt that current adult training practices are not fulfilling their complete purpose of educating adult workers with OH&S skills and

knowledge to use in heavy industry such as shipbuilding. This failure of OH&S education erodes existing OH&S systems in the workplace rather than building on them.

The conclusion of the study has confirmed two distinct findings. The first finding is the published and grey document reviewed to substantiate the legitimacy of the six andragogy assumptions. In reviewing these Documents, the history, origins, and the people who championed andragogy through the ages are comprehensively documented together with the contribution andragogy has made to adult education from the 10th century to the current day. The study second finding is the survey results of the Koren shipyard. Survey results show an overwhelming need to educate adults using the six proven andragogy assumptions.

The initial injection of resources in improving the way adults are trained will have a long-lasting effect on OH&S, which in turn affects the economic bottom line. Implementation of findings has been approached from a pragmatic angle to entice shipbuilders into adopting them. This study is a small contribution in seeking answers required to improve OH&S in shipbuilding.

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List of Acronyms & Abbreviations

OH&S	Occupational Health and Safety
WHS	Workplace Health and Safety
ATP	Authority to Prospect
IET	Initial Employment Training
NOSA	National Occupational Safety Association
ILO	International Labour Organisation
BBS	Behavioral Based Safety
TROs	Registered Training Organisations
TWD	Traumatic Workplace Death
VR	Virtual Reality
JCU	James Cook University
HSE	Health and Safety Executive
TNA	Training Needs Analysis
SM	Survey Monkey
TBT	Toolbox Talk
SPSS	Statistical Package for Social Sciences
WWW	World Wide Web
EOQ	Education Orientation Questionnaire
JSA	Job Safety Analyses
PPE	Personal Protective Equipment
WA	Western Australia
SM	Survey Monkey
HRD	Human Resource Development
USA	United States of America
UK	United Kingdom
KOSHA	Korean Occupational Safety Health Agency
APPG	Adult Party Parliamentary Group
EWP	Elevated Work Platform
DWH	Deep Water Horizon
LTI	Lost Time Injury

Chapter One: Positioning the Researcher Or How I Came to Undertake This Research

From Soldier to Trainer

Born in Alexander, Egypt, in 1958, my family migrated to Australia in 1966. I completed primary and secondary school in Geelong and Melbourne Victoria. I joined the Australian Army in 1975 at age 17 and served three years in the 2nd 4th Battalion Royal Australian Regiment Townsville Queensland as an infantry soldier.

My infantry company disbanded in 1977, and the company transitioned from an infantry company to a training company. The training company was created to train recruits as infantrymen. The training course duration per recruit intake was four months. An infantryman's Initial Employment Training (IET) was the first step to becoming a soldier. IET was a comprehensive theoretical and practical course covering all fundamental infantry aspects from weapon handling to fieldcraft, such as navigation and bush survival. The course was conducted for recruits to give them the understanding, know-how, and skills they required to become infantry soldier (fighting soldier).

The newly formed training company required two experienced soldiers as part of the training staff. Two soldiers were selected from 120 soldiers by the training officers and Non-Commissioned Officers. The first person selected was no surprise to anyone; he was skilled in all aspects of a soldier, brilliant in every infantry skill, and remarkably fit and dedicated. To my absolute dismay and disbelief, I was the second person selected. I was at a loss as to why they would select me; there were so many competent soldiers to chose from. However, I did have all the skills required, and I was very passionate about my work, but to be selected for this training position was something I never expected or even contemplated. I realised much later that the selection committee saw something in me that I had not seen in myself at that time.

Training the IETs to become soldiers was an amazing, challenging, and exhilarating experience that taught me a lot of valuable lessons and gave me experience that I would draw on for many years to come. That experience cemented my lifelong fascination with training. I completed my three-year term in the Australian Army and was discharged in 1978.

I joined a mineral exploration company in Townsville, Queensland as a trainee draftsman. It became apparent to my manager in the first two weeks of employment that I had acquired practical skills in the military that could benefit this company. My map reading, compass,

and training skills were of special interest. They needed someone to peg out (mark or secure with wooden pegs) claims for an Authority to Prospect (ATP). Pegging of ATPs needed to be done by qualified surveyors. The company had six at that time, but the survey team could not keep up, and surveying costs were restrictive. In the interim, the ATPs needed pegging by hand (referred to in the mineral exploration industry as using compass and chain). Fully pegging an ATP perimeter is a skill that needed practice and training. I passed on these skills, amongst other bush skills to 10 other field staff in the following two years. I did little to no drafting at that time; it seems that I was destined to become a trainer.

My employment came to an end when the Townsville branch closed down. I moved on and joined another mining company in Townsville. I went to this company as a development officer to train field crews at a mine site west of Townsville. The mine site was both open cut and underground, giving me good exposure to both these aspects of mining.

With this company, I also started training Indigenous Australian workers. That was the first time I realised that training is an art and no adults learn in the same way.

In 1981, I was employed by the most significant mining company in the world and sent to Melbourne. After one year of working with this company, I was selected to become a trainer in a commercially acquired safety management system that this company had purchased and wanted to implement worldwide.

For twelve years, I worked for this company, and during those years, I was trained to teach 16 Occupational Health and Safety (OH&S) courses from auditing OH&S management systems to basics like the development of checklists. The weakness of this safety management system was the OH&S training course material and the course delivery style.

Teaching these courses had to be delivered in ‘parrot-fashion’ with plenty of Powerpoint slides and minimal to no interaction with the course participants. It became apparent to me early in the piece that this way of training adults would only work in a military setting.

Civilians have different learning needs.

The safety system purchased by this mining company originated in South Africa. The principle system developers were ex-military, and that flowed down to the category of preferred employees, who, in the main, were also ex-military. The approach might have worked in South Africa, but it did not have the remotest chance of working with a union- driven and outspoken workforce in Australia. In practice, it took four years for the entire OH&S management system to fail miserably even after countless efforts to customise it to better fit Australian conditions, culture, and the mining industry workforce.

Such failure reinforced what I already suspected of training adults. I always got this uneasy feeling while conducting training courses in an autocratic manner. At the time, there were few learner feedback mechanisms, and certainly no course feedback forms for people voicing their dissatisfaction. These courses were seen as the norm and as part of the safety management system requirements, and everyone had to conform. I did not enjoy presenting these training sessions. I came to see that training adults was not straight forward and varied immeasurably. There was no one method of delivering a course that catered to all adult learners. I knew that to succeed, trainers must inject imagination and innovation into their courses, and present with exuberance and commitment that can be seen and felt by course attendees.

In my time with this mining company, I studied to be an industrial paramedic, credited to teach five levels of first aid by the Australian Red Cross. I attended 81 other company-sponsored training courses in my 12 years, mainly in OH&S. With the company training courses, it quickly became a battle for me to motivate myself to attend because of sheer, mind-numbing boredom. These courses were both internal and external. I paid little heed to proven methods to efficiently teach adults because I did not know of their existence. I promised myself that if I ever conducted courses of my own that I would make them so exciting and interactive that people would ask to attend.

The company decided in 1992 to close its mineral exploration offices in Australia. 90% of employees lost their job. My never-ending training legacy once again elevated me to a shortlist, and I was selected to work at the mining house’s Head Office in Collins Street, Melbourne. My designation for this new position as Health, Safety, and Training Superintendent for 480 workers over 14 floors in a fifty-level building. I presented 60 OH&S courses in the following two years. I presented these courses in my style, which I started to develop after some initial research on how to teach adult learners.

Training is always a large part of the OH&S management system implementation process. My team and I made the training sessions more interactive. We trained 2000 people over 18 months, we were awarded four stars out of a possible five stars, which was an outstanding effort and a credit to the whole safety team, not just the trainers. Unknown to me, a General Manager who attended several of our courses was impressed by our courses and recommended me for the position of Health, Safety, Security, and Training Superintendent at one of the company mines in Western Australia (WA). The mining company's headquarters at that time relocated from Melbourne to the UK, so I decided to accept the WA position.

In my new role at this mine site, there were plenty of challenges. The site OH&S culture was weak, so my team of two and myself worked on that aspect at a feverish pace to bring it in line with the rest of the company mines in Australia and continue with the implementation of the company OH&S management system. The mine site was 3000 kilometers north of Perth with 140 employees. I did little training in the 27 months I spent at that mine site, but most of my work was around improving the safety culture. For family reasons, I accepted a job with a mining company back in Townsville.

The new position was Site Safety Systems Superintendent for an open cut mine in Cloncurry Queensland with a different mining company. In the two years I spent at this mine, I expanded my repertoire of training. I became an instructor in rope rescue, vehicle rescue, breathing apparatus rescue, and confined space rescue. This position was extremely challenging and enjoyable, but the fly in, fly out aspect did not suit my circumstances at the time. A friend offered me a job back in Townsville, which I accepted as I would be able to spend more time with my young family.

My next position was not with a mining company for the first time in 15 years. The position offered to me was the Senior Manager Administration, Health, Safety, and Training for an enterprise group of supermarkets. I found myself out of my comfort zone with a knowledge gap that resembled a black hole. I learned a lot about food hygiene, restaurant, and nightclub management, WorkCover, and construction projects. I conducted only a few courses in the eight months I spent in this job. Unfortunately, the company liquidated when the principal owner passed away.

I was continually applying for work overseas; this had always been a single-minded pursuit of mine. So much so that I had applied for 450 jobs around the world and succeeded in securing a job in Qatar with job application number 451. The position on offer was the most significant challenge in my working life as the Head of Safety for a gas company. To fill the requirements of this job was just impossible for one person. I liken it to trying to empty the world's oceans by using a coffee cup, a worthy effort perhaps for very little to no seeable gain. For eight years, I worked about 70 hours a week to keep my head above water and my department afloat.

In this position, I was responsible for the Health and Safety Department. My responsibility spanned 29 safety officers, 100 million dollars of assets on and offshore, a working gas plant, and a community of 10,000 expatriates. Never-ending, demanding, stressful, challenging, frustrating, and very satisfying all at once. The job pushed me to my

limits all the time, and I loved it for the eight years that I spent in that position. Here is where I truly honed my skills for mass training a large number of workers.

There were two parts to this job, which consumed 95% of overall resources. First was the annual shutdown (a planned, periodic event during which one or more processing/production units are removed from service temporarily) of one mega gas processing train for 83 days. The safety department required four months of full-time preparations to be ready for this event. These shutdowns were our most significant exposure to injuries and fatalities. The logistics were staggering, with 10,000 workers transported to the site. Six to ten thousand jobs /repairs to be done on the shutdown process train, with the operating process trains meters away from the open flame welding. There were potential disasters everywhere that had to be controlled and managed precisely to avoid catastrophe.

We conducted all the health and safety training for the 10,000 new workers who in the main did not speak English. Credit to all, we completed no less than ten (10) 83-day shutdowns without a Lost Time Injury (LTI) or fatality. We were formally acknowledged as the safest gas plant in the world in 2007, which was benched-marked against 72 other gas plants worldwide. This award is my greatest treasure of that time.

For the rest of the year, my team and I continued with the implementation of the companies off the shelf OH&S system, initially requiring the development of a one-day Behavioral Based Safety (BBS) course to be presented to between 2500 and 4000 people over 40 sessions. For the eight years in this position, I developed the curriculum, trained the trainers, and was the principal presenter at these BBS courses. I started to experiment with training games to help settle and relax adult learners.

The white sticker game was trialed at the end of these BBS training sessions. The game is simple; every person gets a set of white stickers, and they need to write something nice about other members in the training session and anonymously stick the sticker on that person's workbook or their person. The game achieved two things; it gave participants pleasant memories of the training course and made visible to the receiver, skills, and qualities that their peers saw in them that they might not see in themselves.

These courses were a success, and in the words of one of the managers, and I quote, "these sessions should be televised". Talk is cheap as they say, so I will let the course participants over the eight years tell you what they thought of our courses. The following is a small sample of the white stickers I received over the eight years of conducting these

sessions. I have only posted one representative page. All my trainers, including myself, have, in the eight years, received well over 60 pages of white stickers for our efforts.

My family and I left the Middle East after eight years. My predecessor left the job after 11 months because of the job demands. A job like this can only be done once in a lifetime; the stress, the sheer volume of work and responsibilities are overwhelming. The

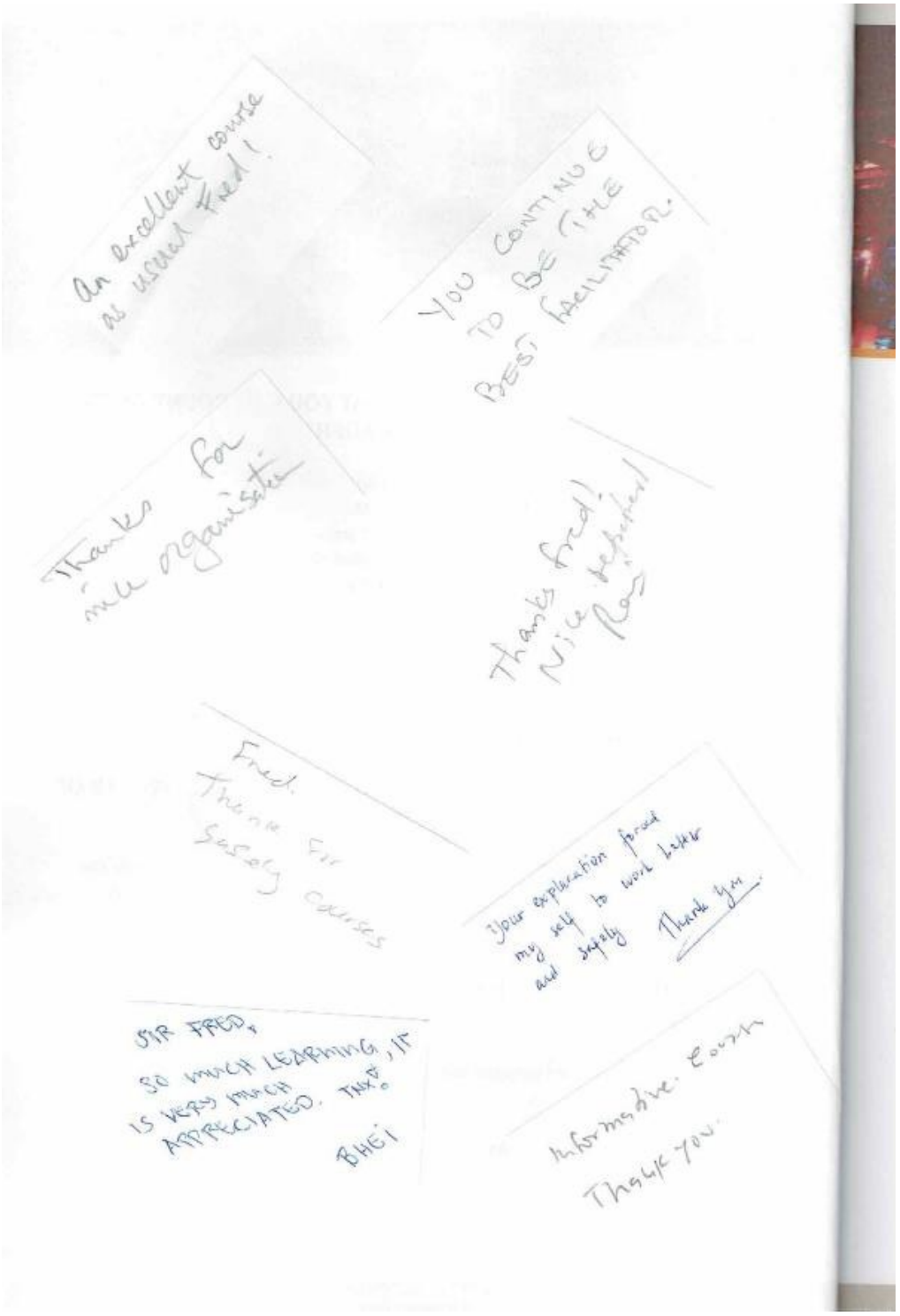

Figure 2. Sample of Course Feedback Page

The Head of Safety position is now divided up into four appointments, Head of Safety On Site, Head of Safety Offsite, Head of Safety Offshore, and Head of Safety Offshore with the safety training portion contracted out to a third party.

Back in Australia economically times were hard in 2011 with little full-time appropriate work on offer. I decided to find short-term contracts as a stand-in for safety people on sick leave or long service leave. January 2011 till September 2019, I managed ten short-term contracts all in OH&S, all with a significant training component. My longest contract was one of 21 months in South Korea; the main reason I landed the South Korea contract was because of my training background. The recruiter informed me that 100 candidates contested this position, but my training experience and expertise stood out. It was during my time in South Korea that I undertook the survey research presented in this thesis.

The Research Problem and Its Importance

This is a personal research project, and insider analysis of the assumptions applied to training adults in OH&S in what is known as heavy industry. Heavy industry is defined as oil, mining, shipbuilding, steel, chemicals, machinery manufacturing, and similar. They are very capital-intensive activities, requiring a lot of machinery and equipment, and commonly have extremely large workforces. The purpose of my study is to produce research evidence that can add to the increasing body of evidence to help sustain and possibly improve OH&S in these types of workplaces.

Unfortunately, occupational deaths and diseases will always be with us in the workplace. Eliminating workplace accidents by controlling all hazards and risk is impossible (Safe Work Australia, 2012). This is applicable but not limited to high-risk industries such as mining, construction, oil and gas, and shipbuilding. Annually, worldwide, there are over one million work-related deaths with hundreds of millions of workers suffering from workplace accidents and occupational disease according to the International Labour Organisation (ILO) in Geneva at the opening of its 15th world Congress on OH&S 11-15 September 2011 Istanbul, Turkey (International Labour Organization, 2012). Indeed a staggering number of workplace injuries and fatalities estimated throughout history is 341.7 million people (Hedges, 2003).

Before proceeding further, I would like to clarify the terms Occupational Health and Safety (OH&S) and Workplace Health and Safety (WHS). In Australia, before 2012, all Australian States and Territories had their own Health and Safety laws, and the term OH&S was used widely. In 2012 the Model Workplace Health and Safety Act was introduced and

implemented in most jurisdictions across Australia. This new national framework of health and safety law was introduced to secure the health and safety of workers and workplaces (Cruz, 2018). As for the terms OH&S and WHS, they share the same meaning with the change to WHS coming into play when the new national health and safety laws were introduced in 2012 (Alertforce, 2019). Indeed, when reading health and safety articles, legal or otherwise, both OH&S and WHS are used. According to Johnson, both these acronyms are often used (sometimes even interchangeably) by auditors, safety experts, and lawmakers (Johnson A., 2016).

South Korea is where the data collection part of this research was completed, so terminology must be established to prevent confusion. The overruling body that looks after health and safety and enforces the health and safety law in South Korea is the Korean Occupational Safety and Health Agency (KOSHA) (Kwon, et al., 2010). To prevent confusion when referring back to work-related health and safety matters in Australia and other places around the world and for the sake of consistency, this research only uses the term Occupational Health and safety OH&S.

Occupational accidents, deaths, and diseases occur for many reasons in the workplace, so the cure for this pandemic takes many forms. A health and safety management system is designed to manage workplace hazards; there can be up to 1400 health and preventive OH&S elements within industry workplaces, depending on the OH&S management system used. An example of an element is ensuring personal protective equipment (PPE) is worn correctly.
The safety management system used for this example is the National Occupational Safety Association (NOSA) management system (NOSA, 2016). Ninety-two percent of the 1375 elements in the management system require some form of education to enable their practical and effective implementation. Therefore the most effective way to reduce workplace accidents is to maximise efforts to educate adult workers (Hermanus, 2007). So is training. For consistency, and to conform to the language used in heavy industry, this study uses the term training, however, it is the education of workers that is critical to safety. An article in *Australian Mining* stated that one of the factors that have played a part in decreasing OH&S standards in the workplace is inadequate training in OH&S, and lack of training increases risks of injury in mining (Latermer, 2012).

Legal requirements and economics dictate training standards and frequency of training. Registered Training Organisations (TROs) deliver accredited OH&S training courses and have been continually under pressure from customers, the business owners to

reduce course durations and costs. Because of this pressure, the areas that end up suffering are course content, delivery, duration, and training technique (McCabe, 2013). As a workplace educator, my concern is as training standards drop, so will the effective implementation of OH&S in the workplace, increasing accidents. Regrettably, working in industry here in Australia and overseas, I have witnessed 40 disabling injuries, 90 occupational diseases, and 21 fatalities.

The level of OH&S severity in the workplace can be measured by the cost to South Korea in workers' compensation. The Soth Korean worker's compensation scheme was established in 1964 initially for workers in the mining and manufacturing industries. Coverage for workers was expanded and applied to all industries from 2000. The number of workers who have received compensation numbers 13,880,000 out of a South Korean population of 50 million (Kim, Rhie, Yoon, Kim, & Won, 2012).

Occupational injuries and diseases forever alter the lives of families for the worse. Implications for families include ongoing economic and social problems and health consequences following Traumatic Workplace Death (TWD). TWD is shown to have both short and long-term effects on family members, including psychological and physical problems, anxiety, drug and alcohol abuse, obesity, depression, and cancer (Burton, et al., 2002). Mental health problems include stress, depression, prolonged grief, and traumatisation with evidence of other developing behavioral problems such as physical violence. Affected families report that their social life is affected, becoming difficult, altered, and strained (Bohle, Quinlan, & Rawlings-Way, 2011). The lessening of trauma to families is a massive personal motivation for this research project.

Exploring a Knowledge Gap

The purpose of any research is to contribute to a body of knowledge. This research focuses on andragogy, which is defined in this thesis as the science and art of teaching adults. Andragogy was developed in the 1970s by Knowles (1975) and conceptually explores strategies to teach and engage adult learners. The term has been used with various connotations. Broadly, andragogy is defined as the scholarly approach to training adult learners and a theoretical and practical approach based on a humanistic concept of self-directed and autonomous learners (Knowles, 1997). These assumptions are not new; they have been tested and proven with known origins dating back to 3000 B.C.E (*New World Encyclopaedia*, 2015). This research directly addresses an identified professional knowledge gap by inquiring into how andragogy training assumptions can be deployed to better train

adults in OH&S within the shipbuilding industry in South Korea, with the expectation that findings can be transferred to heavy industry in general.

Research questions focus on the development of research knowledge contributions. Contributing to a field of knowledge must be approached with a coherent argument and specifics to have any chance of convincing peers in that field of study that a contribution has been made (Rafael, 2018). To succeed in positioning my argument and therefore, my contribution of new knowledge to the best possible outcome, I identified four research questions:

Research Questions

1. Which andragogy assumptions are used in the planning and delivery of Occupational Health and Safety (OH&S) training courses for adult learners in shipbuilding—a large industrial and global workplace?
2. How do these assumptions correspond to best practices for training adult learners in shipbuilding?
3. What techniques are used to deliver OH&S training courses to adult learners in shipbuilding?
4. What are shipbuilding adult learner's perceptions of OH&S training courses?

Applied education research work must demonstrate originality and significance. A researcher's work could be worthless unless they can show that their work is original and significant enough to add value to an already established body of knowledge (Cryer, 2000). Highlighted is the significance of this research when the industrial death and accident rate in South Korean shipbuilding industry appears in the paper with headlines such as 'Six workers died and 25 were injured when a crane collapsed in the shipyard' (Harris, Jung-a, & Buseong, 2017). As identified from my professional practice, there is a need to raise the standard of OH&S in industrial shipyards.

From library database searches, there appears no limit to the number of national and international studies completed on educating adults using andragogy assumptions. However, for all my searching, I was not able to find any published studies that addressed the training of adults in OH&S in shipyards in South Korea using andragogy assumptions. Clarity of definitions between educating and training adults needs to be established here. A definition of educating is receiving or giving systematic instruction, especially as teaching institutions (M.K. Smith, 2005). Whereas training is the action of teaching a person a particular skill or type of behavior. (Smriti, n.d.). I am both an educator and a trainer. This doctorate is an

exploration of the education principles concerning the training of workers in a large industrial worksite.

Research exists to contribute additional knowledge to a discipline. To be able to contribute new insights, researchers review relevant publications in a field to understand the established parameters in any particular discipline. Usually, the process starts at the review stage of the research (Gray, 2011). My review process did not go according to plan. I was unable to initially adequately review my research subject because of the non-availability of relevant research material on training adults in OH&S in shipbuilding in particular, though when I considered mining, the available documents were more numerous. Two courses of action were taken to overcome the problem of insufficient research material required to complete my research.

Firstly, I collected research material that had one or more elements (keywords and search terms) that matched my proposed study. For example, I could find an excellent study of educating adults in the workplace. The elements I could use in this study were adults and the workplace, with the missing elements being, OH&S and training as opposed to educating. This method gave me a sparse picture of adult training in the workplace but not specifically in shipbuilding; however, it still provided me with enough to begin my document review, which does form part of my original research. Secondly, what is known as grey documents, or the grey literature, was searched as I sought published study materials relevant to training adults. Grey material provided a wealth of articles and industry reports that dealt directly with training adults in OH&S in shipbuilding and mining (which is where I started). Stored for evidence are copies of all articles selected for my document review from recognised, peer review research to grey material. In this way, I can show that I was unable to find anything of relevance rather than suggesting that ‘little or nothing is known’ about this research topic.

Practitioner Research

People in the workplace can conduct practitioner research. Advantages for practitioner-researchers are the years of experience accrued in the workplace, which enables researchers to carry out efficient, practical, and relevant research that will benefit their industry (Heikkinen, Vanderlinde, & Jong, 2016). After 45 years in my profession, I have a high level of understanding of my work environment and work-related problem areas like OH&S. OH&S has changed for the better from my first year of work in 1975. Young (2013) argues that OH&S in the 1970s was tolerated and seen as adding little value to the workplace and that we should not risk going back to that time. The central problem area when I decided

to conduct this research project was my lack of academic know-how to conduct valid research. Since starting my research in 2013, I have slowly picked up the academic skills required with the help of my assigned academic supervisors, friends, and colleagues.
Industry experience and academic research combined, make for more relevant research knowledge. Panda and Gupta (2014) argue that there are many benefits to practitioner research. Pure researchers can lack experience, and a solid background in industry and long experience cannot be readily learned (Panda & Gupta, 2014).

Judging practitioner research relies on principles of validation. My research narrative has considered the principle of historical continuity, looking at historical events that shaped modern practices (Heikkinen, Vanderlinde, & Jong, 2016). In my research reading, I found that the principles of andragogy or active learning has a long history, and has been part of industrial education in the eighteenth and nineteenth centuries (Corrigan, 2013). Historical continuity in my research has considered the struggle of pedagogy and andragogy from the so-called father of pedagogy Jean Piaget (Autodidact, 2018) to the modernist practitioners like John Dewey noted as the most significant 20th-century educational thinker (Neill, 2005).

In practitioner research, the principle of reflexivity, the values, and thoughts of a person, will be represented in their work. Using the following three research techniques, I have endeavored to illuminate my reflexive thinking (Wilkie, 2015) and reduce errors of personal bias in the conduct of my insider research. The first technique required notes to be kept on how I was feeling on each day of my research while I was actively collecting data in the workplace. These notes reflect my emotional state at that time. Eventually, when it came time to write up my findings, I looked back at my notes to see if my emotional state at the time has influenced what I was writing. As a self-check, I have asked colleagues to vet my writing for any anomalies and I have made it a practice to stay transparent in my writing because that is what reflexivity is about.

I have also adhered to the principle of dialectics, which is a discourse between people holding different points of view about a subject but wishing to establish the truth through reasoned arguments (Dick , 1997). To qualify my argument, I have tried to create dialectics in my research in a structured manner. The structured approach means that all voices are heard in a discussion, argument, or by taking (participating in) a survey, and, as much as possible, none are permitted to dominate. My research approach was to have an

an environment where research participants (as industrial site workers) themselves were able to reach a decision using all available information.

This was especially true during the pilot study for my survey questionnaire. I ensured to make time for people to understand the data collection (e.g. survey questionnaire) without outside influence. I used third parties such as other trainers to undertake data collection for this study. I stressed the matter of undue influence to trainers who issued my survey questionnaire at OH&S training sessions. I was assured that the trainers issuing my survey would not try and influence the respondents in any way. The respondents were informed that their participation was voluntary and they were not persuaded in any way and they were provided with the opportunity to ask questions for clarification (Dick , 1997).

A steadfast criterion is a workability, which is needed for successful practitioner research to produce practices regarded as useful (Heikkinen, Huttunen, & Syrjala, 2007). The workability of my ideas and recommendations are based on the simulation method, which fitted my situation better than the canvassing for opinions method (SkillSoft, 2009). The simulation method worked for me because it provides simulations to demonstrate both the process and details of my ideas (SkillBrife, 2009). Once my ideas are published, I will be physically demonstrating my recommendations to show the practicality and benefits of these ideas.

Validity is the process of meanings, creating and negotiation, the difference between knowledge and the outside world (Heikkinen, Vanderlinde, & Jong, 2016). What is good practitioner research? No one has a final answer, but we can continuously ask this fundamental question. For me, reliable and valid practitioner research means producing a product at the end of the research process that produces practical findings of value to the industry, with the educational aim of improving adult learners' experience in OH&S training courses.

Professional doctorates contribute to knowledge. Given the short contract jobs I took on during my EdD enrolment, I was running the risk of not contributing knowledge by the end of my candidature. As an HDR candidate, I could see a risk of not achieving my research goals because my contributions to knowledge might be unclear, perhaps creating problems during the external examination of this study. To protect my contribution, I have carried out this study carefully step by step, making sure that every aspect is carried out with integrity and by always keeping full notes and records.

All education and training research, is in fact, other people's work. The contribution to knowledge in any field will not be a quantum leap in the field of training adults in industry. The significant and original contribution is derived from researching small gaps in knowledge or uniquely different uses or interpretations of old ideas and principles (Cray, 2014). My primary goal when training adults is to keep them involved, interested, and immersed throughout the training session and leave them wanting more. I achieved this by applying andragogy assumptions in my work, but the main ingredient has always been the enthusiasm of the trainer that carries the training session and keeps adults involved and glued to the material.

The most prominent fears in doing a doctorate are becoming transfixed on the research and forgetting the big picture (Cray, 2014). To avoid being transfixed on this research problem, I had a well-summarised idea of my contribution that contextualizes my work. The big picture for this study was daunting. Trying to understand the way adults are trained in shipbuilding was a mammoth and complicated task. I started my document research in Australia, but because of the nature of my contracting work, I carried out all my entire research in South Korea. Coming from Australia, I was initially surprised, amazed, and dumbfounded by the systematically poor standard of OH&S training of adults in South Korea. The world is a big place, and nations like South Korea are vastly different in so many aspects from Australia, but it seems that when it comes to training adults, the training downfalls are similar if not the same as Australia. A research report by Ball, Lee, Phan, and Ra (2001), looked at the similarities in training adults in South Korea and Australia. The report discusses how training adults in both countries are not adequately servicing the needs of adult learners and where synergies were identified to improve the training of adults

What are the research implications in the context of practitioner research? The definition is not straightforward but summarised by saying research is 'suggestive without being stated directly' (Oni, 2018). My task as the author of this research was to make it clear to the reader how interpretations were developed from the analysis and how key points were established. Readers have also been informed about any findings, unexpected trends, patterns, and anomalies with evidence to support such interpretations. In terms of my professional field, the conclusion section is crucial because it refocuses on the purpose of the research. The conclusion section is a snapshot of findings and their implications and limitations that might highlight research constraints and the possible need for further studies (George Mason University, 2017). Indeed, in my research, there are implications mainly because of the

professional familiarity I have with the subject. I revel in the fact that my research could generate enthusiasm in other researchers to learn more and keep on infilling small fragments of knowledge.

What You Can Expect in The Coming Chapters

I have worked all over the world and Australia training and educating adult workers in OH&S in industry, always knowing that adults need different considerations than children when being taught. Systematic research was required to substantiate the benefits of the educational principles of andragogy as applied to industrial workplace OH&S training.

Chapter Two sets out the research context and examines the nature of the research problem. This chapter covers the basics in OH&S management systems, from hazard identification to risk mitigation and the tools used in these processes and why it is essential for adults to know how to use these tools correctly, which can only come from a good adult focussed workplace training.

In Chapter Three, I conduct a historical document review of andragogy to show that it has been applied to adult education and has benefited adult education in industry not only to learn but to learn better. This chapter starts with the origins of andragogy and how it was conceptually separated from pedagogy. The history of andragogy is discussed from 1833 to the 21st century looking at the evaluation of andragogy internationally. To ensure the document review was fair and impartial, implementation, resistance, and the future of andragogy are covered. Conclusion of the history and philosophy of andragogy based on the reviewed documents leaves no doubt that this concept of educating adults has contributed significantly to educating adults in all workplaces. From the reviews in Chapters Two and Three, the six principles of andragogy were derived which were then applied to the design and analysis of my on-site study in a professional setting in South Korea.

Chapter Four is about the study methodology. There is an extensive discussion on why the quantitative approach was selected and the essential steps required for a professional survey to be conducted in an industrial setting. To ensure that the methodology is academically sound, validity, bias, ethics, and analytical strategy are discussed, as is Constructivism which is the theoretical basis for engaging adult learning for occupational health and safety.

Chapter Five examines the results from the research survey, which was carried out in a South Korean shipyard and online. Four hundred seventy-four workers participated in this data collection. The survey questionnaire results of this sample population and their

demographics are displayed in tables and graphs. There is also a brief discussion of the results from each survey question. There is also a discussion around the four questions the study was designed to answer, and if the survey results had answered these study questions. The survey results are conclusive, showing the overwhelming request from adult learners to introduce effective, and exciting training that heavily involves adult learners as participants, not bystanders.

Chapter Six is the conclusion of the thesis and looks at what the study has achieved. Research limitations, problems, and problems arising from the research design selected for this study are discussed. The contribution to the field of adult education and what knowledge gap this study has filled is stated. Recommendations from the study findings are also in this chapter, followed by the study conclusion. This concluding chapter closes with a twist on the traditional way studies end. The author travels back to where his journey started some 30 years ago back to mining to see if the education of adults in OH&S had improved and if, industry has learned anything in that time. The results of the trip were, well, the reader will have to decide if any progress has been made in adult education in OH&S in industry or not.

Note: Photographs are placed throughout this thesis to assist the reader in visualising the concepts and equipment used in the industries mentioned in this study.

Chapter Two: The Research Context of OH&S Training

To examine the current situation for training adults in OH&S in the workplace, to set out the research context and the research problem, I draw on international studies and examples from Australia for this document review. If I were to use South Korean shipbuilding for my one example, I would struggle because of my short exposure to the shipbuilding industry and other limitations, including language, shipyard confidentiality, and the amount of material available to make this case. This doctoral research was started when I was working in Australian mining, even though survey data collection took place in a shipyard in South Korea and online with a range of workers from different nationalities.

Training is a legal requirement across Australia and in all states and territories. For example, training legislation required by Queensland includes the *Queensland Coal Mining Health and Safety Act 1999 and Regulations 200, Act: Work Health and Safety Act 2011 (Qld), and Regulation 2011 (Qld).* All States and Territories in Australia have similar legislation for mining as well as OH&S legislation for all other industries. Fortunately, Australia, South Korea, and 130 other countries around the world have established OH&S laws to protect workers, but workers in 63 other countries have no OH&S protection at work (International Labour Organization (ILO), 2017).

Mining companies must comply with training requirements under Australian legislation, which can be onerous and expensive (*Workforce Guardian*, 2017). To hold a position as an OH&S and Training Manager for an underground coal mining company in Queensland, Australia, OH&S additional qualifications are required. In my case, additional training took 20 working days and cost the company $20 000 for me to obtain these qualifications. I was required to have formal qualifications initially like a degree in OH&S to secure this position. Under Australian Mining Law, businesses can incur severe financial and incarceration penalties if they do not adhere to all the legal training requirements. Penalties are steep because the OH&S risk to workers is high (Business Queensland, 2018).

Qualifications required to work in OH&S internationally vary widely from country to country and across industries. The ILO sets international standards on OH&S; they encourage all companies to use these standards (International Labour Organization , 2017).

Identifying Hazards in Heavy Industry Workplaces

As with all heavy industry, mining is hazardous by the nature of the work. Underground workers are exposed to life-threatening hazards such as rock falls, cave-ins, gas

explosions, and diseases such as black lung from coal dust and diesel exhaust (Mendes, 2016). Open cut miners are exposed to the dangers of interactions between workers and large machinery and open-cut pit high-walls (a high wall surrounds a truck and shovel loading operation in an open cut mine) that can result in rock falls (Ames, 2015). Sixty-three mining disasters equating to 665 deaths occurred in the Australian mining industry from 1886 to 2017 (Simtars Safety in Mines and Research Station, 2017). The 665 occupational deaths are broken down to 66% miner died from explosions, 12% from flooding, 10% from rockfall, 8% from fire, and 4% from poison gas. 94% of these deaths are from underground mining operations. Training adults in OH&S alone will not remedy this problem but should lower the risks (Trotto, 2016). Improved OH&S standards in the workplace, including training, reduce injuries, and fatalities (Cohen & Colligan, 1998).

The safety record in the Australian industry from 1st January 2017 to 13th July 2017 stands at 98 deaths (Work Safe Australia, 2017) which is not excellent but indicative of what is happening around the world. Internationally 2.2 million workers die of work-related accidents and diseases each year according to a 2005 report issued by the ILO at the *17th World Congress on Safety and Health at Work* held in Orlando, Florida, in September 2005. This number may be vastly underestimated. The ILO report presents an example of gross underreporting by some countries like India, which stated 222 fatalities in a year, but the ILO estimates that in that time, India has closer to 40,000 deaths (International Labour Organization, 2005).

Why are these workplace accidents occurring, and how can we reduce them? There are five reasons why workplace accidents occur (McFarlin, 2017). These are a failure to identify potential hazards/risks in a workplace; failure to control identified risks; failure to assist employees in avoiding injury while at work; failure to train all employees in safety, and failure to monitor the workplace for new dangers and check risk controls. Injuries and fatalities are less likely to occur when employees are trained in OH&S. The better the OH&S training, the fewer system failures that lead to injuries (Torazzi, 2015).

Identifying hazards does not come naturally to workers (Maus, 2004). Workers not trained find it difficult to identify hazards in their workplace to a practical and comprehensive level. Workers need training in ten categories of hazards: manual task hazards, gravity, electrical, machinery and equipment, chemicals, extract temperatures, noise, radiation, biological, and psychosocial hazards (Maus, 2004). Therefore, practical training needs to be

conducted for workers to become proficient at identifying the full range of workplace hazards.

Once hazards are identified, the next step in creating a safe work environment is using the risk tools of the Health and Safety Hierarchy of Control; composing a task risk assessment commonly known as a Job Safety Analysis (JSA), and referring to as established risk matrix. All three tools require training, practice, and mentoring to achieve the best possible risk control. The Hierarchy of Control helps to manage risks in the workplace (Safe Work Australia, 2011) and is a list of controls designed to manage risk systematically. The most effective control is on the top of the list; the least effective is at the bottom (Workplace Health and Safety Queensland, 2011).

The second risk assessment tool is creating a risk assessment in the form of a Job Safety Analysis (JSA), also known as Job Hazard Analyses (JHAs), Job Hazard, and Environmental analyses (JHEAs) depending on what part of the wold you work. These risk assessments highlight to the employees all risks workers will face while conducting their work tasks. JSAs must be completed with the active participation of the workers who will be doing the job. JSAs must be facilitated by someone proficient in composing JSAs who can lead and facilitate the JSA session for the workers. A facilitator adds value because they know the pitfall of these seemingly simple risk assessments. The professional safety

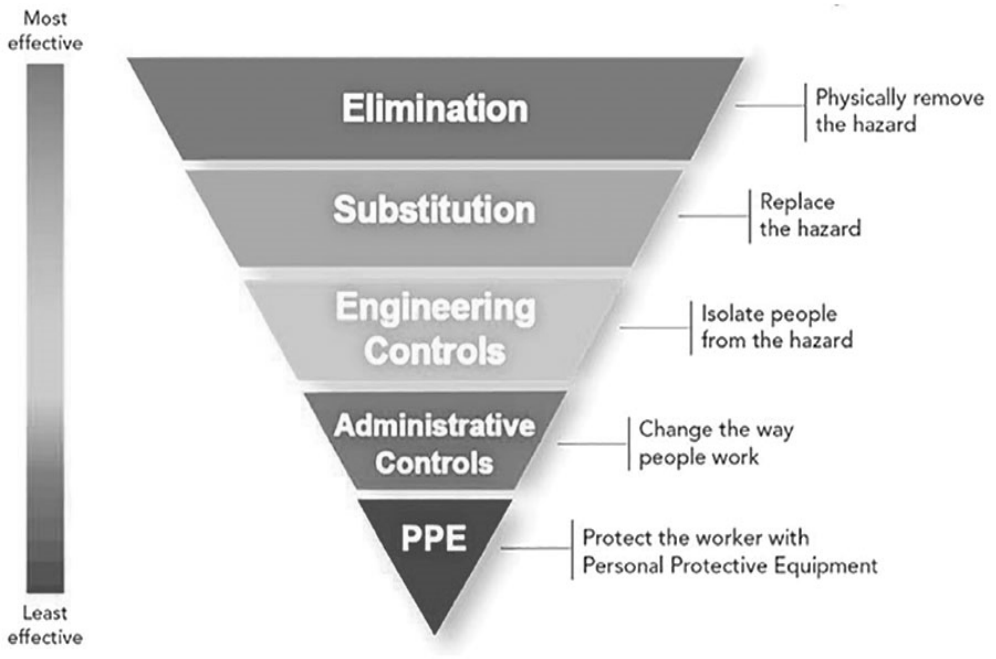

Figure 3. Health and Safety Hierarchy of Control. (n.d.). Retrieved from https://www.iosh.co.uk/Books-and-resources/Our-OH-toolkit/Noise/Noise-control-measures.aspx

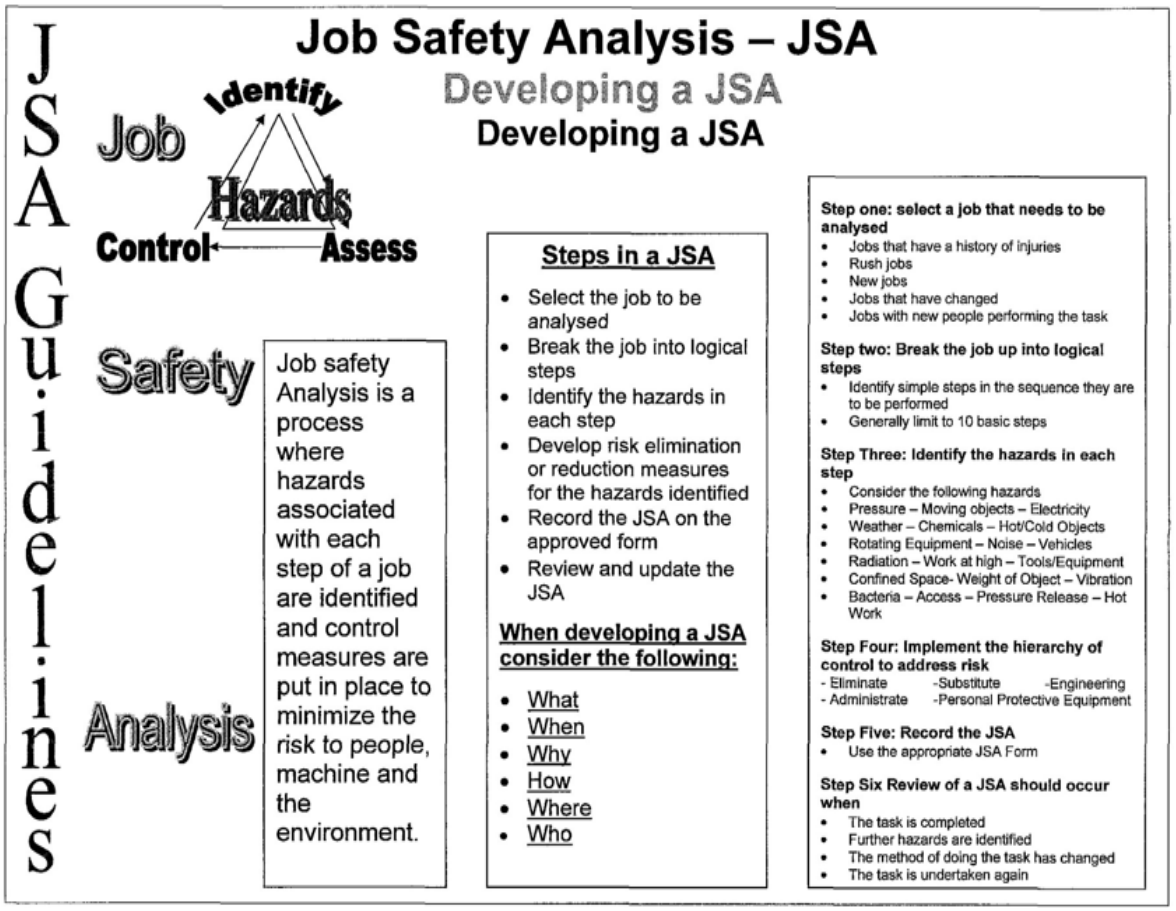

Figure 4. Developing a Job Safety Analysis, Australia. Originally from Guirguis, F., 1995.

practitioner, i.e., facilitator, contributes experience and knowledge to the JSA process and facilitates the process to extract the highest possible standard JSA that will hopefully capture all the risks of the task analysed.

The third risk assessment tool is the Risk Matrix. Seemingly simple however untrained people using this matrix can lead to an incorrect classification of risk rating, placing workers in harm's way. A testimony to this is the Piper Alpha disaster, where the investigation made several findings, including failing to provide effective training and adopting a superficial attitude when risk was assessed for the Piper Alpha offshore platform (National Aeronautics and Space Administration, 2013). The findings were riddled with comments about inadequate training, especially around emergencies and evacuation of the platform. This disaster resulted in 167 deaths and remains to be the world's worst offshore oil and gas disaster to date (Allen, 2011).

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Critical
Almost Certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	High	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Low	Medium

Consequence	Description of Consequence
1. Insignificant	No treatment required
2. Minor	Minor injury requiring First Aid treatment (e.g. minor cuts, bruises, bumps)
3. Moderate	Injury requiring medical treatment or lost time
4. Major	Serious injury (injuries) requiring specialist medical treatment or hospitalisation
5. Critical	Loss of life, permanent disability, or multiple serious injuries

Likelihood	Description of Likelihood
1. Rare	Will only occur in exceptional circumstances
2. Unlikely	Not likely to occur within the foreseeable future, or within the project lifecycle
3. Possible	May occur within the foreseeable future, or within the project lifecycle
4. Likely	Likely to occur within the foreseeable future, or within the project lifecycle
5. Almost Certain	Almost certain to occur within the foreseeable future or within the project lifecycle

Assessed Risk Level		Description of Risk Level	Actions
☐	Low	If an incident were to occur, there would be little likelihood that an injury would result.	Undertake the activity with the existing controls in place.
☐	Medium	If an incident were to occur, there would be some chance that an injury requiring First Aid would result.	Additional controls may be needed.
☐	High	If an incident were to occur, it would be likely that an injury requiring medical treatment would result.	Controls will need to be in place before the activity is undertaken.
☐	Extreme	If an incident were to occur, it would be likely that a permanent, debilitating injury or death would result.	Consider alternatives to doing the activity. Significant control measures will need to be implemented to ensure safety.

Figure 5. Health and Safety Risk Matrix. (n.d.). Retrieved from http://www.health.gov.au/internet/publications/publishing.nsf/Content/mental-pubs-n-safety-toc~mental-pubs-n-safety-5~mental-pubs-n-safety-5-7

OH&S Training

Occupational Health and Safety Training are for all workers, and what is required is determined by using a Training Needs Analysis (TNA), which is the process of identifying training needs to improve employee job performance including safety to and above legally required training. TNA takes into consideration the tasks employees perform and what additional safety training is required (Peters, 2018). Just as necessary is monitoring the workplace for potential new dangers and checking to make sure that the safety controls implemented are working to reduce risk, which is achieved by workplace inspections and system auditing. Both tasks need extensive training and practice to reach an acceptable level of competency (Witty & Gaston, 2008).

Training helps people to obtain specific work knowledge or skills; it spells out what to do and not do to complete a task safely and competently. Effective training in larger firms will contribute to making employees competent in OH&S (Waehrer and Miller, 2009) while avoiding the stress that accidents and ill health cause both the business owners and workers

(Frost, 2017). Training helps avoid the cost of accidents and ill health, both emotionally and financially (Young, 2017). Training to a required level of competence is legally required by law in both Australia and South Korea. Businesses must consider the likelihood of the hazard or risk occurring, the degree of harm from the hazard or risk, and knowledge about ways of managing the hazard or risk (Health and Safety Excecutive, 2017).

Adult training in OH&S could be more effective (Laberge, MacEachen, & Calvet, 2014). And industry practitioners have been rallying against the poor standard of training and assessment available (Latimer, 2012). Outside Australia, I found a research paper from South Africa on the fast-food industry that concluded that employee training and development were not sufficient and resulted in poor employee performances in every aspect of their work, including OH&S (Ukpere & Ukandu, 2013). Elnaga & Imran (2013) showed how effective training could enhance every aspect of employee performance. OH&S regulations have progressively increased protections since they first appeared (Futurework Conditions, 2017; Worksafe , 2017).

Early OH&S law was influenced by labor movements. In 1837, OH&S was established as Common Law in the United Kingdom. The *Mines and Collieries Act 1842* was introduced to improve safety and prosecute offending businesses (Judge, 2015). In 1883, Germany introduced the first Workers Compensation Law (Cowie, 2013). The first Australian OH&S legislation originated after an accident on a building site in Melbourne in 1956, where a worker was severely burned. The employer was sued for not providing a safe place of work, and the workers won in the High Court of Australia on the 10th of August 1956. The court found that the employer had a Duty of Care - a legal obligation imposed on an entity to adhere to a reasonable care standard of workers) – this is the first element that must be established to proceed with legal action of negligence in the workplace. Employers protested that the new OH&S legislation went too far to protect the employee, but the intention of the new OH&S legislation is and has always been to value and protect human life (Cowie, 2013).

Fewer accidents at work will show more significant savings to employers (Johnson , 2013). Better OH&S training in the workplace aligns with the business needs to maximise company profits, which will be achieved by fewer accidents in the workplace that equates to less money spent on injuries that save business millions of dollars, which can be channeled into other business improvements, including more employee training (Goold & Campbell, 1998). Adults benefit financially and gain job satisfaction from workplace training. The

Konekt Ltd. study results show that people who are happy in their workplace are motivated to learn more and aim to improve themselves which includes improving OH&S continuously (Myers & Sweetman, 2014).

The Robens's Report *Safety and Health at Work* (1972), commissioned by the UK Government had a lasting influence on the development of OH&S legislative frameworks and training with its focus on self-regulation (Cowie, 2013). In South Korea, the Korean Occupational Safety & Health Agency (KOSHA) is the OH&S governing body. South Korea was a little behind the rest of the world, first releasing the KOSHA Act in 1986. The need for KOSHA was in the making from 1964 when two million workers were involved in workplace accidents with over 20,000 deaths in South Korea. The workers that survived this onslaught of occupational injuries caused an economic loss of 6,000 million dollars. Korean government released the *Occupational Health and Safety Law* in 1981with little success in reducing occupational injuries. At this time, the South Korean government recognised the seriousness of the situation and decided to establish a professional organisation to try and curb this occupational disaster. Today KOSHA consists of nine departments, and education, and research center, 20 branch offices employing 1300 occupational experts to prevent occupational injuries (Paek & Hisanaga, 2002).

Research shows that effective adult training does increase productivity, when adults' fears about learning, including fears of embarrassment and low self-esteem, are properly addressed (Barnes, Hughes, & Adriaanse, 2016; Rabourn, Shoup, & Lorenz, 2015). Happy employees want to stay in a workplace that looks after their interests and helps them better themselves (Ball, Lee, Phan, & Ra, 2001). One of the interesting findings of the National Centre for Vocational Education Research report shows that both in South Korea and Australia, people who were better educated were more likely to participate in lifelong training (Ball K. , Lee , Phan , & Ra, 2001). According to the Australian Bureau of Statistics Australian Worker: Education Workplace training, 6.7 million workers had no school qualifications, i.e. did not attend school long enough to obtain a certificate. (Australian Bureau of Statistics, 2010). Australian businesses have the potential to tap into 6.7 million adults who, when trained, will perform better at work, provided they are trained under adult learning principles (White & White , 2017).

Roberts (2001, 2007), looked at what happened when trainers did not use andrological assumptions for adult learning. The table below highlights the research results composed by Roberts (2007) based on the andrological assumptions. The results show that there is a

Table 1

Result of Training Study Using Andragogy Assumptions:

Elements of the Andrological Principles	Focus Group Opinion	Do Fiscal Management Classes Align with the Component?
Need to know – Adults need to know why something is important before learning it.	Aligns with the Model	Mixed Results
Self-Concept – Maturing from being a dependent personality to a self-directed person.	Does Not Align with the Model	Mixed Results
Adult Learner Experience – When people mature, they gain experience that becomes a resource for learning.	Aligns with the Model	Yes
Readiness to Learn – As people mature, they become ready to learn, which is orientated towards the tasks they need in their social role.	Aligns with the Model	Mixed Results
Orientation to Learning – Time perspective changes as people mature from one of postponed application of knowledge to immediacy of implementation.	Does Not Align with the Model	No
Motivation to Learn – As people mature the motivation to learn is internal	Does Not Align with the Model	Mixed Results

the problem created by trainers who will not or do not want to adhere to andragogy assumptions for adult learning, including the principle most relevant to OH&S training with mature learners, which is the need to know why (James, Krajnc, & Sponzananja, 2012).

There seems to be little argument that OH&S in the workplace can be improved (Gilroy, 2008). There is also evidence that adults can be trained effectively by using andragogy assumptions (Freeman, 2012; Roberts, 2007). There is a strong argument to be made that better-trained employees are more content at work, therefore, are more diligent and caring when carrying out their work tasks because their knowledge and skills are improved (Heathfield, 2016). There is evidence to show that practical training in the workplace is not happening consistently (Amo, 2017). Therefore, using andragogy assumptions to train adults in OH&S in the workplace could lead to greater safety in the workplace.

Chapter Three: Andragogy Document Review

My research aim is to investigate how to improve workplace OH&S through the application of the andragogy when training adults in OH&S in shipbuilding in South Korea. Better training could help improved retention by adult learners and that retained knowledge and skills can then be applied to the workplace to maintain and possibly improve OH&S standards. I anticipate that the research outcomes and recommendations will apply to all shipyards in South Korea and perhaps too heavy industry in general. This research emerged from my professional observation that how we train adults – whether effective or not effective - has the potential to act as an enabler or a barrier to maintaining and possibly improving OH&S standards in the workplace.

Documents applicable to a field of study are reviewed to identify gaps in knowledge and to understand what research work has already been undertaken. By considering established research, other researchers in the field of study can then summarise, evaluate, and develop a clear picture of what still needs to be researched. Document reviews provide an overview of the researched subject underpinned by sources explored by the researcher, demonstrating to readers how the proposed research fits into the broader field of study (Fink, 2014). All indications, such as my work experience over four decades in industry, suggest that perhaps the andragogy should be used when training adults in OH&S. However, the trend in shipbuilding seems to be structured around placing more emphasis on activities that affect profit like production as opposed to an indirect contributor to profit like OH&S training (Rizkalla, 2014). The lack of quality OH&S training could compromise OH&S systems in the workplace, providing and lower standard of OH&S protection to workers (Torazzi, 2012).

A document review, for a study such as this one on workplace training, combines both summary and synthesis to inform the reader how the researcher is planning to investigate a research problem (Fink, Hart, Jesson, & Ridley, 2007). Prior research is viewed in a new light relating it to how adults are trained in OH&S using andragogy today in the workplace. I have looked at the research context and problem (Chapter Two) and in this Chapter, I present my work on the history of andragogy. I then present the adapted six principles of andragogy that I use as a basis for the design and analysis of my quantitative research study in South Korean shipyards.

The document review process highlighted several questions and problems that have not been fully explored or answered appropriately. There is a need to analyse differently

studies with scholarship areas identified to avoid duplication of effort, structure research to encourage additional research, and identify where new research will fit into the context of the existing literature (Fink, Hart, Jesson, & Ridley, 2007). Document reviews can be argumentative, integrative, historical, methodological, systematic, and theoretical (Baumeister, et al., 2017). I use a historical review to look at the history of andragogy then I use an integrative review method, the most common method used in the social sciences (Baumeister, et al., 2018), to come up with my interpretation of the six principles of andragogy that I apply to my research of OH&S training in South Korean shipyards.

In this thesis, I use the definition provided by M.K. Smith (2002) that andragogy is the art and science of teaching adults. Andragogy is pedagogy developed for adult learners, and it concerns strategies to best teach adults, and how to engage adults in learning effectively (Field, 2015). Andragogy may be a recent term however it is not a new concept. Traces of it can be found as far back as Confucius (551-479 B.C.E), who believed that good teachers are those who draw on experience to train others (Huanyin, 1993). Socrates (469-399 B.C.E) focused on constructivism, encouraging people to think for themselves. Andragogy ideals for effective adult learning go back in history (Gogus, 2012) and forward to the present day (see Knowles, 1984; Lumadue & Waller, 2013; Robottam, 2012).

Historically, adult training succeeded because andragogy was included as part of industry training (Westbrook, et al., 2013) and distance education (Bates, 2016; Darden 2014). Training success is achieved by encouraging people to learn at their own pace (self-direction) and through life experience (Adult Learner Experience) (Ascough, 2002). Andragogy includes readiness and motivation to learn (Pappas, 2013), role play and scenario learning to practice real-life situations (Wepman, 2000), and a focus on developing practical skills for industry situations (Ota, DiCarlo, Burts, Laird, & Gioe, 2006).

In science, to prove anything is a complicated process (Siegel, 2017). Ivan Pavlov introduced the behavioralist theory, which suggested that behavior can be manipulated (McLeod, 2014). Constructivism - the philosophy of education that looks at the nature of knowledge and specifically represents an ontological stance – holds that learning is an active, contextualised process of constructing knowledge rather than acquiring it. Behavioralism and Constructivism are two schools of thought, that both approach the idea and show how learning is affected by changing the learning environment (Weegar & Pacis , 2012) such as breaking the traditional classroom routine (Imel, 2013).

3.2 A History of Andragogy

Looking at the history of andragogy is both fascinating and overwhelming. 1833 is, as far as I know, the first time the term 'andragogy' appeared in print. This history is approached chronologically, looking at and reviewing only English language documents. To prevent confusion of andragogy history, the chronology order will follow work done in this field by the date that documents, books, and articles were published. Following this strategy of using publication dates on the history of andragogy might slightly distort the history of andragogy. However, it will still demonstrate a comprehensive and accurate account of how and where andragogy appeared to where it sits today in the field of adult education. For the sake of continuity and coherence, the history will include all contributors to andragogy, both minor and significant, but only the major contributor's work will be reviewed.

1833-1968

Andragogy first appeared in 1833 in a text authored by Alexandra Kapp (Loeng, 2017), a teacher in Germany, published a book titled *Plato's Educational Ideas.* Kapp promoted the idea that people felt a necessity to keep on learning throughout their life, which was very much in line with all the changes occurring in Europe at that time. Fifty-nine pages of his 300-page book are dedicated to adult education. Kapp stated that learning happens through self-reflection and life experience, not just through teachers. Kapp's publication made people aware of the term andragogy but unfortunately, the term andragogy, once introduced, lay fallow for several decades perhaps because adult education had no specific label or name to designate what it was. The strength of Kapp's writing was in his revolutionary thinking and the realisation that adults need to be taught differently than children. Kapp was ahead of his time with his thinking because it was not until the 1920s that another German reinstated the term andragogy (Loeng, 2017).

Andragogy remerges in 1925, proposed by Eugen Rosenstock-Huessy. His theory was using adult education (andragogy) was the only way that the disgruntled German people following World War 1 could regenerate their country and race. The strength of Huessy's writing was his theory that historical thinking, learning from the past, is a key dimension of adult learning, hence of andragogy. By looking at past events and adhering to their lessons, the people of the present could prevent repeating mistakes made (Leithart, 2007).

About the same time, Linderman (1926) made his way to Germany from the United States of America to acquaint himself with what was called the worker's educational movement. Linderman published his renowned book, *The Meaning of Adult Education* in

1926 but never used the term andragogy. However, in his book, he explored, described, and explained the workings and attributes of andragogy, scrutinising what was required to teach adults best and advocating adult education moves recently in Germany. Linderman would come to be seen as the father of andragogy and adult learning, the man who planted the first seed of andragogy in the USA. His one publication would later be considered one of the significant contributions to the field of adult education and Linderman's work is still sought out today by andragogy practitioners. The term andragogy was only used a few times in the first 100 years of its existence; however, in the following eighty years, andragogy found its place in adult education and became to be was used extensively (Henschke, Isenberg, & Zalenski, 2013).

Forty years later after Linderman introduced the term and assumptions in the mid-1920s, andragogy made its appearance in Great Britain in the work of Simpson, in 1964, who proposed that andragogy be used as the term that encompasses the methods and purposes of adult education. Simpson argued for recognizing and establishing the principles of adult education, the educational psychology of adults, the study of adults, and generalized andragogy methods for teaching adults (Robb, 1997).

1968 - 1985

It was in 1968 that the true champion of andragogy made his appearance. Malcolm Knowles (1968) published his breakthrough first article arguing that adults learn in different ways from children. Knowles's contribution to andragogy was significant because he also diversified understandings of andragogy and applied it to leadership training, not just to adult education and training. In the field of andragogy, the work that was undertaken by Knowles would forever be the first solid step to cementing andragogy as the term relevant to adult education and training. The strength in Knowles' writing and publications was his passion and total belief in andragogy. Knowles started to apply andragogy in all the adult courses he taught, strengthening his theory of andragogy. The beauty of Knowles's work was the way he infused the term andragogy with his own experience of adult education, giving it life. Knowles' combined ideas on andragogy came together with the publication of *The Modern Practice of Adult Education*: *Andragogy vs. Pedagogy*. This is where Knowles' made the absolute distinction between pedagogy and andragogy. In the 1970s Knowles introduced the andragogy assumptions that included: adults are self-directing; their experiences are a resource they can learn from; their learning needs are dictated by their social roles; their time

is essential; and immediate application of skills and knowledge are imperative (Hensckle, 2008).

By 1971, nations with long histories of formal and informal adult workers education, such as France began to realise the benefits of andragogy and recognising it as the new science of training adults (Loeng, 2018). In Canada, Rehder (1971) concluded that the need for adults to improve themselves as a group was as high as the need for individual gain.

Rehder used this insight to ask for greater public investment in adult education. Rehder's contribution is the concept that what is right for one will strengthen all. His message was that united we stand and progress as one through training adults, and the best vehicle for that progress is andragogy (Rehder, 1971).

Ingalls & Arceri (1972) guided educators and trainers on the application of andragogy, therefore establishing a reliable and consistent system of training adults for the US government. In the same year, Knowles noticed that there was growing interested by industry in andragogy as it became clear that managers can also function as teachers, trainers, and facilitators to employees. This was a significant advancement in the field of adult education because now industry was not only curious about andragogy but could see its advantages. The potential was for improving interpersonal work relationships as well as working more effectively on tasks. Knowles made more leaps forward by suggesting that andragogy can be used to structure industrial training, programs, especially those focussing on skills such as management development.

There is no doubt that Knowles' work through several decades made him the single most influential contributor in the advancement of andragogy. Henschke (1973) called Knowles a 'field builder' of adult education. Knowles (1973) turned his attention to the application of andragogy towards human resource development and his consideration of the mechanical and organismic (stressing the organization, integration of human beings, unity, and an individual's inherent developmental or growth tendency). Knowles identified andragogy as organismic, which nudged andragogy more towards the human frame.

From 1975 to 1981, Knowles (1975) pioneered the concept of self-directed learning skills. There was a distinct change in Knowles's thinking at this stage because he labeled andragogy as 'self-learning' and pedagogy as 'teacher-directed' learning. Knowles's initial thinking seemed to be that pedagogy was for children, and andragogy was for adults, but he changed his perspective. Knowles determined that if the taught content is unfamiliar or new with children or adults then pedagogy was appropriate. If what is taught had some

background with children or adults that are involved in the learning, then andragogy was the correct approach. Knowles was looking at andragogy as exemplifying the philosophy of self-directed learning. Along with his new direction in thinking, Knowles introduced nine self-directing learning competencies to complement this new-found direction.

The Education Orientation Questionnaire (EOQ) was developed by Hadley (1975) that consisted of sixty items addressing both pedagogy and andragogy. The EOQ helped in assessing educator's beliefs and opinions towards the constructs of pedagogy and andragogy. The EOQ was composed of 600 beliefs and attitudes about education, learning, and teaching practice. The EOQ Turkish version was used to study the andragogy and pedagogy preferences of adults learning English as a second language. The results of the study were not conclusive with people who preferred andragogy not rigid in their orientation, as may still hold tendencies towards pedagogy (Deveci, 2007).

In 1978 Eskridge published a doctoral dissertation on Knowles' work in promoting andragogy as the proper vehicle for carrying adult learning forward. The strength of this doctorate was it revealed Knowles' wholehearted and unwavering commitment to the andragogy. The weakness in the dissertation was perhaps the projected future of andragogy, although based on a solid foundation of Knowles' work was still a prediction of the unknown (Henry, 2009). Also that year, Knowles (1978) published the second edition of *The Adult Learner* titled the *Andragogy: Adult Learning Theory in Perspective*. Knowles was directly involved with adult education in corporate settings, and in his second edition, he added and clarified his work using andragogy in those environments. The second edition was exciting because Knowles detailed the historical development and growing current interest in adult learning and andragogy. Knowles argued andragogy was a unifying educational theory that can be applied in and to a range of diverse industries, activities, and clientele for adult education. The strength of his writing in the second edition was substantial because it was based on years of teaching and work at a corporate level. The second edition also made a tribute to Linderman, who was Knowles' teacher and mentor

In parallel, Godbey (1978) released an essential practical guide for adult educators to educate teachers and trainers on how to manage their adult learners by dealing with some of the learning barriers adult learners might have. Godbey profiled the adult learner and was clear, that to get the best out of adult learners, teachers need to act as guides and counsels to help adults to organise their time, clarify their motivations for learning, sort out problems and allow adults to find a clear path to learning. Godbey offered advice on teaching methods to

make the adult learners comfortable and settled in class and other learning situations (Godbey, 1978). The concept of motivation was taken up by Knowles in 1980 when released his fifth assumption that adults are motivated internally or intrinsically as opposed to externally or extrinsically.

It was also at this time that a lot of disenchantment and disagreement on the application of the andragogy assumptions appeared. As Blondy (2007) points out, educators and academics debated these assumptions as having no support from empirical, scientific evidence. Interestingly, the application of the assumptions does assist in creating a workable teaching environment for adult learners. Educators were questioning the split between andragogy and pedagogy (Loeng, 2018). The thinking was learning should be viewed as a continuum (a sequence in which adjacent elements are like each other, but extremes being quite distinct), not a dichotomy (a division between two things represented as being different or entirely opposed). Contributions from other fields were also identified as contributing to

the adult learning theory of andragogy. Long (1982) saw derivatives from sciences such as (but not limited to) psychology, anthropology, and sociology. Long claimed that these areas of science contributed not only knowledge and information but also models that significantly contributed and enriched the field of adult learning (see Henschke, 2010). Long was correct in arguing adult education benefited from other disciplines, but that is also the weakness in his claim. No science can exist on its own all sciences to a degree are interdependent, and no one science can exist without the other except maybe for mathematics (Vukovic, 2016).

Eitington (1984/2002) published twenty-two chapters, 600 pages, and 100 Pro-forma teaching handouts in the work *The Winning Trainer: Winning Ways to Involve People in Learning*. The book had ample ideas on how to get adult learners involved in their learning - the fourth edition was published in 2011. With games, role play, puzzles, and icebreakers the book is an absolute whirlwind of knowledge, ideas, and strategies designed to make the life of teachers and trainers just that little easier and keep adult students interested and engaged.

1985 – 2020

Patterson (1986) is motivated and passionate in his study when he discusses the benefits of andragogy, especially in areas such as self-direction, active learning, and the problem-centered approach to teaching adults encouraging educators and trainers to utilize their creativity. With the expansion of distance education and the Open University for British

adults, Tylor and Kaye (1986) wrote on how the adoption of andragogy emphasizes adult learners' autonomy and independence. Andragogy and distance education are indeed productively linked (Darden, 2014). Burge (1988) argued distance education needed to look to andragogy for the sake of course quality cleverly by asking the question if an andragogy approach would undermine or contribute to academic rigor. A clever approach because andragogy and distance education have been successful partners since the inception of distance education in the 1800s, but the distance education and andragogy partnership took off in the 1950s with the advancements in radios and TV (The Association for Educational Communications and Technology, 2001). Burge was convinced that an examination of the implications of andragogy within the new distance education classroom would contribute to academic rigor. Andragogy had additional benefits when it came to improving the quality of counseling and tutoring separate from the quality of course content if andragogy was used (Burge & Lenksyj, 1990).

In 1990, Knowles published his fourth edition of *The Adult Learner*. This edition was the most influential. Knowles made a point of indicating the crucial importance of equableness (a tendency to remain calm or free from harsh or sudden changes); openness (lack of accessibility: restriction); democratic approaches (relating to or supporting democracy with all its principles); realness (in the state of being real or actual); genuineness (things are authentic or true); prizing (to move apart or open something); acceptance (consenting to receive or accept something offered); and empathic (ability to understand the feelings of others) as they relate to andragogy. In simple terms, what Knowles was saying is adult learners must be accepted as a person of worth, their feelings, and ideas respected, and this will assist in building relationships between the adult learner and teacher (Mcgrath, 2018).

In 1990 Heimstra and Sicso were adamant that when applied correctly in the right hands of skilled and dedicated teachers and trainers, andragogy will make a positive impact on adult learners. As andragogy caters to adults who become increasingly responsible for their learning, they have a sincere desire and motivation (self-direction) for learning. If the andragogy model is not used to teach adults, there is nothing to cater for changes on the part of adult learners, and that would account for the development of resentment, resistance, and tension. The development and growth of andragogy is a way to address this situation to help better adults learn (Hiemstra & Brocket, 2012).

Savicevic's (1991) work involved ten European countries – the nationalities involved were Soviet, Czech-Slovak, Polish, Hungarian, Yugoslav, German, French, Dutch, British,

and Finnish. Savicevic aligned himself with the task of establishing and developing andragogy as a discipline of education and the learning of adults in all situations and disciplines (Conaway, 2009). This was important work because there was still much opposition to andragogy in this period (see Rachal, 2002). More research work was conducted on Knowles' work (see Cook, 1994; Henschke, 2008; Risley, 2009) and Eitington published another edition in 1996 with great success, and again proved to be a valuable tool for facilitators (Bawdekar, 2015).

Malcolm S. Knowles passed away on November 27th, 1997. Knowles et al. (1998) published *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development* (Henry, 2017). Savicevic (1999) published *Adult Education: From Practice to Theory Building*, a work on andragogy and how it shapes literacy education. Savicevic provided several definitions of andragogy, but the focus of this book was to examine its humanistic philosophies.

Cooke and MacSween (2000) explored the relationship of social movement and adult education institutions in their edited work *The Rise and Fall of Adult Education Institutions and Social Movements* containing 31 papers from the proceedings of the Seventh International Conference on the History of Adult Education, Dundee, Scotland 1998. The debate around the role of adult education was is it an agent for change or some form of social control. From reading the conference papers, it was a little confusing with the number of topics debated. For example, a subtheme of this conference was a discussion on the cultural, political, and religious identity at times linked to issues such as linguistic or liberation movements. The conference, and perhaps this was the intent, generated more questions than answers.

The significance of Knowles' work and the impact on adult workplace training has been recognised by many practitioners. Sopher (2003) argued that researchers and practitioners can best understand Knowles's ideas if they view his work from within a humanistic philosophy within the boundary of his time. Sopher claimed that Knowles acquired the term andragogy from Savicevic in 1966. Nevertheless, credit goes to Knowles, who gave andragogy an identity and infused it with an understandable, and more importantly, applicable meaning. Sopher's doctoral was significant to the field of andragogy because it covered most of Knowles' life work and his landmark publications. Knowles shifted his take on andragogy and pedagogy to understand that both andragogy and pedagogy can both be used for children and adults depending on what is being taught (Henschke, 2018).

Henry (2009) explored historical thinking in Knowles' principle writings. Wilson (2006) published *No One Is Too Old to Learn: Neuroandragogy: A Theoretical Perspective on Adult Brain Functions and Adult Learning* covering the historical emergence and value of andragogy in the USA and Germany looked closely at the ability and capacity of adults to continue learning well into their later years (and most relevant for an aging population in western countries). Tannehill (2009) gathered extensive data from 85 different institutions to explore pedagogical approaches to educating adult learners in post-secondary institutions. This researchable to provide empirical evidence application of andragogy principles has a positive impact on adult learners.

It has been a long road for andragogy and its many contributors to thinking about adult education over the last 187 years. Andragogy history is as long as it is complicated starting in 1833 with andragogy introduced by Kapp in Germany, making its leap to the USA with Linderman in 1926 then championed by Knowles in the 1970s until he died in the late 1990s. Knowles applied andragogy within varying settings, including industry, government, and educational institutions, with great success. This historical document review highlighted several pivotal points towards the application of andragogy and andragogy has been proven as an approach that holds beneficial concepts for assisting adult learners throughout their lives in countries all around the world. The main understanding I got from my document review on the history of andragogy is the fact that andragogy is the result of a lot of work and effort by multiple people from different backgrounds and beliefs over time. This makes andragogy special because it has proven its worth to adult learning withstanding the test of time.

The Six (adapted) Principles of Andragogy

Andragogy is the art and science of helping adults learn (Adult Learning Australia, 2017; Smith, 2002). When applying these principles to training adults, they encourage adults to learn, and generate enthusiasm in adult learners, motivating adults to continue learning because they are more comfortable and confident. Alexander Kapp, Eugen Rosenstock-Huessy and Carl Linderman first generated these theories about adult education while Malcolm Knowles, a theorist in adult education, later popularised and expanded on these theories over his lifetime of work in the mid to late 20th century

Eventually, for Knowles, adult learning was premised on six principles. As interpreted by me, for this research on adult workplace learning, these principles are:

1. Adult learners are internally motivated and self-directed
2. Adult learners bring life experiences and knowledge to learning experiences
3. Adult learners are goal-oriented
4. Adult learners are relevancy oriented
5. Adult learners are practical, and
6. Adult learners like to be respected.

Discussion of these six assumptions follow:

The first principle is that adults are internally motivated and self-directed. Adult learners need to be capable learners. In a training setting, adults should be offered choices and encouraged in setting their learning goals. The characteristic of self-directed adults is their independence; they revel in finding their way, want to make their decisions, manage their learning & are self-motivated (Adult Learning Australia, 2017). I found this trait of internally motivated and self-directed to be precise, specific, and correct in my training experience. Adults in shipbuilding attend an OH&S training session weekly as a requirement of their job and form part of the criteria for promotion, which does motivate adult learners. In an article titled 'The top 10 benefits of ongoing staff training and development' Gill (2014) points out that employees are motivated to attend training for a possible promotion, but motivation can be lost if adults are treated like children in a classroom.

The second principle is that adults bring life experiences and knowledge to learning experiences. All that experience, richness, and diversity is a valuable resource that adults bring to the classroom. Adults should be allowed to use all that life experience and be allowed to apply it to new learning experiences reflecting and reasoning skills to solve problems (Adult Learning Australia, 2017). Life experiences and knowledge that adults bring to training is a boundless ocean of skills, techniques, and know-how that I have tried to utilise in training adults. An excellent example is a time I was presenting a workshop on the Piper Alpha offshore platform disaster where 167 people perished in a fire and explosion in the North Sea. One of the adult learners in the training session had worked on the platform weeks before the disaster. His experiences and knowledge of the offshore platform transformed the training session into a tremendous learning experience that few adult learners will ever forget.

The third principle is that adults are goal-oriented. Adults become ready to learn when they need to know or become proficient at something or if something connects with their life. The characteristics of goal-oriented adults are they are goal-focused; they want timely learning; they seek meaningful learning experiences, and they need clear and precise

learning goals (Adult Learning Australia, 2017). My experiences in training adults suggest that preparing a training course that is focused, to the point, and presented over a suitable time (not dragged out or rushed to fit into a time slot) resonates well with adult learners. A prime example of adults being goal orientated is a course I developed titled S1, S2, and S3 for supervisors - a requirement to be eligible for promotion in mining. The course went from being a three-day course to a one-day course with assignment work to be done at home in the adult's own time. One two or three days made little difference to the adult learners because they were focused on completing the course for possible promotion. The course was reduced to one day because of hard economic times in the mining industry around 2012 – 2013. Hard economic times seem to be with us forever, and a day seemingly as noted by Smith, Smith, Tuck, & Callan (2017) in their research paper, stated that employers face time and financial constraints when providing training for adult employees.

Adults are relevancy oriented, which is the fourth principle. Adults want to know that what they are learning is directly relevant to them. They might ask, 'why is this important?' or, 'why do I have to know this?' because they want to know the value of the learning. The characteristics of relevance are that adults want their needs met; there must be connections with their employment; and an explanation of how this training will help them achieve their goals (Adult Learning Australia, 2017). One of the first questions adults will ask during my OH&S courses is, 'why we need to know this?'. If the question is answered to their satisfaction, i.e., your reply has shown why this training is relevant to them, then the course will proceed smoothly. A weak reply such as, 'this is our program, so you just need to do it', will always hinder the progress of training. Relevance is a perception. However, the search for relevance needs to be satisfied to show that something is exciting and worth knowing and worth working for (Roberson, 2013).

Adults are practical is the fifth principle. Adults like to engage in problem-centered or life-centered experiences while training. They need to learn skills that can help them do their job better or how to deal better with problems in their life. The characteristics of adults are they want to be part of the planning process for their learning and focus on what is useful to them (Adult Learning Australia, 2017). I was asked to prepare and training course for 1500 workers in the oil and gas industry about risk in the workplace. Not an exciting subject, so the dilemma was how to make this interesting and practical that workers can use. I took my inspiration from Rene Rivkin's (2002) guide to the stock market. I used one of his risk rules as a catalyst to launch my course. The principle was simple, but it could be applied to any

situation. The rule is, ‘before taking a risk always consider both sides of that risk (up and downside), and if you accept both sides go ahead and take the risk’ (Rivkin, 2002). The beauty of this simple rule was it could be applied to life itself, indeed a practical skill.

Lastly, adult learners like to be respected. An external motivator of the prospect of a better job and better pay makes adults more responsive. However, the best motivators are internal motivators, such as job satisfaction, heightened self-esteem, the prospect of a better life, and the promise of development and personal growth. Unfortunately, motivation can quickly diminish by learning experiences that do not a factor and embrace adult learning principles respect (Adult Learning Australia, 2017). For me, respect is the first item of business when training adults. I have a humble approach when training adults, call them by name, value all their input good or bad, and always listen to their opinion. This approach has worked well for me in the past. I feel that it solidifies the relationship between trainers and adult learners. The importance of fostering respect is part of the discussion by Schwartz and Bonini (2014), who points out that without respect, teaching adults is a difficult and unsustainable task.

Survey Data Privacy

The physical handwritten survey data for this research was kept in a locked filing cabinet during the research stage. Once the research was finalised all the handwritten survey data was destroyed by an accredited document shredding company. I assured all the survey participants of this by showing them the receipt from the shredding company stating that all documents were destroyed. All computer survey data was deleted. All safety course participants were informed in their language (Korean and Chines) That they did not have to participate in the survey and that they could also drop out at any stage of the survey if they wished. There was no requirement for the research survey participants to give any personal details so the survey was anonymous. The safety course trainers and I went to great lengths to ensure the privacy and anonymity of all the survey participants.

Chapter Four: Methodology

Surveying shipyard workers

For this research, I was required to cite supporting evidence that the methods utilised for this research are credible and have been used successfully in the past. The positivist paradigm is well-known and well-established in universities worldwide and is designed to strive to investigate, confirm, and even predict law-like behaviors and patterns. Not surprisingly, this paradigm is used to test hypotheses or theories. This paradigm is useful in physical and natural science and can be used in social sciences where large sample sizes are possible – as is the case with this research. The focus is on objectivity, and this paradigm underpins quantitative data collection and analysis methods where the researcher is external to the research but is the controller of the research process (Taylor & Medina, 2013). This study relies on quantitative methodology conducted by an inside professional practitioner research viewpoint.

My methodology approach changed as research parameters evolved through my employment circumstances. I went from working in mining in Australia to working in shipbuilding in South Korea. The initial research plan included English speaking, Australian mine workers in the research, but due to my employment circumstances, this changed to mixed English speaking and non-English speaking South Korean and international workers in shipbuilding.

I found it educational to learn that the more things change, the more things stayed the same. Half a world away from Australia but still adult learners are taught OH&S in the same manner, affecting the same poor OH&S results at the workplace. South Korean shipyards have a low, occupational accident rate but a high death rate. In 2011 the accident rate in South Korea was 0.65 accidents per 100 workers. The death rate in 2011 was 0.79 per 10,000 workers. To place these deaths into context in 2015, 1810, industrial deaths occurred in South Korea (Eun-joo, 2106). My workplace in South Korea had an average safety record of four deaths in 2015, even with their intensive weekly OH&S training programs in place for all employees, including contractors. Delivery of weekly OH&S training courses in South Korea had little consideration for andragogy for training adults before my arrival and subsequent research. The OH&S courses were taught with many similarities to the way OH&S courses were delivered in Australia for adult learners. Australian figures In 2010–11 show that 220

workers died due to injuries sustained at work; this equates to 1.93 deaths per 100 000 workers, indeed not a record to be proud of (Key work health and safety statistics, 2013).

Research objectives, timelines, and the financial situation need serious consideration before committing to a study plan. After some consideration, I decided that I would use a survey questionnaire both online and in the training classroom. There are advantages to online surveys, mainly because of the increase in computer utilisation in the last decade. The manual survey method was labor-intensive and challenging to coordinate when issuing and collecting surveys. I would agree with Kelley, Clark, and Sitzia (2003) when they argue that manual surveying is no longer feasible and is unable to compete with online surveys. In South Korea, I had no choice but to manually survey the workforce because of limited access to workplace computers by employees. I ended up with 80% of my survey questionnaires manually completed and 20% completed online.

The manual surveying method added an insurmountable amount of work to my research because all the surveys were manually entered into Survey Monkey. The data collection process is critical to achieving credible conclusions at the end of the research (Peersman, 2014). I recorded the data collection process for my research in detail by following the guidelines and protocols below:

- Stated in the online manual survey that all information collected would remain confidential and anonymous.
- All prospective responders were under no obligation to complete the voluntary survey, as was stated in both online and classroom sessions.
- No names or personal information was requested
- All surveys collected after training sessions were collected by the session trainer never by me.
- Both completed and uncompleted surveys were collected and returned to me in hard copy weekly.
- A unique number and date were given to each survey questionnaire.
- Manual (paper) surveys were entered manually by a third party into the Survey Monkey (electronic) database but never by me.
- Entered surveys into Survey Monkey, were scanned and saved onto an external hard drive as well as on the James Cook University e-GRS online site for data storage as proof of the integrity of my data collection and as raw evidence of my findings.

- Ensured a professional document disposal company destroyed all paper survey copies.

Research design

Research design ensures that the evidence collected will enable the researcher to logically, unambiguously, and efficiently address the research problem (Maria, 2012). Much deliberation has gone into the type of design to use for this study. The research design that I selected had to be able to deliver suitable data collection, measurements, analysis of data, and enable me to make practical recommendations that will benefit shipbuilding in South Korea (De Vaus & Trochim, 2017).

I started my doctoral research while working in Australia in the coal mining sector. After some consideration, the action research design (McTaggart,1991) seemed †hen to fit my research requirements best. The design starts with trying to understand the research problem then looks at an intervention strategy which is the action part of the design, during which time appropriate data is collected. The process of intervention and data collection can be repeated as many times as required until a sufficient understanding of the problem or a reliable solution is found (Master & Hughes, 1999). As Checkland & Holwell (1998) point out action research is ideal for use in work environments; the design focuses on pragmatic solution-driven research outcomes, not theories; the design can be regarded as a learning cycle for the researcher by learning continuously from the research experience; the design often has obvious relevance to practically improving practices and advocating for change, which is the absolute core of why I am doing this research. The biggest drawbacks of this design are that action research is difficult to conduct as it requires stable employment and a stable workplace because the research process is time-consuming and complicated; is harder to write because a standard format is less likely; can generate bias because of the researcher's over-involvement, and researching change requires buy-in from stakeholders – this is never easy (Brydon-Miller, Greenwood, & Maguire, 2003).

There were problems with my original methodology after making an argument for additional research and, most importantly, placing my proposed research within the context of existing documents (Fink, Hart, Jesson, & Ridley, 2017) (See Chapter Two). The problems arose after the catastrophic collapse of the Coal mining industry in 2012-2013 in the Bowen Basin, Queensland. At the time of the coal mining collapse, I was part of an OH&S training team that facilitated training courses, presentations, and workshops daily. The mine site training team and I catered for 3000 contractors and visitors annually and 500 employees. I

needed to seek other work. I ended up taking a position in the shipyards of South Korea, where a standard action research project would not be possible for me as a well-paid, professional, but foreign worker. I then considered a case study research design, but this did not fit my research requirements in that case study does not facilitate the investigation of cause and effect relationships, and interpretation of problem investigated is unique and can only be applied to that case (Coghlan, et al., 2018). (And as a global practitioner I wanted to extrapolate from my results.)

I went from mining in Australia to shipbuilding in South Korea. My methodology had to be revised to suit the South Korean work environment. I still wanted to use a survey questionnaire in training courses, but now my audience was Korean, with 45% having limited English proficiency (*The Korean Times*, 2014).

I spent a lot of time considering a range of designs such as casual design (Coghlan et al., 2018), cohort design (Healy et al., 2018), cross-sectional design (Bethlehem, et al., 2018), descriptive design (Anastas, et al., 2017), experimental research – which is not suited to this study because this design attempts to predict what may occur (Anastas, et al., 2017), historical design (Howell et al. 2018), direct and unobtrusive observational design (Aitkenson, 2017), longitudinal design (Anastas et al., 2017), meta-analysis design (Beck et al. 2017), philosophical design (Burton et al. 2018), sequential design (Betensky et al. 2018) and exploratory design (Cuthill et al. 2018) and mixed methods design (Tashakkori & Creswell, 2007).

There are some positives with exploratory design, including the fact that this type of design can be used to solve a research problem when there are few to no earlier studies, which was revealed by my survey of the published and grey literature. Exploratorydesign can deliver a useful approach for information gathering; address what, why, and how questions; provide an opportunity to define new terms and look at clarifying old or existing concepts; makes it possible to generate hypotheses and refine research questions, and helps to allocate resources by looking at research priorities. An exploratory design cannot deliver on generating new insights if the small sample populations are used; the ability to make definitive conclusions are inhibited is there is a lack of rigor to the methods used to collect data because of its exploratory nature (Cuthill, et al., 2018).

Proponents of mixed methods research design argue that this design is more than just a combination of qualitative and quantitative methods, it reflects a “third way” (Tashakkori & Creswell, 2007). The third way is described as an epistemological paradigm

occupying the conceptual space between positivism and interpretivism (Burch, et al., 2018). The design can deliver: textual information that can add meaning to numeric data; more complex problems researched because there are no constraints on using only one method; inherent weaknesses of one method can be overcome by the use of another method; more robust evidence provided in support of recommendations; new and hidden insights generated that would not be possible with the use of a single method, and knowledge of the research problem is complete, and this can be used to increase the ecological validity of findings applied to theory or practice (Burch, et al., 2018).

Mixed methods design cannot deliver if the researcher's proficiency in applying multiple methods to investigate a research problem cannot coherently meld selected methods together; the likelihood of conflicting results or ambiguous findings could be increased inhibition of valid conclusions and recommendations; because of the complexity of this design, all results and recommendations require a well-organised narrative and clear, precise wording choices; merging styles of writing and investigations requires a lot more attention to the overall methodological paradigm; considerable attention is required when merging quantitative and qualitative research, and the design requires extensive time and resources, given the multiple forms of collected data and analysis (Burch, et al., 2018).

I eventually decided to concentrate on conducting an original survey and to undertake a quantitative analysis. A quantitative survey can work well for researching adult's perceptions and experiences in education or workplace training (Eyisi, 2016). The narrative form is used to present the analyzed data. The survey method was appropriate because it caters to individuals to answer questions administered by a survey questionnaire. The researcher then describes the survey answers and concludes these data (Hale, 2011). The data collection is designed to give the researcher a snapshot in time of the current thoughts of individuals who voluntarily agreed to participate in the survey.

Designing an Original Survey

Using the survey method approach for quantitative research is, at times, seen as a natural method of conducting this type of investigation. Not true because to carry out a credible and worthwhile survey, some practices need to be followed, ensuring survey results are efficiently and accurately reported (Kelley, Clark, & Sitzia, 2003). Discussed in the following paragraphs are the essential survey methods I used in conducting my survey. The most critical points are the core steps in survey research, which are designing the research tool (survey), pilot studies**,** sampling, data collection**,** data analysis, fieldwork, and data

validity (Kelley, Clark, & Sitzia, 2003) highlighting common pitfalls and problem areas that I encountered in my survey process and how I overcame these setbacks.

My research approach was revised to cater to the South Korean work culture. I had to consider Korean culture, so I found a cultural coach to ensure I did not insult anyone during my research. I requested permission from the shipyard senior management to survey employees and contractors, which came after exhaustive efforts navigating through shipyard bureaucracy. A translator was sourced to translate my English survey questionnaire to Korea. Once I had permission from the shipyard management, collecting the required data began by surveying adult learners at OH&S weekly training sessions. Because of language barriers, this was all carried out by Korean trainers. Surveys were collected by Korean trainers, whether completed or not. Delivered to my office and results inputted into Survey Monkey by a Korean worker. Once I had established this groundwork, I had no participation in the sampling process in the shipyard. I know this helped in reducing bias in data collection and processing and did not influence these data (Bem, & Lunenburg, 2008).

Millions of dollars are spent every year trying to find out what people think, know, and feel. $6.7 billion US dollars are spent on marketing research each year in the United States, according to the Council of American Survey Research Organization. The amount climbs to $18.9 billion US dollars worldwide (Anderson , 2010). To survey well research is conducted, and like everything else in life, we have a right and the wrong way of doing it.

Research is a process, so to get the information you are looking for, this process must be following. Entering into a research survey is similar to going into a minefield; every step needs careful and delicate moves to be taken because the consequences could be disastrous. Despite this danger, surveys are still a powerful tool that if used concisely, will yield a treasure of accurate representation of opinions (Shuttleworth, Survey Research Design, 2008).

The first step is to establish the aims of the survey to ensure that data collection is sufficient to make valid conclusions, enough variables are measures, participants are adequately selected, potential bias is reduced, and the survey instrument is rigorous enough (Price, Jhangiani, & Chiang, 1995). The research scope should not be too broad, requiring many questions and making the research not practical. If the research is too narrow, the results will not be thorough enough (Shuttleworth, 2008). The aim of the research is the goal or the primary purpose of why the research is being carried out (Thomas & Hodges, 2013). I

struggled with establishing the aim of this research. I would describe it as a learning, and growing process that I needed to go through to sharpen, focus, and mature my research aim.

I had to consider the sample group. Who needs to be in the sample group? Sampling accuracy is essential, and so is how many people will be required in the sample population to have a suitable and representative sample were questions I was continuously pondering. I was fortunate in that my workplace in South Korea had 30,000 workers that I could ask to be participants in the sampling process. The sample population I needed were adult learners in an industry that attended the weekly OH&S training courses.

The survey questions process included two pilot programs and four feedback sessions with pilot program participants. When the study launched, two unforeseen problems appeared. The first problem was with the main questionnaire, which had too many questions, i.e., the survey was too long. The second problem was the demographics section also had too many questions. One problem encountered with having too many questions was that people in the sample population did not answer all the survey questions.

The second problem was the way the survey questionnaire was printed. One question, in particular, had the question printed on one page and the reply section of the question on the next page. The results were that 20% of participants did not answer that particular question. Both of these problems had little effect on my survey because of the number of participants in the sample population, which was 474. Noted in a paper posted on the Pew Research Center site was a comment on the importance of the placement of questions and how these can have an impact on the results (PEWResearchCenter, 2018).

In writing and rewriting my survey questions, I was conscious of the use of loaded or leading words. In efforts to eradicate this bias, I solicited advice from both colleagues and my advisors. A more difficult area to address when writing survey questions were not trying to force a response because privacy is important to people, and I understand that people may not want to tell me their business. To accommodate people who wanted to maintain their privacy, an option of “none of the above” was included in 75% of the questions the other 25 % did not have options they had percentages that people could select from 0% to 100%, so none of the above options was still possible (Leeuw, Hox, & Boev'e, 2015). I used long questions wisely, keeping the number down to a minimum. DeFranzo’s (2011) Six Rules for Writing Effective Survey Questions was consulted as was the excellent guide published by Burns and her colleagues which became my reference point (Burns, et al., 2008). I also relied on a blog

written by Sam Lloyd (2013) titled the 10 Commandments for Writing Outstanding Survey Questions.

I paid careful and considerable attention to question wording and format, as these factors can all affect the type of responses obtained. I used guidelines from a tutorial on pilot studies: the what, why, and how to establish the groundwork for pilots (Thabane, et al., 2010). I planned the content, questionnaire layout, and how and who will be piloting the survey (Kelley, Clark, & Sitzia, 2003). Bias is hard to predict given the number of different biases that exist in research surveys and the different customs and culture of South Korea. I concentrated on making sure that my survey represented the sample population, which was Korean. To avoided selection, bias the sample population was selected entirely at random, achieved by offering the survey to adult learners who attend weekly OH&S training sessions. No one, not even the trainers knew who would or would not show up to these OH&S weekly training session except that the attendees were part of the 30,000 strong workforces that worked in the shipyard. In this way, a satisfactory form of randomization was achieved (Martínez-Mesa, González-Chica, Duquia, Bonamigo, & Bastos, 2016).

A well thought out, and comprehensive pilot study will make a world of difference when it comes to identifying questions that might not be understood by the selected sample population (Hassan, Schattner, & Mazza, 2006). Not having enough time and money to conduct a pilot and conduct a full survey is something researchers worry about (Matthey, 2014). The absolute importance of pilot studies is explored in an article by Teijlingen and Hundley (2001). As well as collecting invaluable initial data, testing which leads to better development of research instruments. My problem was workability.

For this research, my questionnaire was piloted online and in a training classroom. Without a doubt, sending my full survey out without piloting it would have been catastrophic. I had way too many questions in my pilot survey (74), and that deflated, not motivated, my pilot population. I had problems with question order (see Vannette, 2015). For my pilot study, I involved 62 Nigerian work experience trainees whom I trained regularly. The Nigerians were representative of the workers in the shipyard - they were welders, ship painters, electricians, general laborers, crane operators, and scaffolders. The feedback was almost identical from all participants in my pilot study in pointing out problem questions, an ambiguous text, complicated English wording, and the fact that the questionnaire was too long.

Observing the Nigerian pilot testers in the classroom I could see that the first question confused them all, and then they turned and discussed the problem with the person next to them. I used the same protocol with my online pilot survey testers, who were all past colleagues. They certainly helped to identify survey problems and the survey was amended. The feedback showed that eleven questions were either ambiguous or poorly worded, plain English use was essential, and there were too many demographic questions. The problems were corrected before conducting another classroom pilot, but this time conducting the pilot in four sessions, which covered all the original 62 Nigerian volunteers. In a perfect world, It would be ideal for conducting a third or even fourth pilot session to refine the survey questions entirely.

Respondent bias represents respondents who agree with whatever is distributed to them in a survey. These responders, as suggested by Sarniak (2015) to think that every idea is excellent, and every proposed situation is This can be avoided to a degree by using questions that do not imply the existence of a right answer but use questions that require the respondent's real view I experienced this bias with my Nigerian pilot respondents. They said to me that if I claim something to be true so, then it must be because I have been training people for so long. I immediately corrected this by saying you must always use your good judgment with what people tell you, even people whom you might think are experts in their field. I was very insistent with this pilot group and actively sought their honest feedback.

Conducting the Survey

Quantitative data needs to be statistically tested to determine the significance of the collected data (Shuttleworth, Survey Research Design, 2008). I needed help with this part of my project, so I consulted a University statistician, who decided that the number of participants was sufficient and that the collected data required no further manipulation, and could be analysed as is. The size of the sample required for reducing the statistical error margin was between 400 and 500 workers sampled. The sample number was derived from the advice I received from the University statistician and from reading *Understanding Research Philosophies* (Saunders, Lewis, & Thomhill, 2009).

Quantitative researchers have to decide whether the survey sample will be random or non-random (Kelley, Clark, & Sitzia, 2003). The participating population was random, with a population of 30,000 workers up for selection. Although this might seem like a smorgasbord of sampling delights, the road forward was dotted with problems and came with the ball and chain of Korean shipyard politics and red tape. Eventually, I was allowed to

survey of the workers. I ran out of time when my employment concluded in July 2016. This left me with 474 surveys completed, 100 from online participants, and the other 374 manually collected from Korean shipyard workers over three months in early 2016.

The data collection plan was to contact workers during weekly OH&S training sessions and asked them to volunteer to complete the hard copy survey. The volunteers depended on which category of workers were attending the OH&S training. As an example, if the OH&S sessions were ship painters, then they would be almost all females and mainly from China. This process went on for eight weeks until I left South Korea at the end of my contract. I did not issue, explain, nor collect the manual surveys. This was done by Korean Safety Officers on my behalf so that I could remain at an ethical distance from the act of data collection. Manual surveys were available in English and Korean. The translators are named in the acknowledgments.

The people who participated in the online survey were contacted through Linked In. Two hundred twelve invitations were sent out, and of those, 100 surveys were returned. I kept copies of all documentation used in this process in an electronic format, i.e., everything was backed up on an external hard drive. These documents included emails, dates, and times my survey was distributed online, pilot study results, copies of the all draft and the final survey questionnaire, and all instructions and feedback I received from my online sample population. The benefits of online surveys include unlimited access to individuals worldwide with the ability to access difficult to reach populations (Wyse, Selwyn, Smith, & Suter, 2012). The online participants included workers from South Korea, Nigeria, Egypt, Australia, Qatar, and Papua New Guinea. All the people contacted were people able to respond in English.

The combination of participants contacted through Linked In, and participants recruited from the population of workers in the shipyard was the outcome of me having to embrace the art of the possible. To establish and achieve a credible data collecting system, the following aspects were considered: How many potential respondents would be contacted and by whom? The number of people approached and how many would agree to participate. How to ask people to participate ethically. How can I improve the participation rate? Did I want to target a specific gender, age under any particular circumstances? How would the survey be conducted in person and online? What sort of response was I looking at achieving? (Kelley, Clark, & Sitzia, 2003). As with any method used in research, there will be advantages and disadvantages. The benefits of using a research survey in training sessions are plentiful, with a few advantages to consider (Wyse, Selwyn, Smith, & Suter, 2012). A good example is

respondents because of the presence of a trainer in the classroom are more likely to provide accurate and honest information. The classroom survey also provided me with the benefit of being able to have the surveys collected on the spot once completed and made it easier to target my population of adult learners.

Manually completed surveys are rarer these days because of the availability of online survey tools and dedicated survey software. The disadvantages of face to face surveys have significant disadvantages to consider (Wyse, Selwyn, Smith, & Suter, 2012). The primary disadvantages are cost and time, which are the concerns of any research project (DeFranzo, 2014). My project required me to pay for the printing of 1000 surveys, which were printed back to back; each survey was four pages long. The time it took to find a South Korean printer, get three quotations, decide on a provider, have them send me the proof, approving the proof, printing, and final delivery took five weeks. In my case, there was the added frustration of not been able to communicate directly with the printer because of the language barrier. As for the extra cost, to print the survey, it all fell within my budget.

With online surveys, the convenience of automated data collecting reduces the researcher's time and effort significantly (Wyse, Selwyn, Smith, & Suter, 2012). Once I placed the survey questionnaire online, I was able to collect the responses and look at the trends immediately. Computing and mobile phone costs continue to decrease, allowing more individuals, groups, and communities to access the Internet for communication and information (Perron, Taylor, Glass, & Margerun-leys, 2011). A group of painters during a break asked if they could complete my survey on their mobile phones. I agreed. These Korean shipyard painters were the lowest-paid worker In the shipyard yet still had access to the internet via their mobile phones. I observed a lowly paid group of employees, mainly laborers who were asked to complete the survey, and they were able to do so immediately on their phones. I noticed that when workers were completing the survey, four people out of twenty, I was watching gave up, and the rest struggled because of the length of the survey.
Mobile phones might be suitable for simple short surveys but not recommended for anything lengthy or detailed like my survey questionnaire.

Another significant advantage of anonymous online surveys is people with socially sensitive conditions or disorders (Wyse, Selwyn, Smith, & Suter, 2012). People with conditions like eating disorders, physical disabilities, and learning difficulties would be hard to reach because they would be stigmatised offline. Two individuals who completed the research survey in the shipyard had learning disabilities and would not have participated in

the survey was not online. They completed the survey in privacy and in their own time. I was approached by these two workers and organised time with their supervisors to enable them to complete the survey.

Any method of data collection will have some disadvantages. With online surveys, the main disadvantages are the accuracy, uncertainty, and the validity of the data (Allen, Lee, & Hubona, 2017). Validity questions how well a test measures what the purported to measure. There are five types of validity, which all have similarities, but for this research project, construct validity is applied. Construct validity looks at outcomes assessing how well measures can provide information that will help and improve the research study (Phelan & Wren, 2006).

After the pilot studies, I placed more emphasis on perfecting my questionnaire, improving the English used, reducing the length and number of the questions in the survey, paying attention to question order. The most significant item not entirely under my control was the translation of the survey questions from English to Korean. Although the survey was translated and checked word for word, I had to accept the translator's word that the survey questions in Korean did reflect the intended English questions accurately.

I was aware of responder bias (Sarniak, 2015). Korean shipyard works have a nonchalant view of expatriate workers, and impressing expatriates would not have been high on their list of priorities. The way expatriates are viewed by some Asian countries is less than flattering and daily expatriates are reminded that they do not belong in Asia and are seen as undesirable aliens (Harris & Dolan, 2014). In many ways, I was fortunate to have levels of cooperation achieved. Habituation bias is hard to manage well when respondents tend to provide the same answers to questions that might seem to be similar in content. The respondent is not accountable because the human brain to save energy sends itself into autopilot. Everyone has experienced this phenomenon in life. The best way to manage this bias is to keep the respondents engaged and interested to try and minimise habitation (Sarniak, 2015). I had little trouble with habitation bias because the participating workers seemed glad to take a break from their arduous laboring work in the shipyard to complete the survey in a comfortable air-conditioned room, and they were happy to take their time and interact with the Korean training staff.

Research writing

A significant part of undertaking this doctoral work was learning to write as well as learning how to conduct insider, practitioner research. Educational and social science

the research entails collecting data relevant to a problem to be able to test a theory, program, or an observable phenomenon (De Vaus & Trochim, 2018). I took my time initially, and as I moved through this study to critically think about what data I need to collect to address the research problem. This is the first design parameter (Mats & Sandberg, 2013). The selection of the problem was not hard and required no deliberation on my behalf or input from any third party. I would be researching how adults are trained in OH&S in shipbuilding in South Korea.

Secondly, is the preparation for writing (Hartley, 2008). Stylistic elements look at the big picture; the idea is to make sure that the writing is organised and the flow of cohesive ideas occurs (Murray, Moore, Johnson, Nygaard, & Silvia, 2018). I attempted to do this by asking friends and colleagues to read my work and to be critical in their comments. To date, this has been fruitful to an extent. Unfortunately, only one of my colleagues had the drive and background to be able to critic my writing without prejudice. The results for me have been encouraging allowing me to address problem areas that would have otherwise gone undetected.

Stylistic elements encompass tone, looking at the attitude conveyed in writing (Murray, Moore, Johnson, Nygaard, & Silvia, 2018). To address this element, I addressed my argument in a fair and narrative tone. I have achieved this by always reminding myself to stick to the facts and leave personal feelings and emotions out of my writing. When presenting my position or argument as an insider researcher I must describe facts accurately. I need to investigate and write up my research from an authoritative, researched point of view. Stylistic elements also deal with diction. Crucial because the choice of words comes into play (Murray, Moore, Johnson, Nygaard, & Silvia, 2018). I took great care to make sure that the words used have the exact definition I require. I have used precise words and stayed away from generalising.

Clear and concise language is essential in all academic writing (Hartley, 2008). I wrote my thesis using all the basic rules of academic writing with well-structured topic sentences and clear paragraphs that contain only one idea. I looked at clarity as to the most critical keyword with no ambiguity and no extra details. I made sure that I left out slang, jargon, and clichés providing reliable information avoiding abstract terms where possible, and ensuring all statements are supported by evidence. The language used is non-emotive. The one read rule is applied here, which dictates that the reader must be able to understand my sentences by reading them once. To further achieve concise writing, the following is applied

four rules: get to the point, examine every word for meaning, and watch repetition, and every word in the sentence should add information. I also completed a writing workshop conducted by Associate Professor Liz Tynan.

Stylistic elements include academic conventions. All the sources used in this paper have been cited using the APA sixth edition referencing method. Vitally important to acknowledge the sources of any ideas, data, or research. Proper accurate referencing also protects my work from allegations of plagiarism. Citing is also crucial because it allows the reader to verify my findings and conclusions from the sources used for this research (Murray, et al., 2017).

Stylistic elements look at evidence-based arguments (Murray, et al., 2017). All statements in this thesis are supported by evidence-based on the relevant body of knowledge. Supported by scholarly sources where possible and, in some cases, grey documents where necessary. I realised that the quality of my evidence would determine the strength of my argument. Using the grey literature (reports, non-peer-reviewed articles) might not fully convince the reader of the validity of my argument, but in some cases, I have had no reply to this body of publications due to the sparseness of published research in the field of OH&S training in shipyards in South Korea using andragogy assumptions.

Stylistic elements are considered thesis-driven papers (Murray, Moore, Johnson, Nygaard, & Silvia, 2018). This is an applied research design addressing an applied research problem in investigating applied research questions. This would not be considered academic writing if I only describe my topic without the research questions that provide answers to the research questions posed (see Staiger, Swales, Feak, & Arbor, 2018).

The final stylistic elements are complexity and higher-order thinking. Explaining complex ideas as clearly as possible is one function of academic writing (Murray, et al., 2017). The argument presented in this thesis is without any manipulation expressed and described in an understandable language and should be able to be understood easily by the reader. In the thesis preparation, I always considered what contribution will the study make to additional knowledge or new understanding (Hirano, Samraj, & Redman, 2018).

Presentation of Data and Analysis

After reviewing my survey results with a statistical expert from James Cook University (JCU), I had confidence in my findings (see Chapter Five). The primary stakeholders in this research who would be affected by my results are shipbuilding employers who send their people out to train in OH&S, or who teach these courses in-house using

workplace trainers and adult learners who attend these courses. I was able to view my research problem from all perspectives because of my long association with training adults in OH&S. As an external training provider, I wanted to train as many people as possible as quickly as possible to maximise profits and appease employers. As a workplace trainer, I wanted to find shortcuts to get the courses done as quickly as possible. Finally, as an adult learner, I wanted to see the training sessions finish as soon as possible with minimum effort on my behalf. My results will affect all these stakeholders, but two stumbling blocks, profit, and time constraints might be hard to overcome.

What amount and type of data to report in the results section? Where possible, I use tables, photos, illustrations, and figures (Brett , Burton , Ketchmer, & William, 2018). I was selective in distinguishing data that would typically be included in research papers from raw data. Data that was not crucial to answering my research question were excluded. Following Burton, et al., (2017). I present a synopsis of the results, followed by a detailed explanation of each key finding. My content includes an introduction to place the study results in context, a logical sequence of all my critical findings.

In the discussion (Chapter Six), I have attempted to ensure that my discussion always relates to my research questions (Annesley, 2017). I thought critically about the research problem and sought a synthesis of my findings. Implications and bias were discussed with improvement recommendations made clearly with a focus on andragogy and practice, showing existing gaps that my research fills (Annesley, Bitchener, Basturkmen, & Kretchmer, 2018). The patterns and trends that emerged from the data were not unexpected, and no surprises were noted and discussed (Bavdekar, Sneha, Brett, Burton, & Kretchmer, 2018). For me, this research thesis is very much about personal reflection and how I can do better next time and keep improving the way I approach my OH&S training. To this end, I finish with a relevant experience drawn from my life experience, and I was hoping this last gesture would be a “take-home message” to the reader. (Assan, Plotnick, & Kretchmer, 2018).

Fortunately, I heeded my advisors’ recommendations and subscribed to Survey Monkey (SM). SM can collect and analyse data instantaneously with options to share your data. A genuine beauty of SM is the perfect record it has kept of all my survey work. SM was used to enter all the hard copy survey results. I had complete control and more time to concentrate on interpreting the data without the care of collecting, sorting, and recording (Write, 2005).

My survey consisted of 29 surveys and 13 demographic questions. Once the 29 questions were finalised, I mapped them back to my research questions. The survey yielded 474 replies, which, according to the JCU statistician was more than enough to arrive at a reliable conclusion for my research. I was asked to download my survey results from Survey Monkey directly into the Statistical Package for Social Sciences (SPSS) software. No modifications were made to my SPSS file, and the statistician agreed that the statistical information should be used in its original form, and manipulating the data would add no value. I used the results of the 29 survey questions to answer my four research questions.

Confidence in the results of the survey was enhanced by combating question order bias by piloting my survey and getting feedback on the order of questions to see if any questions were confusing or out of place; keeping related questions together that made it easier for the respondents to answer the questions; and asking questions in a logical order to make sure they make sense (see Vannette, 2015). And combatting leading question bias. Researchers might do this without realising what they are doing because they are trying to confirm a hypothesis or build rapport. Researchers need to bite down hard to stamp out this practice and to start asking questions using the respondents' level of language, culture, and level of understanding. No need to mesmerise the respondents with lavish English and lengthy and complicated words (see Sarniak, 2015). My survey drafts helped immensely in cutting out words, questions, and over-elaborate English wording that might have encouraged leading question bias.

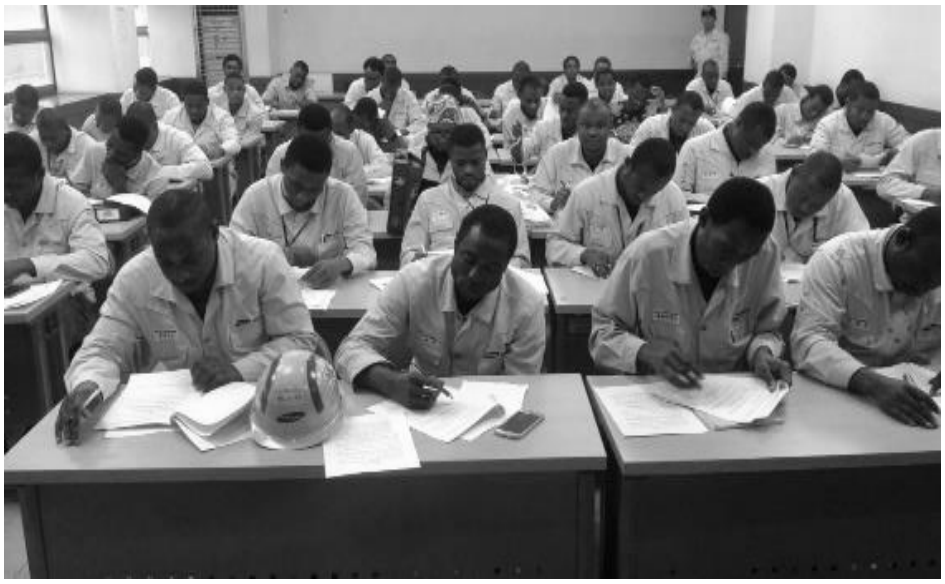

Figure 6. Pilot Study for This Research Project With Nigerian Work Experience Students, South Korea.

The Quality of Practitioner Onsite Research

Covering the quality aspect of my onsite research, I considered and acted on four vital aspects (Kirke, Layton, & Hiow-Hui Sim, 2007). The first aspect is the aim of onsite research, which is to understand the theoretical issues of research in practice better.

Theorising cannot stand alone and needs to be proven in practice to make sure it works in the 'real world (Stanovich & Stanovich, 2005). I found this to be true when my training ideas play out in theory but fall short in practice. I have found that the practical application of an idea in a training session is invaluable in fine-tuning training techniques.

The second aspect is the benefits of onsite research such as: seeing theories and ideas come to life; improving and honing my knowledge with a better take on what does and does not work in training sessions, and developing new skills and refining old skills to the point of excellence. Thirdly, onsite research gave me a chance to enjoy presenting my training creations and enjoying the opportunity to make them better. On balance, my onsite research was an interactive, exciting, and motivating six months. Lastly, onsite research should be relished and enjoyed (little sacred space, 2012). The rest of the research project requires planning, discipline, countless hours of searching, reading referencing. So, I embrace this experience, enjoyed it, and had a great time, theorising, chattering, and observing how useful my work and ideas were and how they might evolve in a real setting. For sure, the onsite research experience made me a better and more practical trainer.

Researcher bias is a deeply seated bias in people and the way they look at, understand, filter, and use information. To reduce this bias, researchers need to push themselves always to re-evaluate first impressions and always challenge pre-existing assumptions (Sarniak, 2015). Keeping this bias at bay for me worked well because I involved as many people as possible in my research in keeping my point of view well balanced. I involved friends, colleagues internationally as well as professionals in South Korea and family to look at my research and give me their unbiased opinions and thoughts.

My onsite research did have to consider cultural bias. We all bring our cultural bias to the table on every occasion, from dinner with friends to replying to research questions.

Cultural bias is the way we are seen and perceived by other people and cultures and how we see and perceive everyone around us. A case of cultural bias can impact our mannerisms and gestures. Addressing cultural bias can be managed by looking at your research questions from a distanced perspective and considering the cultural context of your sample population (Sarniak, 2015). Cultural bias was a huge consideration for me in my study since my sample

the population was mainly South Korea and Nigerian. I overcame this cultural bias by working closely with my Korean colleagues to make sure we trod lightly around any sensitive cultural areas and did not overtly discriminate in any way.

This ties in with my understanding of Resnick's (2015) cautions about ethics. I found and used this essential list of ethics to make sure that I fully complied with the highest ethical standards of which means keeping my promises and acting with sincerity, avoiding careless errors and negligence, having respect for other people's work, keeping data sources confidential and records safe, taking responsibility for the confidentiality and informed consent (Kelley, Clark, & Sitzia, 2003), having respect for colleagues and proper social responsibility throughout the research, not discriminating against anyone (race, gender, or ethnicity), maintaining competence throughout my research process, checking and assuring that everything was legal. For me being ethical and complying with all the rules has worked in my favor because it went a long way to winning over the South Korean shipyard management trust. The South Korean management was skeptical at first when I introduced my project, but as they got to know me and could see that I had no hidden agenda, they were happy to allow me to conduct my onsite research.

Onsite research can promote better education practices (Stricevic & Farmer, 2011). That was my motivation for starting this research project to promote better adult training techniques, so adults can be taught OH&S effectively, which will help them be safer in the workplace. Little work has been completed in my area of interest in OH&S adult training in shipbuilding using andragogy assumptions, so my onsite research (even as a foreigner) was the search for a paradigm of a "shared understanding of reality" (Kivunja & Kuyini, 2017). A paradigm is a belief or theory which guides the way we see and do things in life and establishes practices. These practices or behaviors can range from thought patterns to actions.

Paradigms govern all research disciplines. The positivist paradigm is experimental testing, post-positivism, which states that we need context and that context-free experimental design is insufficient. Critical theory is ideas about an ideology that believes that knowledge is not free, and addressing bias is also essential always. What the paradigm for this research project will be using is constructivism. In this approach, each person constructs his or her reality, so there are multiple interpretations. At times constructivism is also known as interpretivism, which is partly perception (Kivunja & Kuyini, 2017). After all, people's perception is often their reality (Fern, 2013).

Constructivism in Onsite OH&S Training Research

Constructivism is a theory that uses observation and scientific study to determine how people learn. Through experience, people construct their knowledge and understanding of the world. Using people's experience in the classroom has helped me to close the gap between trainers and adult learners. Adults are active creators of their world and knowledge, so they have the need first to ask questions, explore, participate, and access what they are being told. When adults encounter something new, they will not automatically accept it when it challenges previous ideas and experiences (Concept to Classroom, 2004). I have made sure to involve adult learners in all my training sessions as much as possible. The adults by participating in training sessions show me their likes and dislikes, and I have capitalised on that by designing training sessions that incorporate their likes. For example, when training adults in OH&S common law aspects, which are tedious, the classroom is set up as a courtroom where we play out an actual common law case with the adults participating as judge, jury, plaintiff, and defendant.

As a trainer, I have always encouraged my adult learners to question themselves, their strategies, and do the same for my delivery techniques and course content. The idea is to give adult learners tools to keep learning. As an example, I often ask adult learners to conduct part of the training for the class that they are comfortable with. The concept is based on 360- degree feedback; it shows the adult learners the difficulties and challenges the trainer has in delivering material to adults. The beauty of 360-degree feedback is it empowers adults to drive their development (What is 360 Degree Feedback? n.d.).

Training can never happen without a trainer steering the course in the right direction with the expertise they bring. I lead with my knowledge of the subject, but once a class gains momentum, I take a back seat only intervening as required to keep the session on course. So, the trainer's role is modified under applied constructivism because now the trainer helps the adult learner to help themselves learn. My experience suggests that once the adult learners understand what they need to learn and what is expected of them, they apply their life experience and knowledge of the problem. Lankes and Clark (n.d.) believe that learners do not reinvent the wheel but instead try to understand how and why the wheel turns and its function.

Constructivist approaches to OH&S training in heavy industry sites prove that this approach is not elitist, and people from non-privileged backgrounds can meet international education standards (see Gagnon and Collay, 2006). These types of workplaces pay for all

resources regardless of the adult learner's background or economic status. The critique that constructivism encourages "group thinks" and a "tyranny of the majority" (Concept to Classroom, 2004; Moosa, n. d.; Rushdoony, 2010) may not be a critique relevant to OH&S training in shipbuilding. As comparisons really cannot be dawn between the school classroom and adult training (c.f. Kirschner, Sweller, & Clark, 2006).

Constructivist methods promote higher-order thinking skills (Concept to Classroom, 2004). Adult Learners learn more when they are asked to be engaged participants as opposed to being passive listeners (Gleeson, McDonald, & Williams, 2007; Pappas, 2014). Constructivism is designed to teach learners how to understand (Cornelius & Herrenkohl, 2004) and improve their thinking processes (Hein, 1991). The skills learned through constructivist methods are transferable (Cornelius & Herrenkohl, 2004; Olusegum, 2015). The ownership of the training course belongs to the student (Cornelius & Herrenkohl, 2004). From my training experience, I see my adult learners slowly taking ownership of the training session, and that engages them. It could be understandable because adult learners invest themselves and their creative instincts in the process, which makes them feel like they own the process. Ownership is one of the best ways to promote a healthy, safe culture in the workplace because it gets everyone involved (Ross, 2012).

Constructivism grounds learning in a real-world context and give learners ample opportunity to learn to question which an extension of their natural curiosity (Cornelius & Herrenkohl, 2004). In training sessions with first-time adult learners, most adults are quiet, and they take in what I am saying and make notes. I have witnessed this quickly changing as the session progresses. I go out of my way to encourage my adult learners to question everything they do not understand or agree with. It seems that the first-time adult learners attending my sessions have been conditioned to sit there and accept everything they are told. I found it very hard at times to get adult learners to relax, speak freely, and express their concerns. Evidence to prove that constructivism does empower learners to question everything they do not agree with and what they are being taught is positively discussed Le Cornu and Peters (2005). Constructivism promotes social communication skills through the exchange of ideas and collaboration on tasks (Cornelius & Herrenkohl, 2004). In some key respects, the research rationale relies on the benefits of a constructivist approach to adult education. Safety in Australian workplaces is relatively high compared to South Korea (NationMaster, 2018) but in all nations, it can indeed be better. However, ask yourself this question; is even one occupational death acceptable? The answer must be no. However, it would not be possible by

any stretch of the imagination to entirely eradicate accidents at work. Where does that leave us, it leaves us where we have always been, and that is to do what we can when we can to the best of our ability and always try to improve whatever OH&S we can.

There are particulars of design or methodology that can influence the interpretation of the findings of a study (Price & Murnan, 2004). Recognition of a study's limitations gives credit to the researcher because it shows that the problem has been critically examined, methodically, and correctly assessed with the right methodology selected. The objective of any research is not only to find answers to questions but also to confront assumptions and discover what is not know. Research limitations need critical scrutiny and interpretation of how they will impact results (Aguinis, Edwards, Brutus, Senunyeme, & Gerben, n.d.). The question all researchers need to ask do these restrictions matter, and if so, to what extent will they affect the result of the study (Price & Murnan, 2004). As I was writing my research thesis, I was always searching for study limitations. Perhaps the most significant limitation identified was the fact the 80% of the data collected was in a South Korean shipyard with study recommendations to be made in the first instance to a shipyard with English as their second language. Another limitation of my research was the scope of the study, which concentrated on one shipbuilding yard in South Korea. Limited research material was available on OH&S adult training in shipbuilding using constructivist and andragogy assumptions, which did not allow me to lay a solid foundation for my research. However, my understanding of the research problem was comprehensive from the point of view that I had lived and worked with the research problem all my professional working life.

Self-reported data can be an issue and has its limitations I have accepted that what people say as being the truth. However, given that people are not capable of understanding the true nature of reality (Stratford, 1994) makes the truth only people's perceptions. The problem intensifies in the realisation that self-reported data can contain sources of bias. I was lucky I had access to the workers I needed. The company I worked for in South Korea also allowed me access to all the customers and contractors in the shipyard, which was significant. These companies included 60 international shipping companies, 112 subcontracting companies working for the shipyard, and 30,000 direct shipyard hires. Permission was also granted for me to have access to any documents I might have needed for my research.

Figure 7. Five Drill Rigs Drilling Holes to House Explosives in an Open Cut Mine, Australia.

Chapter Five: Results of Occupational Health and Safety Training Research in a South Korean Shipyard

In this chapter, this section introduces presents results from a research survey conducted with employees of a South Korean shipyard. Section 5.2 will present a description and a series of photographic figures that show the location of this research and illustrate examples of the everyday OH&S hazards encountered by employees and contractors of this shipyard. Section 5.3 presents the survey results of the demographic questions. Section 5.4 will presents the results of the central questions of this research survey, which are on training experiences. The research survey was designed to gather employee perceptions of their experiences of OH&S training courses at the workplace and use those data to answer my research questions.

1. Our pedagogical principles used in the planning and delivery of OH&S training courses for adult learners in the industry?
2. How have these principles corresponded to best practices for training adult learners in industry?
3. What techniques are used to deliver OH&S training courses to adult learners in industry?
4. What are industry adult learner's perceptions of OH&S training courses?

The results of the collected data are arranged in tables and graphs. Great care was taken to develop and pilot the survey questionnaire to ensure that the survey was both valid and reliable. Care was taken to include both open and closed questions as well as questions with a rating scale (Hoque & Supinit, 2015). Although the open questions were more difficult to analyze statistically than the closed and the rating scale questions, this type of question was added to the survey because of the comprehensive feedback from the survey pilot.

A total of 474 survey questionnaires were collected for this research project. One hundred replies from online participants from 212 online invitations. 374 from Korean shipyard workers out of 500 surveys issued at weekly OH&S training courses. The survey questionnaire consisted of 28 topic questions, with the 28th question asking for general comments and 13 demographic questions. Out of the 28 topic questions for this research survey, 1.4% of the questions were skipped by participants. A follow-up survey asked the participants as to why they skipped questions 85% of participants reply was that the

the questionnaire was comprehensive, so they had nothing else to add. The other 15% of participants' replies ranged from the information they felt was personal, and they did not want to divulge it, and some participants said that they just could not be bothered. The results of each question are graphed and show the number of participants that skipped each question. The 474 completed questionnaires were analyzed.

Frequency counts were used - the individual responses to the survey questions were added together, finding the highest frequency of occurrence or the number of times a response occurs. Quantified responses are presented in a percentage and person count format. The results of the questionnaire can be seen in a tabular form combined with bar charts. At times, the data tables presented may contain two or more variables in a single table/bar graph. Survey collection, analysis, and results have been processed through Survey Monkey and with the help of a statistician from James Cook University.

Demographic questions that covered: gender, age, nationality, county of residence, education standard achieved, languages are spoken at work and home, industry participants are currently working in, and occupation, the number of OH&S courses attended to date in the participant's working life, which was of particular interest in this research because it helped build a picture of OH&S training in the shipyard. Demographic questions added value because they detailed and identified the sample population used for this research project. All survey questions, including the demographic questions, are can be found in Appendix A of this thesis.

Photographic Evidence for the Presence of Hazards and Associated Risks at the South Korean Shipyard

The purpose of this section is to use a series of photographic figures to illustrate the suitability of the South Korean shipyard as a location for this research. The South Korean shipyard workplace presents several workplace OH&S issues for employees. This section will illustrate through photographs the presence of typical OH&S hazards and, thus, the importance of workplace OH&S training for employees to equip them to be able to manage these hazards. Six high-risk hazards are generic in all heavy industries anywhere in the world; they are welding, working at height, working in confined space, scaffolding, using grinders, and Emergency Response rescue team members (DuBois-Maahs & Bonine, 2014).

A working environment is be classified as high risk when the normal work activities are inherently dangerous. In 2015, more than 90,000 workers in the shipbuilding industry suffered from injury and occupational diseases, with an estimated 1,800 dying from their

ailments in South Korea. This corresponds to a death rate of 10.1 deaths per 100,000 employees (Harris, Jung-a, & Buseong, 2017). Efficiently training adult workers in OH&S is not the whole answer to improving OH&S in industry; however, training can make a massive difference (Health and Safety Executive, 2018).

The first high-risk occupational hazard in the shipbuilding industry is welding. 60% of the work activities involve cutting and welding steel (Leal & Gordo, 2017). Statistics about workplace injuries suffered by welders show that this work activity typically results in 7% of welders sustaining fractures, 25% sustaining burns, and 13% of welders being treated for Bronchospasm (Lokhande, 2014). Potential welding hazards can be seen in figures eight, nine, and ten. Figures eight show a sea crane delivering the bow of a ship to a dry dock.
Figure nine shows the lowering of the bow into place in drydock, and figure ten is a closeup of the bow with all the welding scares visible. The bow weighs an estimated 4000 tonnes.
This bow section will be welded to the rest of the ship in the dry dock. The scars on the bow section show the amount of welding and grinding that has occurred in construction to date. You will note that the welding on this shipping module goes from ground level to the top of the shipping module, which is around 30 meters high. In Figure 8, you can also see the inside of the bow section, which has numerous chambers and compartments welds that had to be completed at height and at times in cramped and confined spaces.

The other high-risk occupational hazard is working at height (work that is done above the ground that needs precautions to be taken to prevent workers from falling, which can cause injuries and fatalities). The World Health Organisation (2018) estimates that 646,000 workers die from falls worldwide annually. An example of a task where workers run a high risk of falling from height is slinging a load. Slinging is the method used by trained ‘dogmen’ to secure a load, so a crane can move it to a different location. In some circumstances, a load cannot be slung unless the worker has a high-risk work dogging license. Slinging is done manually, which presents a falling from height hazard that is likely to result in the death of a worker or workers because of the 30-meter height of the bow deck Falling from height also includes loads, tools, slings, and equipment falling on workers.

Figure 8. Ship's Bow Lifted into Place by Sea Crane, South Korea.

Figure 9. Ship's Bow Being Lowered into Drydock by Sea Crane, South Korea.

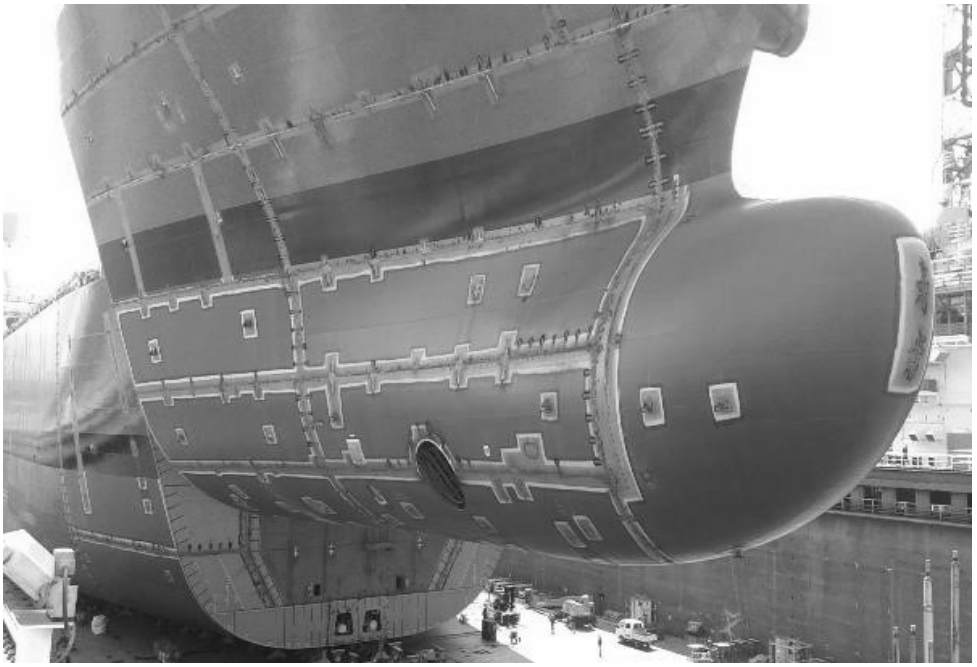

Figure 10. Closeup of Ship's Bow Being Lowered into Drydock by Sea Crane, South Korea.

The third occupational high-risk hazard is working in confined spaces (a space that is not designed for workers to work in such as fuel tanks): Figures 11 and 12 shows a welder who is about to be sealed in the hull of a ship to weld the hull shut from the inside. The worker will work under oxygen supply, and after he completes, the weld will exit into the main cargo hull via a maintenance hole. This is high-risk work because of the atmosphere inside the hull section, which will not sustain life because of the welding fumes. The welder must work with a respirator that will supply oxygen to his welding helmet. According to Koester, who published an article in the OH&S duplication in August 2018 looking at
statistics, he published that 2.1 million workers enter confined spaces annually worldwide. 60% of confined-space fatalities are people who attempt to rescue fallen workers in confined spaces. Other findings of confined space death from incident investigations by the OH&S publication found that 0% used the confined space written procedure provided, only 15% had some form of confined space training, there were 0% rescue plans in place, 0% of confined spaces were tested for an atmosphere that could sustain life before entry by workers, and 0% of confined spaces were ventilated with fresh air. The article concludes by stating that with proper training, confined space fatalities can be prevented (Koester, 2018).

Figure 11. A Welder is Preparing to be Sealed in a Cargo Hull Section to Weld the Inside of the Hull, South Korea.

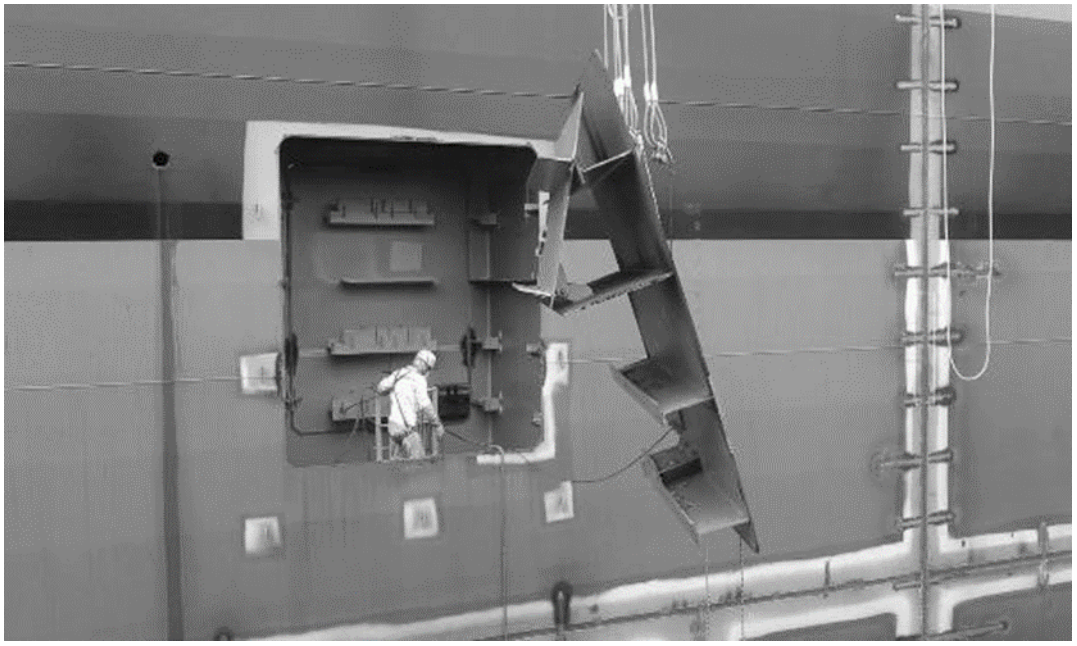

Figure 12. Ship's Hull Being Moved into Place so It Can be Welded from the Inside, South Korea.

The next occupational hazard is the construction and dismantling of the scaffolding. Scaffolding is a temporary structure constructed inside or outside a structure to facilitate building, repairing, or cleaning work. Figure 13 shows scaffolding constructed outside the ship then lowered into one of the cargo sections of the ship. Figures 14 and 15: Show the scaffolding dismantling after the cargo section work has been completed and sealed. Figure 16 shows how much scaffolding needs to be constructed to build one ship module; in this case, the accommodation module. To fill four cargos hulls with the required scaffolding, it takes approximately 1,000,000 scaffolding items Per hull. Scaffolding is constructed using up to ten separate items including but not limited to, base jack plates, upright components, connector joins, horizontal braces, horizontal cross-sections, section bracing, board decking, couplers, scaffold ties, and brackets.

This task is high risk because it includes working at height, being struck by a falling object, being crushed by falling scaffolding, and severe chronic injuries because of the enormous amount of manual handling involved in constructing and dismantling scaffolding. Without OH&S training, this task is classed as an unacceptable risk, (The likelihood and severity of a worker sustaining an injury are almost guaranteed). The injury would be severe to catastrophic, which means it is likely to result in a fatality. The risk of injury to scaffolders is high resulting in 10,000 injuries annually in the USA alone, according to the Occupational Safety and Health Administration (OSHA) (McDonald, 2010).

The stress of manually handing scaffolding, especially a million pieces to assemble the scaffold and then a million pieces to dismantle the scaffolding for each ship hull, has dire consequences for workers. Manual handling activities include pushing, pulling, holding, lifting, throwing, restraining, and carrying. Practical OH&S training in manual handling, especially in the importance of good posture and correct lifting techniques can help in reducing the risks of manual handling injuries. One of the main adverse health effects of scaffolding is that manual handling can result in back, neck, shoulders, and arm injuries.

These injuries could result in cuts, bruises, fractures, and permanent damage to body systems like tendons, bones, muscles, and blood vessels. Europe reports that 25% of workers suffer from manual handling injuries topping the list of all work-related disorders (European Agency for Safety and Health at Work, 2018).

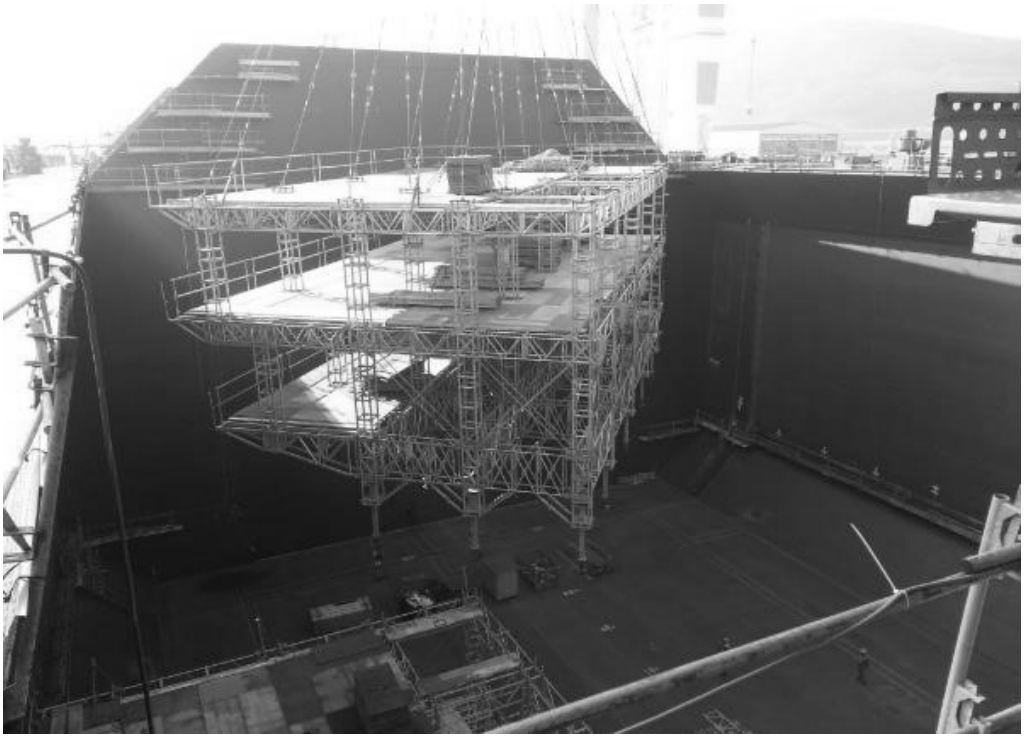

Figure 13. Cargo Hull Scaffolding Being Lowered into Place in One of the Ship's Four Cargo Hulls, South Korea.

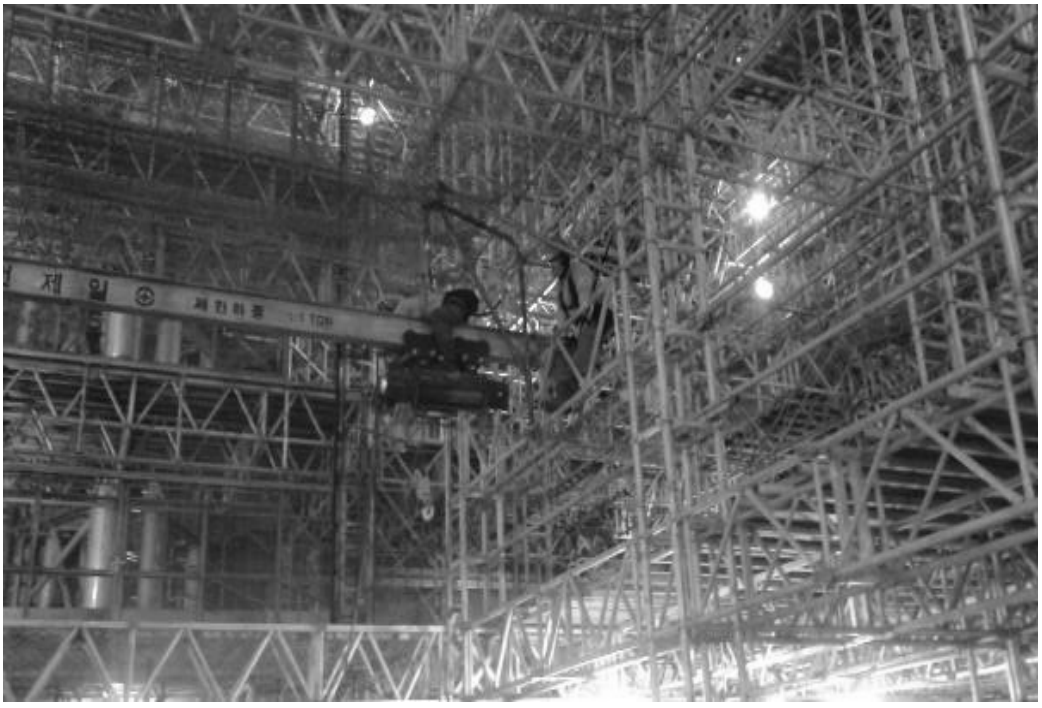

Figure 14. Cargo Hull Scaffolding Being Dismantled by Workers 40 Metres Above the Ship's Deck Floor, South Korea.

Figure 15. Cargo Hull Scaffolding Being Dismantled by Workers After the Cargo Containment System Has Been Installed, South Korea.

Figure 16. Accommodation Block for a Ship is Under Construction With Over One Million Scaffolding Pieces Required for Construction, South Korea.

The next high-risk occupational health and safety task is grinding. Figure 17 shows a worker who is grinding welded sections on a ship's hull. This job is high risk because he is working at height with a powered grinder. This task has three high-risk hazards, including working at height, manual handling both discussed, and the use of a high-powered grinder in an elevated work platform (EWP). Grinders, in general, have a poor reputation when it comes to safety. In a report from Manufacturer's Monthly, the headline reads 31 workers seriously injured by grinders in the past year among 117 injuries involving grinders in Victoria Australia (Dang, 2011).

The sixth occupational high-risk task in a shipyard is working in a professional Emergency Response Team (ERT) member. The risk is high for these employees because they risk their safety to rescue injured workers. These rescues range from fire to a fallen from height worker to someone who has collapsed in a confined space, which is the scenario in figure 18. This team can only be effective in their rescue duties with extensive OH&S training in no less than five disciplines being firefighting, breathing apparatus rescue, first aid, rope rescues to rescuing workers from height, and confined space extraction. Without OH&S training, the ERT would have no hope of carrying out their duties and safeguarding themselves and their patients (Occupational Safety and Health Administration, U.S.).

According to a technical report titled Emergency Response Injuries and Fatalities in the USA records to date show that approximately 1,100,000 firefighters, 500,000 emergency medical personnel have died occupational deaths (Jackson, Houser, Bartis, & Peterson, 2004).

Figure 19 shows the delivery of two completed vessels delivered to the owners. No fatalities on this shipbuilding project, but in the 24 months it took to build these ships, this South Korean shipyard and its associated yards in China sustained four occupational fatalities.

Figure 17. Welder Grinding in an Elevated Work Platform on the Side ff a Ship Under Construction, South Korea.

Figure 18. Emergency Response Team (ERT) Evacuating an Injured Person From a Ship's Hull, South Korea.

Figure 19. Delivery of a Ship, South Korea.

Analysis of Demographic Survey Questions

Five demographic questions results were not used in this research because they added no value. The results of these questions have been kept and archived. The questions are Q31. What country do the participants currently reside in? Q 32. What country do the participants usually reside in? Q36. What the primary language is spoken at your current place of work? Q38. What industry have you worked in for most of your life? Q 41. Which of the following categories best describes your employment status?

Q29. Are you male or female?

The first demographic question is question number 29. The gender of the sample population was 95% male and 5% females. 453 replied, 21 did not answer this question. The gender of the shipyard workers was no surprise because the work is labor-intensive. According to a South Korean government study into the shipbuilding industry in South Korea in 2012, 82.6% of the shipbuilding industry workforces were production workers, mainly males (COUNCIL - Working Party on Shipbuilding, 2005).

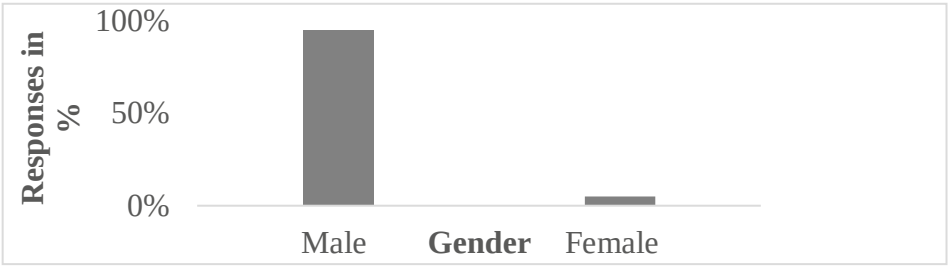

Figure 20. Graph Showing Gender Identity of Survey Participants.

Table 2

Question 29

Are you male or female?

Answer Choices – Gender	N = 474
Male	430
Female	23
No response	21

Q30. What is your age?

Question 30 asked participants to provide their age. 448 answered this question, while 26 participants did not. The largest group of workers (50%) were in the range from 31 to 45 years. 4% of the participants made up the youngest category, with ages from 18 to 25. 7% of the participants who made up the oldest workers onsite their ages ranged from 56 to 70. The South Korean government study into the shipbuilding industry in South Korea stated that young workers have a more extensive range of industries to choose from today, so the shipbuilding industry relies on an increasing share of subcontracted workers that range in age from 30 to 70. Using subcontractors affords the South Korean shipbuilding industry flexibility but disadvantages the industry in its efforts to build South Korean worker's skills, including OH&S. Interest in the shipbuilding industry for South Korean workers is wavering because of the ample choice of career paths available today to South Koreans (COUNCIL - Working Party on Shipbuilding, 2015).

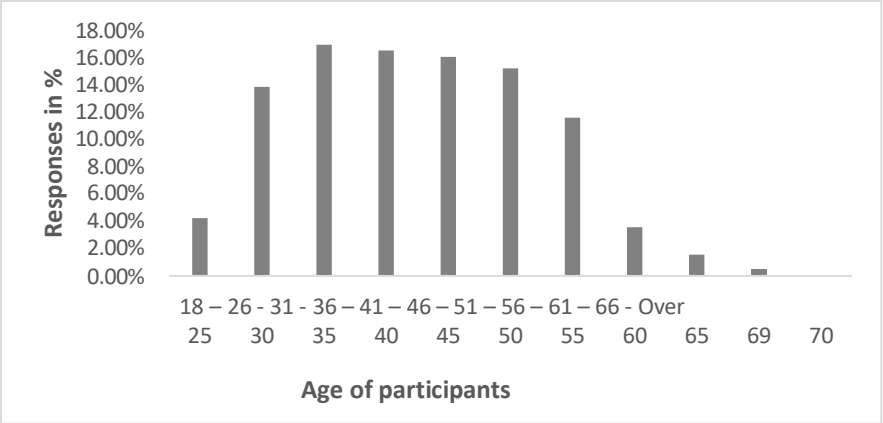

Figure 21. Graph Showing Age.

Table 3

Question 30

What is your age?

Answer Choices	N = 474
18 – 25	19
26 - 30	62
31 - 35	77
36 – 40	75
41 – 45	73
46 – 50	69
51 – 55	52
56 – 60	16
61 – 65	7
66 - 69	2
Over 70	0
No response	22

Q33. What is your nationality?

Question 33. inquired as to nationality. The question was answered by 438, 36 skipped this question. 70% of the sample population were South Korean, 13% Nigerian and the other 17% was a mix of British, Australian, Malaysian, Jordanian, American, Singaporean, Indian, Egyptian, Greek, New Zealand, and Romanian. The South Korean and Nigerian participants worked at the South Korean shipyard, whereas all the other nationalities were the online participants who worked in shipbuilding (predominantly), mining, oil, and gas.

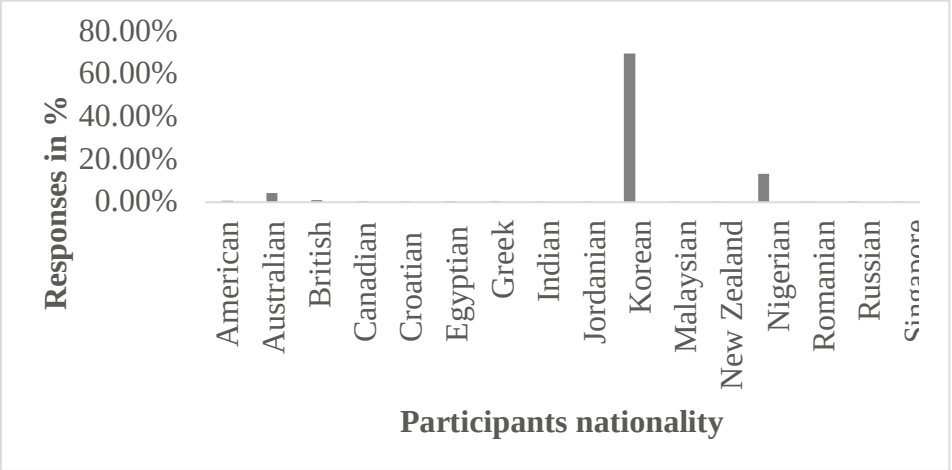

Figure 22. Graph Showing Nationalities.

Table 4

Question 33

What is your nationality

Answer Choices	N = 474
American	3
Australian	20
British	5
Canadian	2
Croatian	1
Egyptian	2
Greek	2
Indian	1
Jordanian	1
Korean	331
Malaysian	1
New Zealand	1
Nigerian	64
Romanian	1
Russian	2
Singapore	1
No response	36

Q34. What is the highest level of school you have completed?

Question 34. asked for the level of education. 418 people replied, 56 skipped this question. 215 participants completed high school with 172 completing college (University) degrees, and the remaining 31 having completed postgraduate qualifications. The result of the level of education achieved by the participants was above average for South Korean shipyard workers but compatible with the South Korean government study into the shipbuilding industry findings. The report stated that in shipbuilding, workers with a bachelor's degree were at 64.2% while 6.4% had a Masters's degree with 3.4% having PhDs. The government report did indicate clearly in 2012 that graduate and post qualifications have increased over time, and the trend would continue (COUNCIL - Working Party on Shipbuilding, 2015).

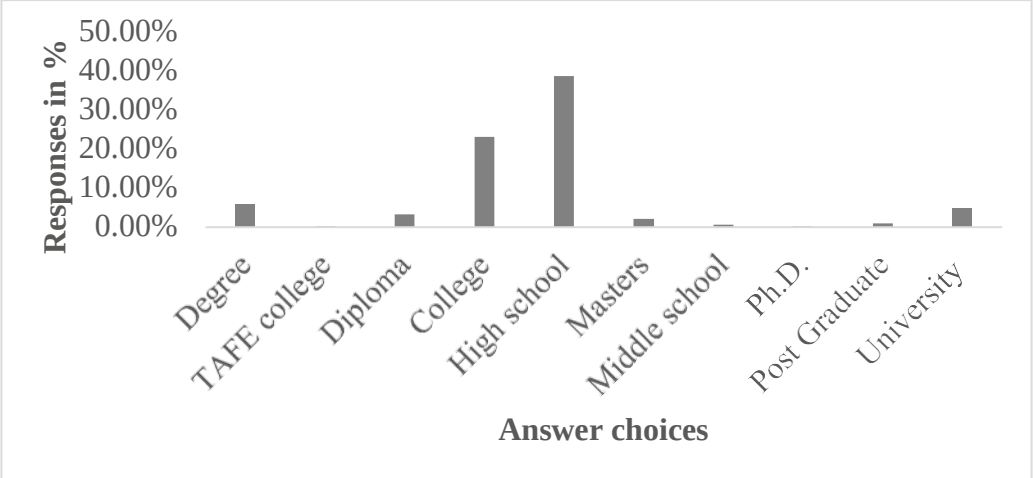

Figure 23. Graph Showing Education Level.

Table 5

Question 34

What is the highest level of school you have completed?

Answer Choices	N = 474
High school	215
Post Graduate	31
University	172
No response	56

Q35. What is the primary language spoken at your current workplace?

Question 35. looked at the primary language spoken by the participant, and the result matched the participant's nationality. 430 participants answered, 44 participants, skipped this question. 66% spoke Korean. The other 34% spoke English as well as their native language.

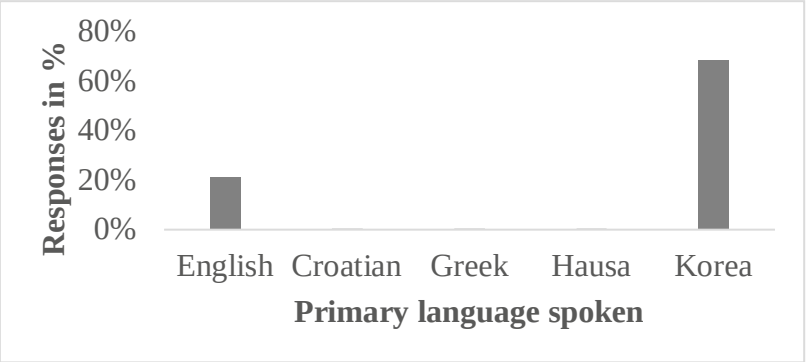

Figure 24. Graph Showing Language Spoken at Work.

Table 6

Question 35

What is the primary language spoken at your current workplace?

Answer Choices	N = 474
English	98
Croatian	2
Greek	2
Hausa	2
Korea	326
No response	44

Q37. What industry do you work in?

Question 37. asked what industry the participants work in. 406 replied, 68 skipping this question. 98% worked in the shipping industry, with the other two percent all online participants who worked in mining, oil, and gas.

Figure 25. Graph Showing Industry Where Participants Work.

Table 7

Question 37

What industry do you work in?

Answer Choices	N = 474
Shipbuilding	398
Engineering	8
No response	68

Q39. What is your occupation?

Question 39. asked for the participant's occupation. 376 participants answered, 98 skipped this question. 88% of the participants had occupations that required physical work, for example, welders, electrical, painting, pipe fitting, and panel installing. The remaining 12% is made up of workers in management, safety, and engineering.

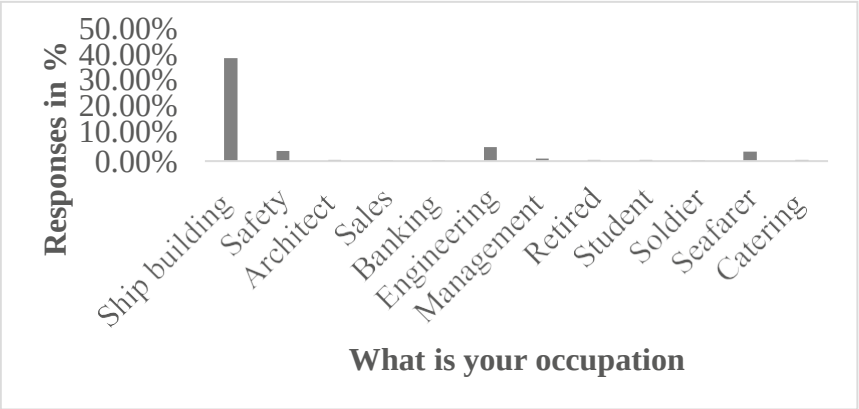

Figure 26. Graph Showing the Usual Occupation.

Table 8

Question 39

What is your occupation?

Answer Choices	N = 474
Shipbuilding	331
Safety	17
Engineering	24
Management	4
No response	98

Q40. How many workplace training courses would you estimate that you have attended across your working life?

The last demographic Question 40., attempted to ascertain the number of occupational health and safety courses the participants attended in their working life. 364 answered, 110 skipped this question. This question is relevant to this research because it shows a large number of OH&S courses conduct in the shipyard. The time and money spent on training employees and contractors in OH&S should, in principle, give a worthwhile return to employers in both dollar value and, more importantly, in better safety in their workplace.

Investing in the OH&S training affords employers a range of benefits such as reduction of sick pay payments, insurance premiums, production disturbance costs, and administrative and legal costs (British Safety Council, 2014). 170 participants out of the 364 who answered the question have attended 50 OH&S courses in their working life, with 35.90 % having attended over 51 OH&S courses.

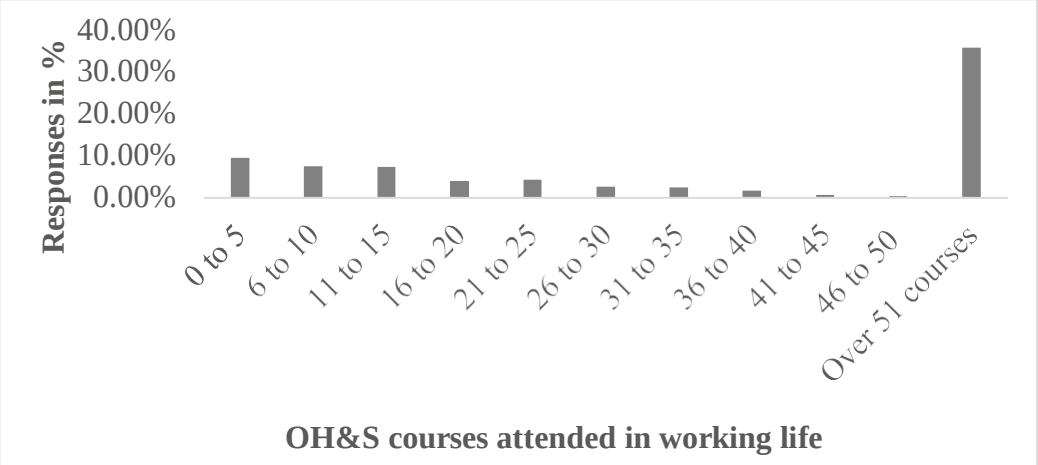

Figure 27. Graph Showing Number of OH&S Courses Attended.

Table 9

Question 40

How many workplace training courses would you estimate that you have attended across your working life?

Answer Choices	N = 474
0 to 5	45
6 to 10	36
11 to 15	36
16 to 20	19
21 to 25	20
26 to 30	13
31 to 35	12
36 to 40	8
41 to 45	3
46 to 50	2
Over 51 courses	170
No response	110

Analysis of Andragogy Assumptions in OH&S Training Experiences

Question responses are presented and discussed concerning my operational, educational hypothesis for this research which is that when andragogy assumptions are applied to training adults in OH&S, this can help sustain and possibly improve OH&S standards in the workplace. Questions one to twenty-one is set up in sets of three questions. Each set of three questions is designed to retrieve a comprehensive and detailed reply from participants. The first two questions supply such information as what is catered for and not catered for in OH&S training sessions for both the last course attended and all courses attended. The third question in the sequence of three questions asks the participants what they would like to see a change in OH&S training courses if anything.

Questions twenty-two to twenty-eight is standalone questions.

The first three questions in the survey questionnaire were looking to identify what if any of the six andragogy assumptions were being currently used for the planning and delivery of OH&S training courses for adult learners in a South Korean shipyard.

Q1: Think about the last training course you attended in the workplace. Did this course include opportunities for you to experience autonomous learning and self-direction? Tick all that apply

Responses to Question 1. reveal there is room for improvement around opportunities to experience autonomous learning and self-direction. 467 participants answered the question, and 7 skipped the question. In the last OH&S course attended by participants, 41.33% of courses currently enabling adults to take responsibility for their learning. Good news because autonomous learning and self-direction will, in part, assure the success of adult training sessions. However, the balance of 47.54% was not happy at varying degrees with the current training practices and wanted more self-directing in their OH&S training courses. 11.13% of participants chose None of the Above These results show that work is needed in this area of self-direction for adult learners.

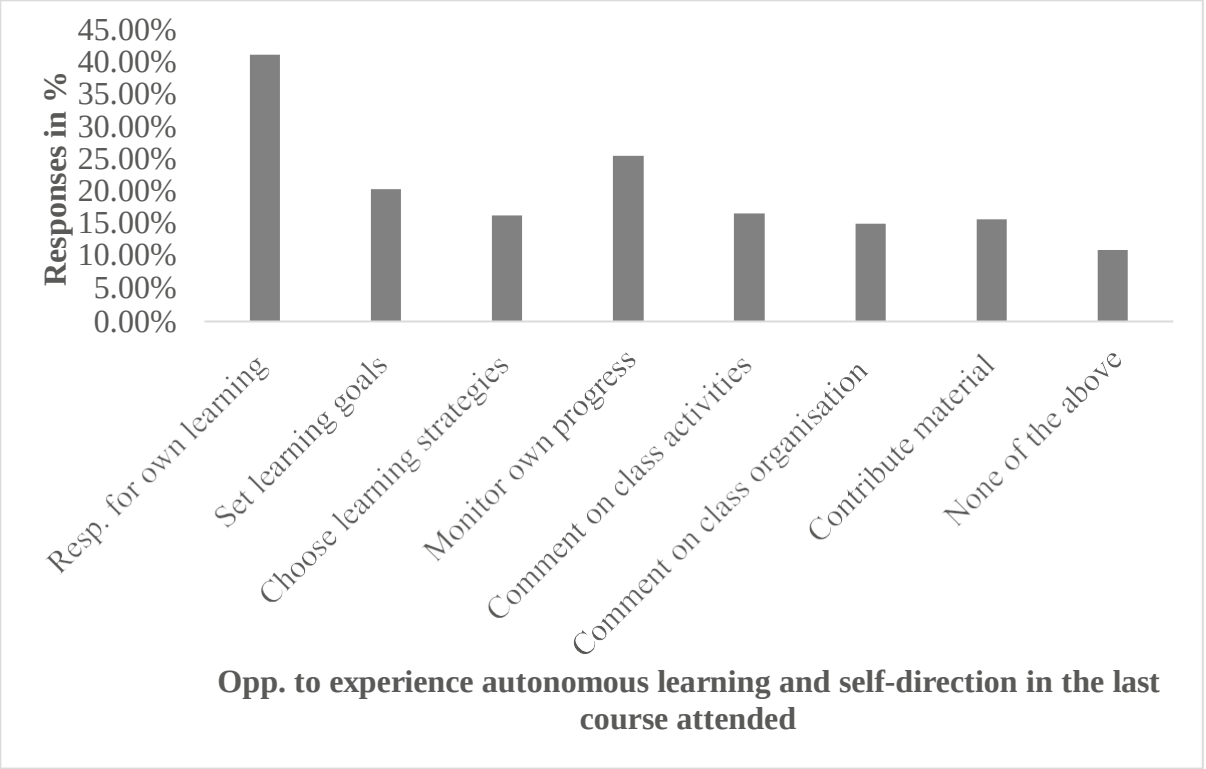

Figure 28. Graph Showing Level of Autonomous Learning.

Table 10

Question 1

Did this course include opportunities for you to experience autonomous learning and self-direction? Tick all that apply

Answer Choices	Responses	
Take responsibility for your learning	41.33%	193
Set your own learning goals	20.56%	96
Choose preferred learning strategies	16.49%	77
Monitor your progress	25.70%	120
Have some say on how the class activities are presented	16.70%	78
Comment on how the class is organized	15.20%	71
Contribute to how the material could be presented	15.85%	74
None of the above	11.13%	52
No response	1.5%	7

Q2: Think about all the courses you have attended in your working life in the workplace. How representative were the course's use of autonomous learning and self-direction? Tick one

Question 2. asked participants to consider all OH&S courses attended in their working life and the amount of autonomous learning and self-direction provided in these courses. 469 participants answered the question, and 5 skipped the question. The results show that 5.12% of all the courses attended by the participants fully utilized autonomous learning and self-direction. Considering the results of question 40 in the demographic section, where 170 participants attended more than 50 OH&S courses in their working life, resulting in 9% of these courses or 170-participant that might have suffered because of the lack of autonomous learning and self-direction. 9% might not sound like a lot, but when considering the dollar value of training employees, 9% could be significant. The annual average training cost of an employee who earns $8.00 an hour is USD 9,444.47 per employee (Schnotz, 2018). The shipyard this survey was conducted in had about 30,000 contractors and employees who all need training in OH&S. 9% equates to 2700 adult learners where resources used to train these adults might be considered to be money and time not well spent.

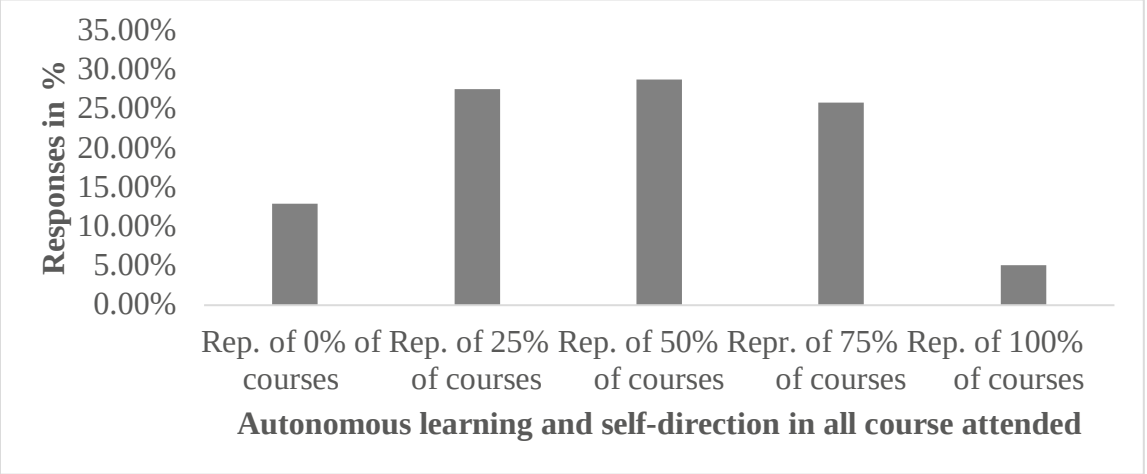

Figure 29. Graph Showing Autonomous Learning in Participants Working Life.

Table 11

Question 2

How representative was the course's use of autonomous learning and self-direction? Tick one

Answer Choices	Responses	
A representative of 0% (none) of the courses I have attended	12.97%	60
A representative of 25% (a quarter) of all the courses I have attended	27.51%	129
A representative of 50% (half) of all the courses I have attended	28.78%	135
A representative of 75% (three-quarters) of all the courses I have attended	25.80%	121
A representative of 100% (all) the courses I have attended	5.12%	24
No response	1%	5

Q3: In an ideal training course, how would you alter the amount of autonomous learning and self-direction provided? Tick all that apply

For Question 3., 471 participants answered and 3 skipped the question. 92.57% of participants to varying degrees have indicated that they would be open to change. Autonomous learning and self-direction are essential to adult education (Manning, 2007).

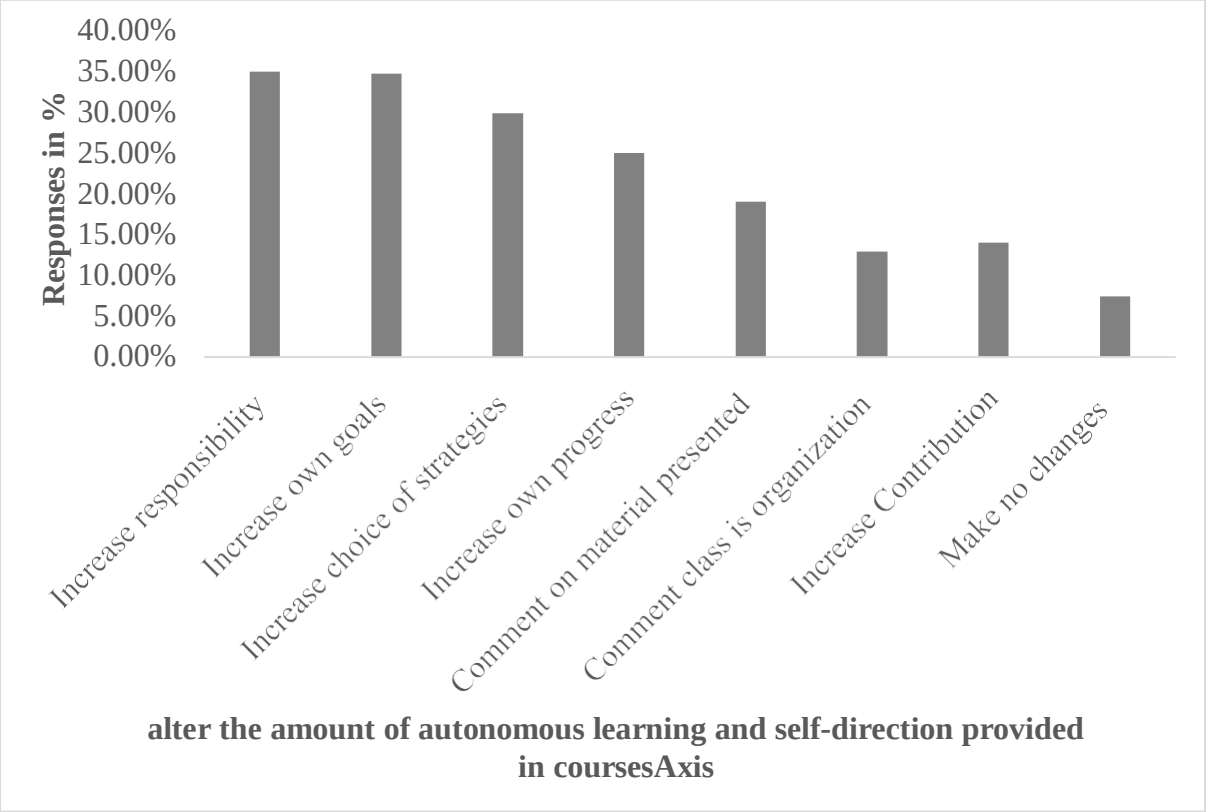

Figure 30. Graph Showing Changes to Autonomous Learning.

Table 12

Question 3

In an ideal training course, how would you alter the amount of autonomous learning and self-direction provided? Tick all that apply

Answer Choices	Responses	
Increase responsibility	35.03%	165
Increase own goals	34.82%	164
Increase the choice of strategies	29.94%	141
Increase own progress	25.05%	118
Comment on the material presented	19.11%	90
Comment class is organisation	12.95%	61
Increase Contribution	14.01%	66
Make no changes	7.43%	35
No response	.6%	3

Q4: Think about the last training course you attended in the workplace. Did this course include opportunities for social interaction? Were you provided with opportunities to participate? Tick all that apply

Question 4. looks at social interaction in the last OH&S course attended by participants. 471 answered and three skipped the question.15.29% of participants chose None of the Above, so they did not experience any form of social interaction in the last course attended. The remaining 84.71% experience some form of social interaction. One of the andragogy assumptions is that the lack of social interaction in adult training is likely to make training less appealing to adult learners. These findings indicate there was perceived social interaction in these OH&S courses, but levels can be improved.

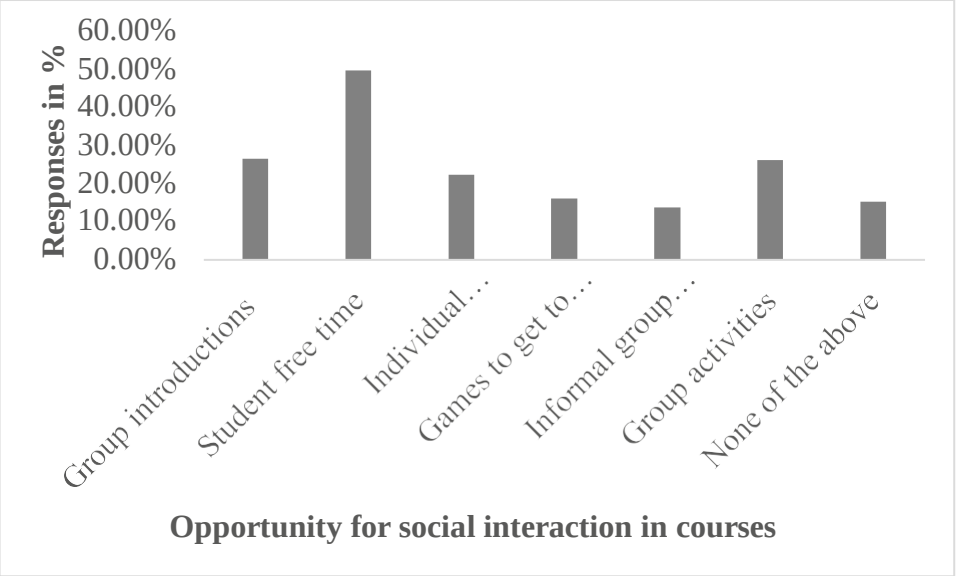

Figure 31. Graph Showing Social Interaction Activities Responses.

Table 13

Question 4

Did this course include opportunities for social interaction? Were you provided with opportunities to participate? Tick all that apply

Answer Choices	Responses	
Group introductions	26.54%	125
Student free time	49.68%	234
Individual introductions	22.29%	105
Games such as Ice breakers to get to know your peers	16.14%	76
Informal group lunches	13.80%	65
Group activities to build group cohesion	26.11%	123
None of the above	15.29%	72
No response	.6%	3

Q5: Think about all the courses you have attended in your working life in the workplace. How representative was the course's use of social interaction? Tick one

Question 5. asks about the amount of social interaction in all the training courses attended in the participant's working life. 469 participants answered and five skipped the question. 5.97% of participants across their working life reported no social interactions in OH&S courses attended. The other 94.03% to varying degrees indicated social interaction in courses attended. There is room for some improvement when it comes to social interaction in training adults, but overall these results are positive.

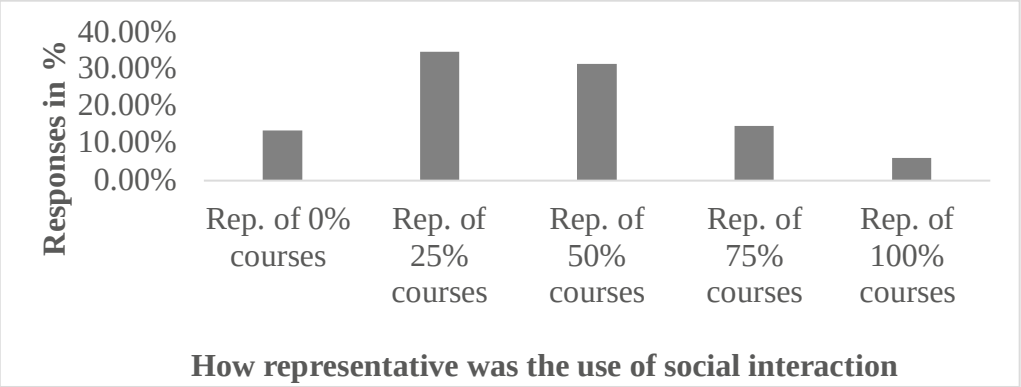

Figure 32. Graph Showing the Amount of Social Interaction.

Table 14

Question 5

How representative was the course's use of social interaction? Tick one

Answer Choices	Responses	
The representative of 0% (none) of the courses I have attended	13.43%	63
The representative of 25% (a quarter) of all the courses I have attended	34.54%	162
The representative of 50% (half) of all the courses I have attended	31.34%	147
The representative of 75% (three-quarters) of all the courses I have attended	14.71%	69
The representative of 100% (all) the courses I have attended	5.97%	28
No response	1%	5

Q6: In an ideal training course, how would you alter the amount and type of social interaction? Tick all that apply

Responses to Question 6. indicate, only 10.78% of participants want no changes made to training courses. The remainder were interested in adding greater social interaction into training sessions. Umberson and Montez (2011) showed that social interaction has short and long-term benefits on both physical as well as mental health of adult learners. This equates to adults absorbing more content because they have a better disposition to learning.

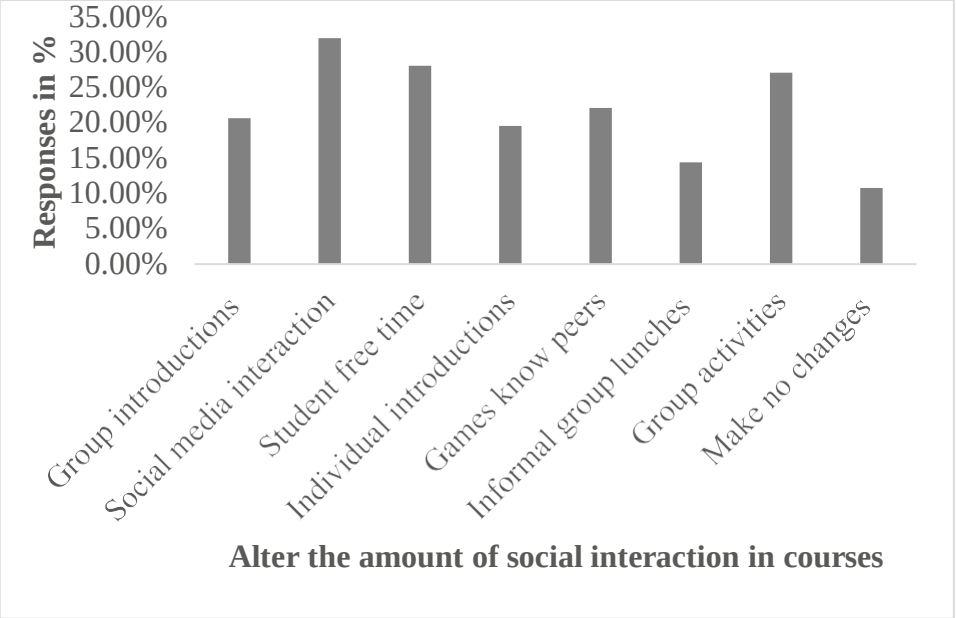

Figure 33. Graph Showing Changes to Social Interaction.

Table 15

Question 6

In an ideal training course, how would you alter the amount and type of social interaction? Tick all that apply

Answer Choices	Responses	
Group introductions	20.69%	96
Social media to interaction	32.11%	149
Student free time	28.23%	131
Individual introductions	19.61%	91
Games such as Ice breakers to get to know your peers	22.20%	103
Informal group lunches	14.44%	67
Group activities to build group cohesion	27.16%	126
Make no changes to the training courses	10.78%	50
No response	2.2%	10

Q7: Think about the last training course you attended in the workplace. Did this course include opportunities for exploration of relevant concepts, thoughts, and your ideas? This means you were provided with opportunities to. Tick all that apply

Question 7. is concerned with the exploration of relevant concepts, thoughts, and ideas in OH&S training courses. 469 participants answered, and five skipped the question. 15.74% report that in the last course attended, there was no exploration of relevant concepts, thoughts, and ideas. 84.26% reported there was the exploration of relevant concepts, thoughts, and ideas.

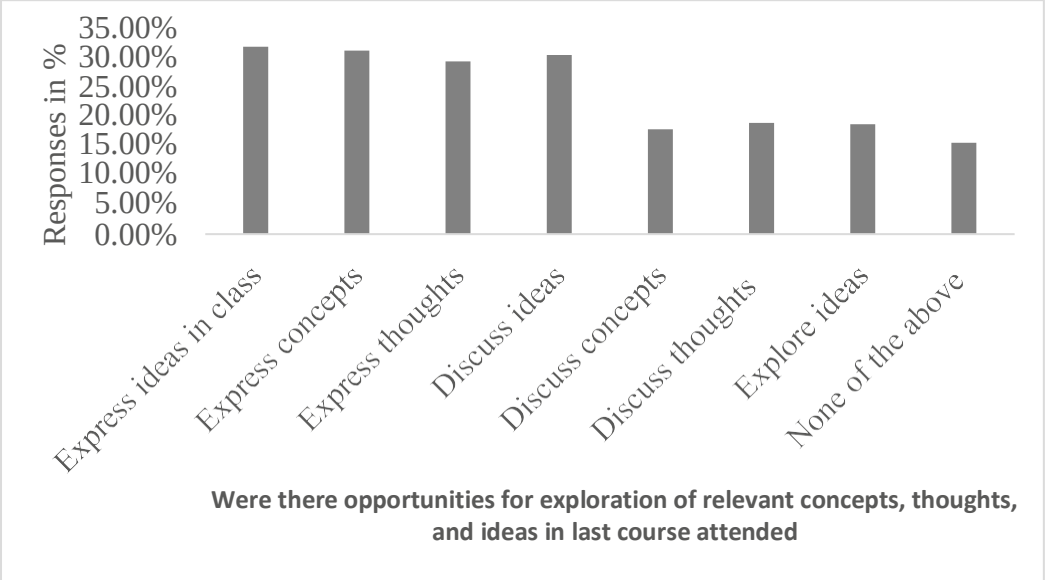

Figure 34. Graph Showing Exploration of Relevant Ideas.

Table 16

Question 7

Did this course include opportunities for exploration of relevant concepts, thoughts, and your ideas? This means you were provided with opportunities to. Tick all that apply

Answer Choices	Responses	
Express your ideas to the class	32.34%	152
Express your concepts to the class	31.70%	149
Express your thoughts to the class	29.79%	140
Openly discuss your ideas with the class	30.85%	145
Openly discuss your concepts with the class	18.09%	85
Openly discuss your thoughts with the class	19.15%	90
Explore ideas, concepts, and thoughts with the class	18.94%	89
None of the above	15.74%	74
No response	1.1%	5

Q8: Think about all the courses you have attended in your working life in the workplace. How representative was the course's use of discussion of relevant concepts, thoughts, and ideas? Tick one

To build a fuller picture of training experiences, Question 8. looks at the trend of the exploration and discussion of relevant concepts, thoughts, and ideas in all training courses attended by participants. 468 participants answered the question, and six declined. The results closely match the results of Q.7. seven, with 14.96% (15%) being unable to indicate a recollection of exploration and discussion of relevant concepts, thoughts, and ideas in any of the courses they have attended in their working life.

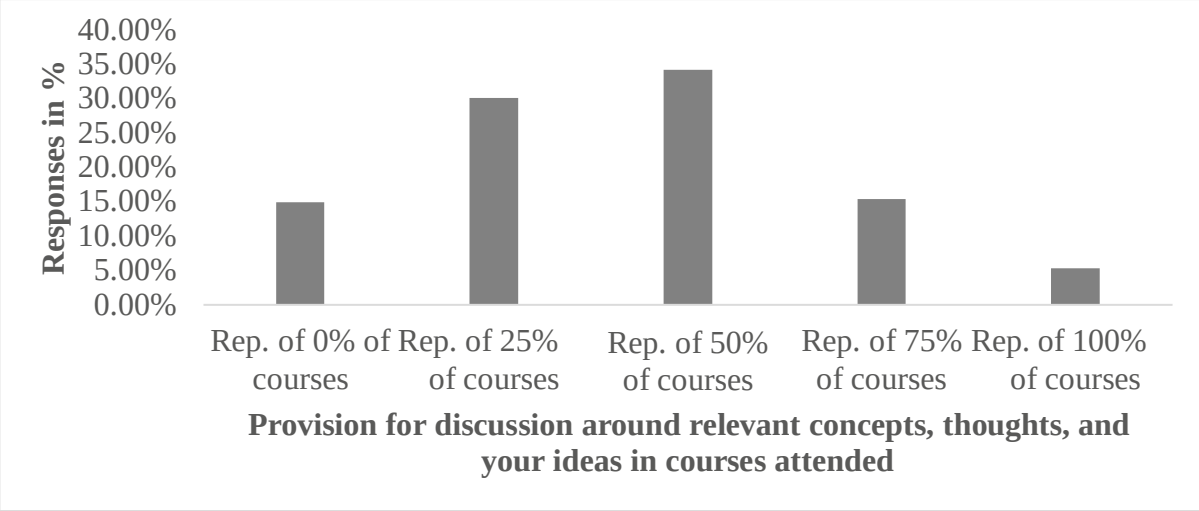

Figure 35. Graph Showing the Amount of Exploration of Ideas.

Table 17

Question 8

How representative was the course's use of discussion of relevant concepts, thoughts, and ideas? Tick one

Answer Choices	Responses	
The representative of 0% (none) of the courses I have attended	14.96%	70
The representative of 25% (a quarter) of all the courses I have attended	30.13%	141
The representative of 50% (half) of all the courses I have attended	34.19%	160
The representative of 75% (three-quarters) of all the courses I have attended	15.38%	72
The representative of 100% (all) the courses I have attended	5.34%	25
No response	1.3%	6

Q9: In an ideal training course, how would you alter the number of opportunities for discussions of relevant concepts, thoughts, and your ideas provided in the course? Tick all that apply

Question 9. Responses show only 6.38% of participants wanted no changes made to the training courses they attend. 470 participants answered, and four skipped the question. The overwhelming majority, 93.62%, wish to see better exploration and discussion of relevant concepts, thoughts, and ideas. This is a clear indication respondent, as adult learners, want to experience their training as being able to reach and connect with them as thoughtful learners through the exploration and discussion of relevant concepts, thoughts, and ideas. Achievable if the training is relevant, welcoming, engaging, respectful, and immediately useful (Northwest Center for Public Health Practice, 2012).

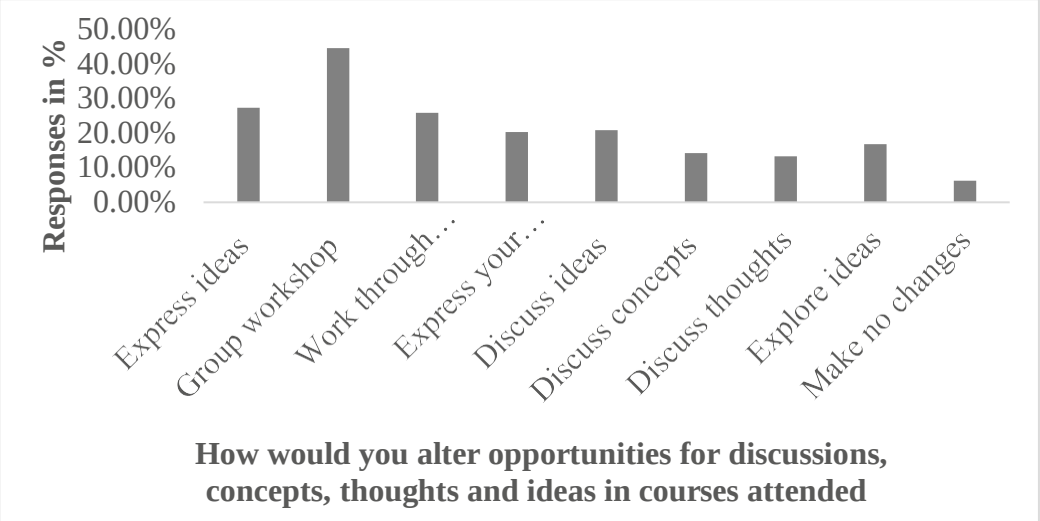

Figure 36. Graph Showing Changes to Exploring Ideas.

Table 18

Question 9

In an ideal training course, how would you alter the number of opportunities for discussions of relevant concepts, thoughts, and your ideas provided in the course? Tick all that apply

Answer Choices	Responses	
Express your ideas to the class	27.45%	129
Groups or workshop to explore concepts, ideas, and thoughts	44.89%	211
Work through ideas, concepts, and thoughts in detail in the class	25.96%	122
Express your concepts to the class	20.43%	96
Openly discuss your ideas with the class	21.06%	99
Openly discuss your concepts with the class	14.26%	67
Openly discuss your thoughts with the class	13.40%	63
Explore ideas and concepts with the class	16.81%	79
Make no changes to the training courses	6.38%	30
No response	.9%	4

Q10: Think about the last training course you attended in the workplace. Did this course include opportunities for you to contribute from your life experiences and knowledge? Tick all that apply

Question 10. gives results of training courses attended given participants the opportunities for contributions from life experiences and knowledge. 468 participants answered the question, and six did not. The question covers the last course attended by participants, and the results are that 18.80% reported they had not been given this opportunity, however, 81.20% had been.

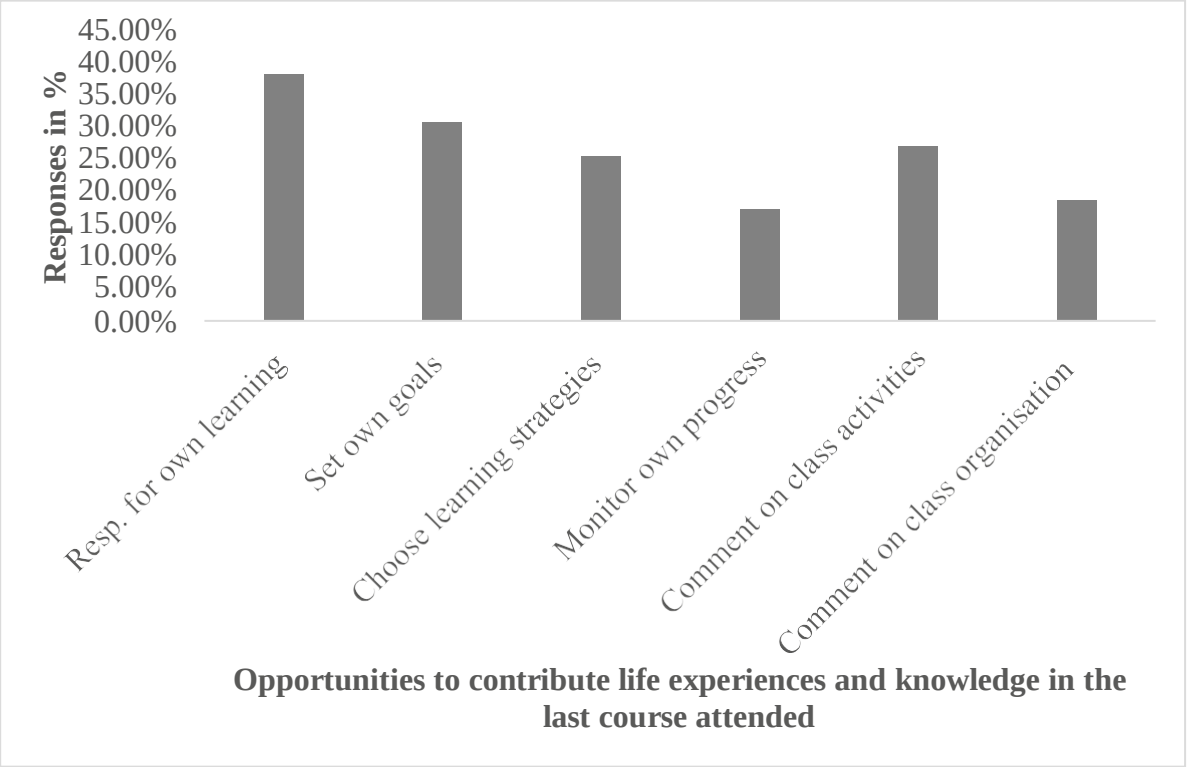

Figure 37. Graph Showing Adult Contributions.

Table 19

Question 10

Did this course include opportunities for you to contribute from your life experiences and knowledge? Tick all that apply

Answer Choices	Responses	
Take responsibility for your learning	38.46%	180
Set your own learning goals	30.98%	145
Choose preferred learning strategies	25.64%	120
Monitor your progress	17.31%	81
Have some say on how the class activities are presented	27.14%	127
Comment on how the class is organized	18.80%	88
No response	1.3%	6

Q11: Think about all the courses you have attended in your working life in the workplace. How representative was the course's use of contributions from your life experience and knowledge? Tick one

The results of Question 11. are consistent with Question 10. 467 participants answered the question, and seven skipped the question. The fact is that 16.70% of participants are saying that OH&S courses they have attended throughout their working life have not allowed them to contributions from their life experience and knowledge. 83.30% were content that they had the opportunity to contribute from their life experience and accumulated knowledge.

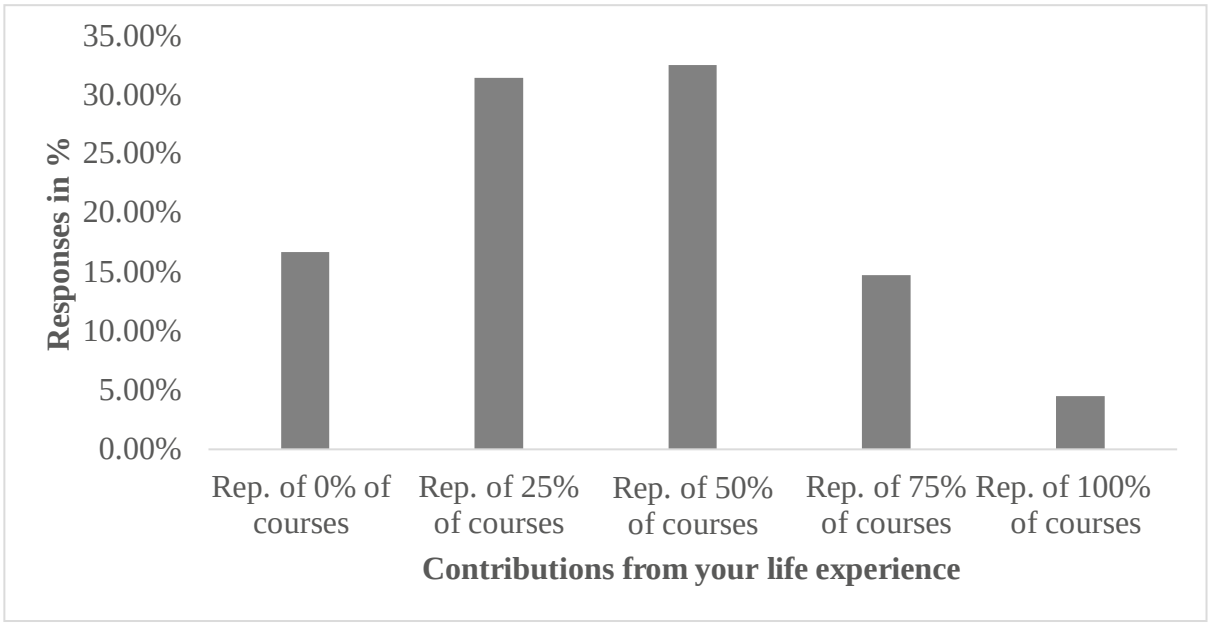

Figure 38. Graph Showing the Number of Contributions by Adults.

Table 20

Question 11

How representative was the course's use of contributions from your life experience and knowledge? Tick one

Answer Choices	Responses	
The representative of 0% (none) of the courses I have attended	16.70%	78
The representative of 25% (a quarter) of all the courses I have attended	31.48%	147
The representative of 50% (half) of all the courses I have attended	32.55%	152
The representative of 75% (three-quarters) of all the courses I have attended	14.78%	69
The representative of 100% (all) the courses I have attended	4.50%	21
No response	1.5%	7

Q12: In an ideal training course, how would you alter the amount of life experience and knowledge you contribute to the training? Tick all that apply

Question 12. results indicate only 8.17% of the participants want no changes made to the courses they attend while, again an overwhelming majority 91.87%, stated a desire to see a change in the contributions they can make to the training from their life experience and knowledge. 465 participants answered, and nine skipped the question. The andragogy assumption tested here is that adults need to be involved in their training and need to contribute from their life experience and knowledge. Ideally, adults use praxis to learn, which means adults analysis and examine their reality to transform it into a continuous learning process. Adults, learning is an ongoing process of living, exploring, taking action, and then reflecting on these actions and then continually repeating this cycle as they go through life (Schwartz, 2010). These results show that andragogy principles are recognized by adult learners in the study.

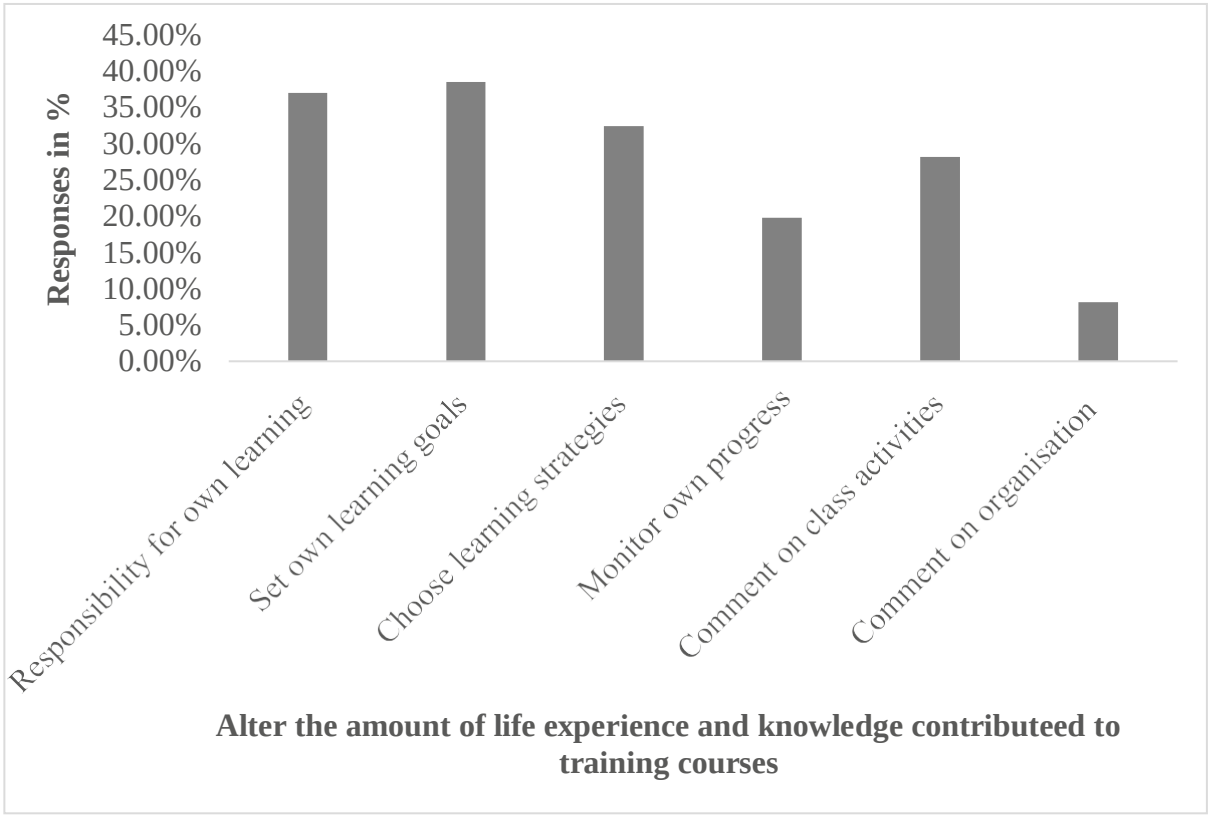

Figure 39. Graph Showing Changes to Contributions by Adults.

Table 21

Question 12

Table 21: Question 12.

In an ideal training course, how would you alter the amount of life experience and knowledge you contribute to the training? Tick all that apply

Answer Choices	Responses	
Take responsibility for your learning	36.99%	172
Set your own learning goals	38.49%	179
Choose preferred learning strategies	32.47%	151
Monitor your progress	19.78%	92
Have some say on how the class activities are presented	28.17%	131
Comment on how the class is organized	8.17%	38
No response	1.9%	9

Q13: Think about the last training course you attended in the workplace. Did this course include opportunities for you to experience active participation? Tick all that apply

Question 13. is concerned with the amount of active participation of adults in OH&S training courses. 464 participants answered the question, and ten did not. The results show that 19.40% of participants were not afforded the chance to participate in the last training session they attended actively. 80.60% had that opportunity to varying degrees.

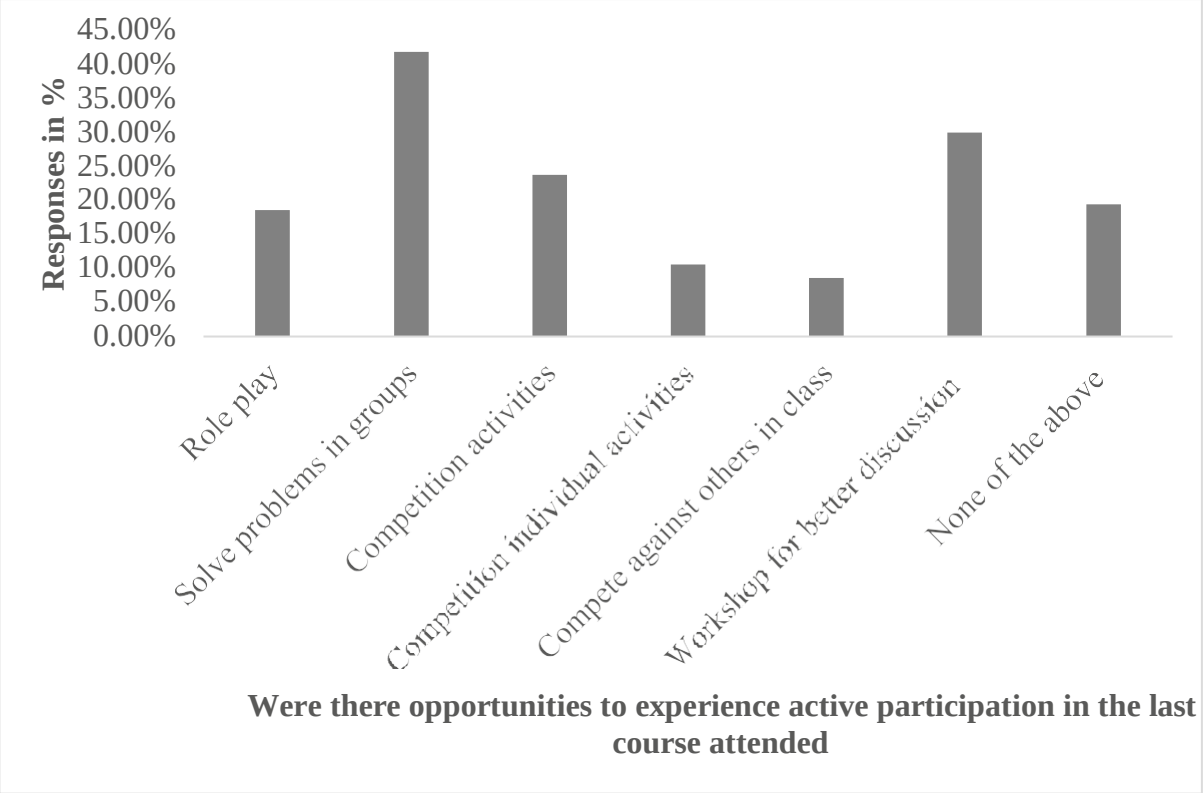

Figure 40. Graph Showing Active Participation.

Table 22

Question 13

Did this course include opportunities for you to experience active participation? Tick all that apply

Answer Choices	Responses	
Roleplay	18.53%	86
Solve problems in groups	41.81%	194
Competition –based group activities	23.71%	110
Competition-based individual activities	10.56%	49
Compete and an individual against others in your class	8.62%	40
Workshop (meeting at which a group of people engages in discussion and activity on a subject or project)	29.94%	125
None of the above	19.40%	90
No response	2.1%	10

Q14: Think about all the courses you have attended in your working life in the workplace. How representative was the course's use of active participation? Tick one

Question 14. asks about missed opportunities to participate in courses attended during the participant's working life. 467 participants answered the question, and seven skipped the question. In question fourteen, 7.92% indicated no opportunities to participate in courses actively. The majority did report there was opportunity however what, where, and how questions are unable to be answered by this survey.

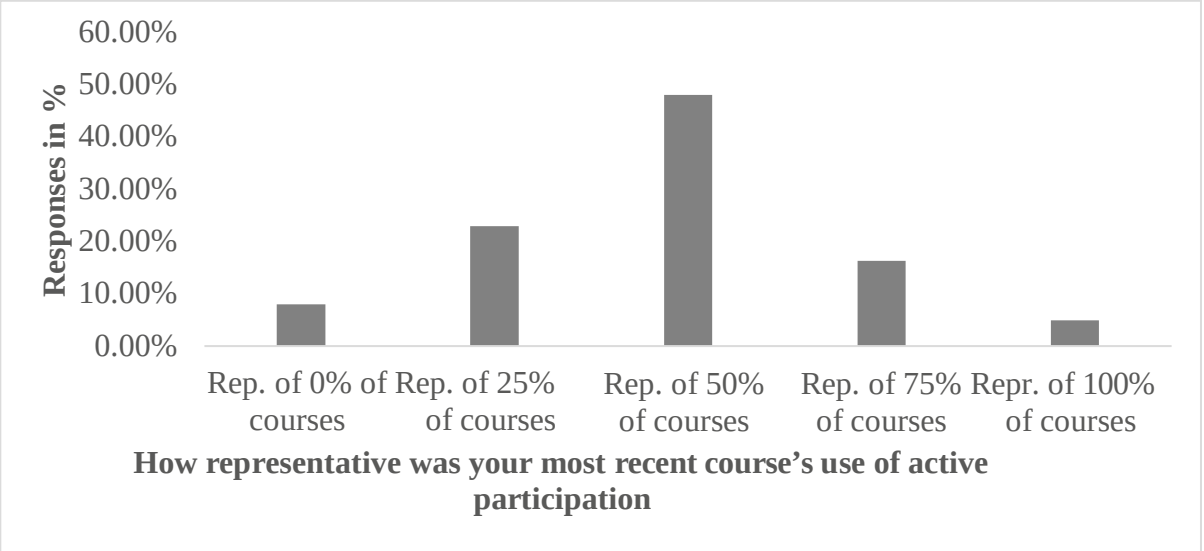

Figure 41. Graph Showing the Amount of Active Participation.

Table 23

Question 14

How representative was the course's use of active participation? Tick one

Answer Choices	Responses	
The representative of 0% (none) of the courses I have attended	7.92%	37
The representative of 25% (a quarter) of all the courses I have attended	22.91%	107
The representative of 50% (half) of all the courses I have attended	47.97%	224
The representative of 75% (three-quarters) of all the courses I have attended	16.27%	76
The representative of 100% (all) the courses I have attended	4.93%	23
No response	1.5%	7

Q15: In an ideal training course, how would you alter the amount and type of active participation provided? Tick all that apply

Question 15. results revealed 88.84% of participants would like to alter OH&S courses attended to increase the amount and type of active participation. 11.16% want to see no change. 466 participants answered the question, and eight skipped the question. The message is clear adults want to more fully participate in training, not just be bystanders. The andragogy assumption on active participation is explicit when it states that adults must be involved, and they must be part of the training. This result supports the research data revealed by my document reviews (Chapters Two and Three) by showing that adults do want to participate and may not satisfied until they do. Personal discussions and group participation are essential when designing training for adults (du Plessis, Kaarin, & Schlumpp, 2011).

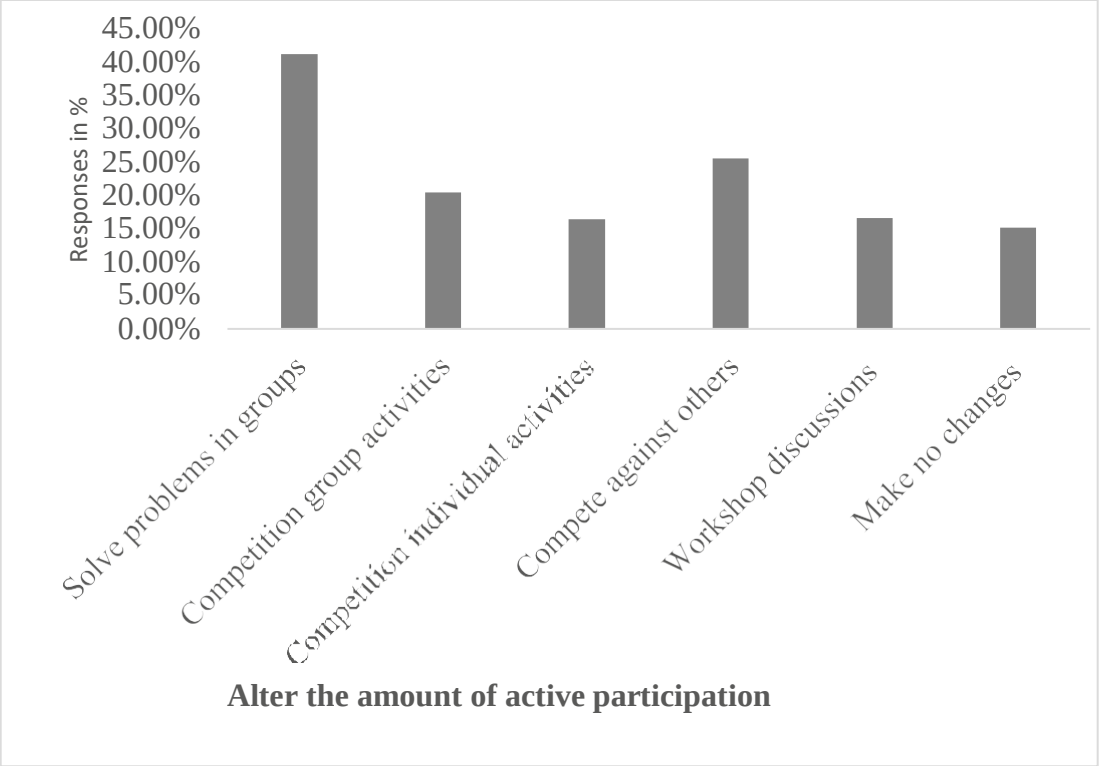

Figure 42. Graph Showing Changes to Active Participation.

Table 24

Question 15

In an ideal training course, how would you alter the amount and type of active participation provided? Tick all that apply

Answer Choices	Responses	
Solve problems in groups	42.06%	196
Competition –based group activities	21.67%	101
Competition-based individual activities	12.45%	58
Compete and an individual against others in your class	10.30%	48
Workshop (meeting at which a group of people engages in discussion and activity on a subject or project).	30.69%	143
Make no changes to the training courses	11.16%	52
No response	1.7%	8

Q16: Think about the last training course you attended in the workplace. What was your perception of the course? Tick all that apply

Question 16, 471 participants answered the question, and three did not. 24.42% of participants had a good perception of the last course they attended. While the other 75.58% thought the last course they attended was dull, uninspiring, made them sleepy, had little to no participation, too many slides, and little to no discussion. Andragogy assumptions were perceived to have been circumvented, resulting in a perceived (and reported) dull and uninteresting OH&S training session.

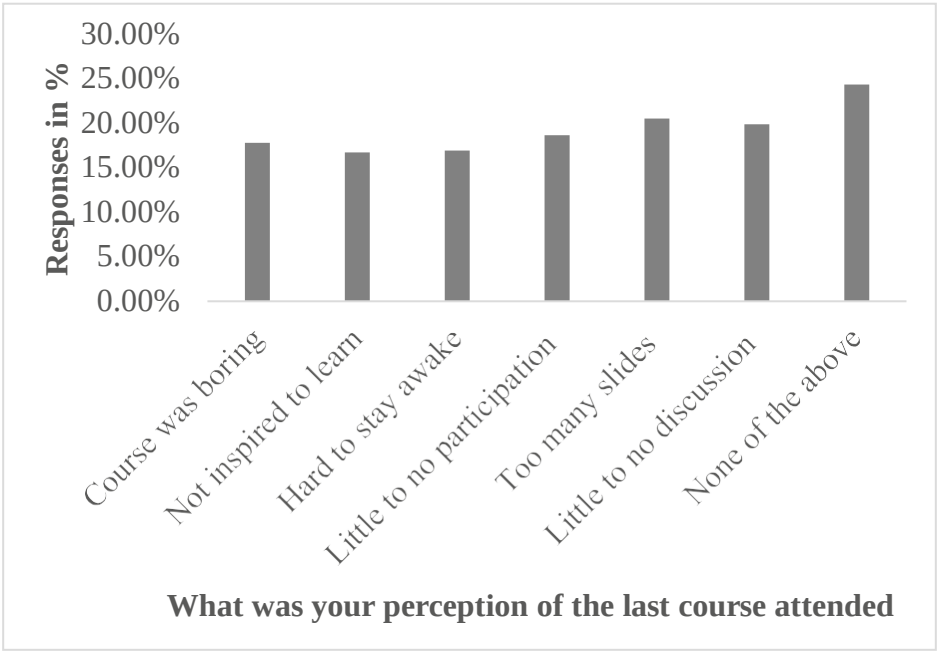

Figure 43. Graph Showing Perceptions.

Table 25

Question 16

What was your perception of the course? Tick all that apply

Answer Choices	Responses	
The course was boring	17.83%	84
I was not inspired to learn	16.77%	79
It was hard to stay awake	16.99%	80
There was little to no participation by attendees	18.68%	88
Too many slides	20.59%	97
Little to no discussion	19.96%	94
None of the above	24.42%	115
No response	.7%	3

Q17: Think about all the courses you have attended in your working life in the workplace. How representative was the courses when it came to be interesting and interactive? Tick one

For Question 17., 464 participants answered, and then skipped the question.16.81% of respondents said that the OH&S courses they have attended throughout their working life had not been exciting or interactive. Whereas 75.58% in question sixteen are saying the same about the last course, they attended. The rest of the results in question seventeen participants are saying to vary degrees that courses attended have been interesting and interactive.

Only 4.74% say that these interesting and interactive courses are representative of 100% of all courses attended.

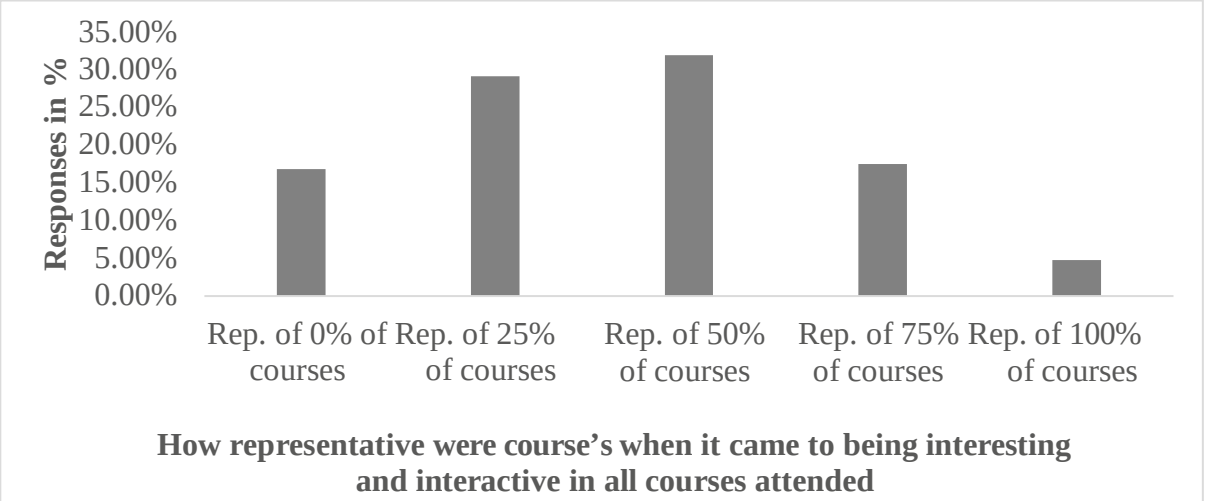

Figure 44. Graph Showing Interest.

Table 26

Question 17

How representative was the courses when it came to be interesting and interactive? Tick one

Answer Choices	Responses	
The representative of 0% (none) of the courses I have attended	16.81%	78
The representative of 25% (a quarter) of all the courses I have attended	29.09%	135
The representative of 50% (half) of all the courses I have attended	31.90%	148
The representative of 75% (three-quarters) of all the courses I have attended	17.46%	81
The representative of 100% (all) the courses I have attended	4.74%	22
No response	2.2%	10

Q18: In an ideal training course, how would you alter the amount and type of training activates to make the course more interesting and interactive? Tick all that apply

Question 18. results are evident, with 8.76% of participants wanting no change, and the rest 91.26% seeking improvements to courses. 468 participants answered the question, and six skipped the question. This shows that andragogy assumptions are best followed if the intention is to win over adult learners. It is generally well known that fun and exciting courses impacted positively on adult learners (Lucardie, 2014).

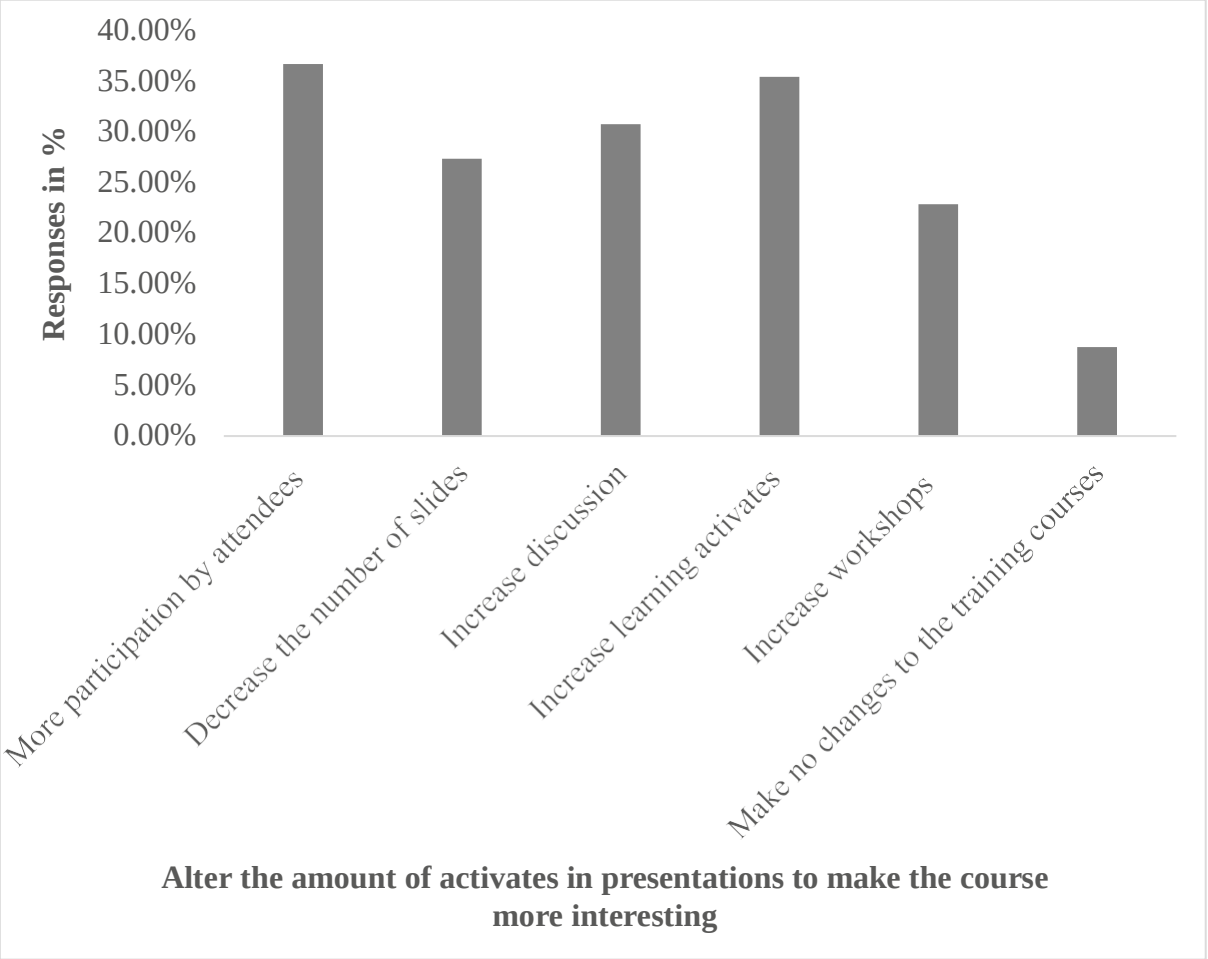

Figure 45. Graph Showing the Number of Activities.

Table 27

Question 18

In an ideal training course, how would you alter the amount and type of training activates to make the course more interesting and interactive? Tick all that apply

Answer Choices	Responses	
More participation by attendees	36.75%	172
Decrease the number of slides	27.35%	128
Increase discussion	30.77%	144
Increase learning activates	35.47%	166
Increase workshops	22.86%	107
Make no changes to the training courses	8.76%	41
No response	1.3%	6

Q19: Think about the last training course you attended in the workplace. Did it allow you to develop your skills and confidence? Skill development means developing yourself to be able to add value to the workplace and for your career development & confidence is about being certain of your abilities. Tick all that apply

Question 19. looks opportunity for participants to develop their skills and confidence. 472 participants answered the question, and two did not. A combined 84.32% were satisfied with the level of development of their skills and confidence. A combined 15.68% were either dissatisfied, very dissatisfied, had no opportunity, or were unsure if they had the opportunity to develop their skills and confidence. It seems odd that an OH&S workplace training course would not cater to the development of skills and confidence of the participants. Odd because the very definition of training is to teach or train a person in a particular skill or behavior. I am personally concerned by this particular finding.

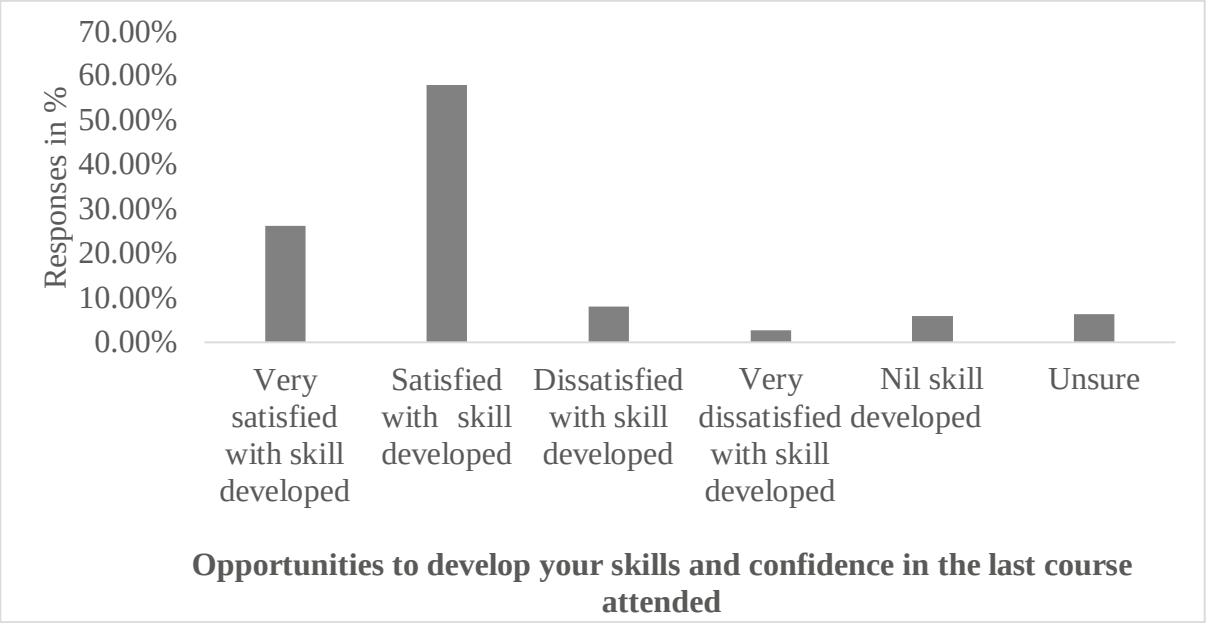

Figure 46. Graph Showing Skill Development.

Table 28

Question 19

Did the last training course you attended in the workplace allow you to develop your skills and confidence? Tick all that apply

Answer Choices	Responses	
Very satisfied with the level of skill developed	26.27%	124
Satisfied with the level of skill developed	58.05%	274
Dissatisfied with the level of skill developed	8.05%	38
Very dissatisfied with the level of skill developed	2.75%	13
Nil skill developed	5.93%	28
Unsure	6.36%	30
No response	.4%	2

Q20: Think about all the courses you have attended in your working life in the workplace. How representative was the courses when it came to developing your skills and confidence? Tick one

Question 20. looks at all the courses OH&S attended by participants in their working life. 437 participants answered the question, and 37 skipped the question. At the bottom end of the results, 6.18% of participants indicate they had never attended a course that has helped them to develop their skills and confidence. At the other end, 6.64% are saying that 100% of all courses attended helped them to develop their skills and confidence. There is work to be done on improving the majority of courses to make sure that they are designed to develop skills and confidence in an explicit way that is perceived and remembered by adult learners;
this should be an educational priority.

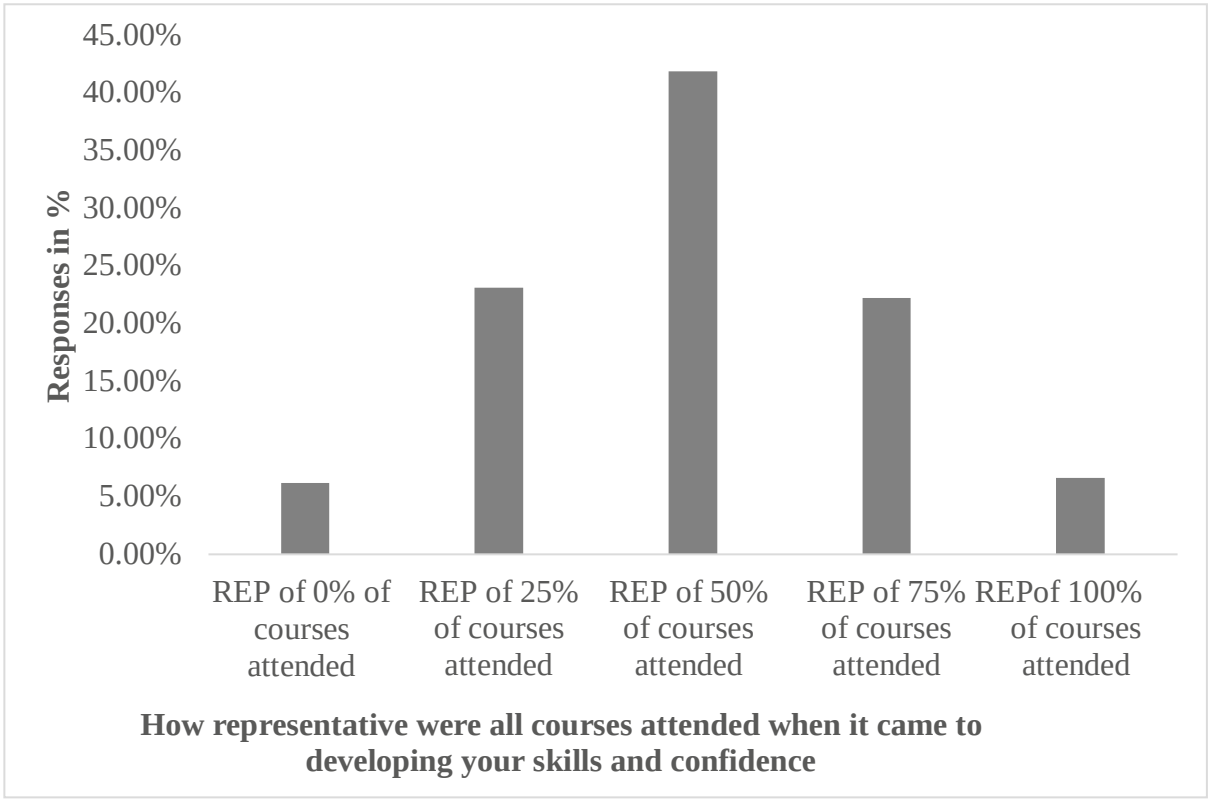

Figure 47. Graph Showing the Amount of Skill Development.

Table 29

Question 20

How representative was the courses when it came to developing your skills and confidence? Tick one

Answer Choices	Responses	
The representative of 0% (none) of the courses I have attended	6.18%	27
The representative of 25% (a quarter) of all the courses I have attended	23.11%	101
The representative of 50% (half) of all the courses I have attended	41.88%	183
The representative of 75% (three-quarters) of all the courses I have attended	22.20%	97
The representative of 100% (all) the courses I have attended	6.64%	29
No response	7.8%	37

Q21: In an ideal training course, how would you alter the amount of activates to developing your skills and confidence? Tick all that apply

Question 21, the participants tell us what they would change in OH&S training courses to make them more suitable. 469 participants answered the question, and five skipped the question. 6.18% want no change, with 93.82% wanting to see more development of skills and confidence. The response percentages of this question show that the focus on skills and confidence is valuable and desirable by adult learners. Many adults have had a less than pleasant learning experience in traditional schooling; these experiences can negatively impact the desire for adults to attend and enjoy workplace training when older. Adults can be left with a lack of confidence, perceived rusty skills, average reading skills, and anxiety, meaning employers need to develop their training programs to aim at building higher confidence and skills for workplace learners (Salleh, Hidayah, Sulaiman, Mohamad, & Sern, 2015).

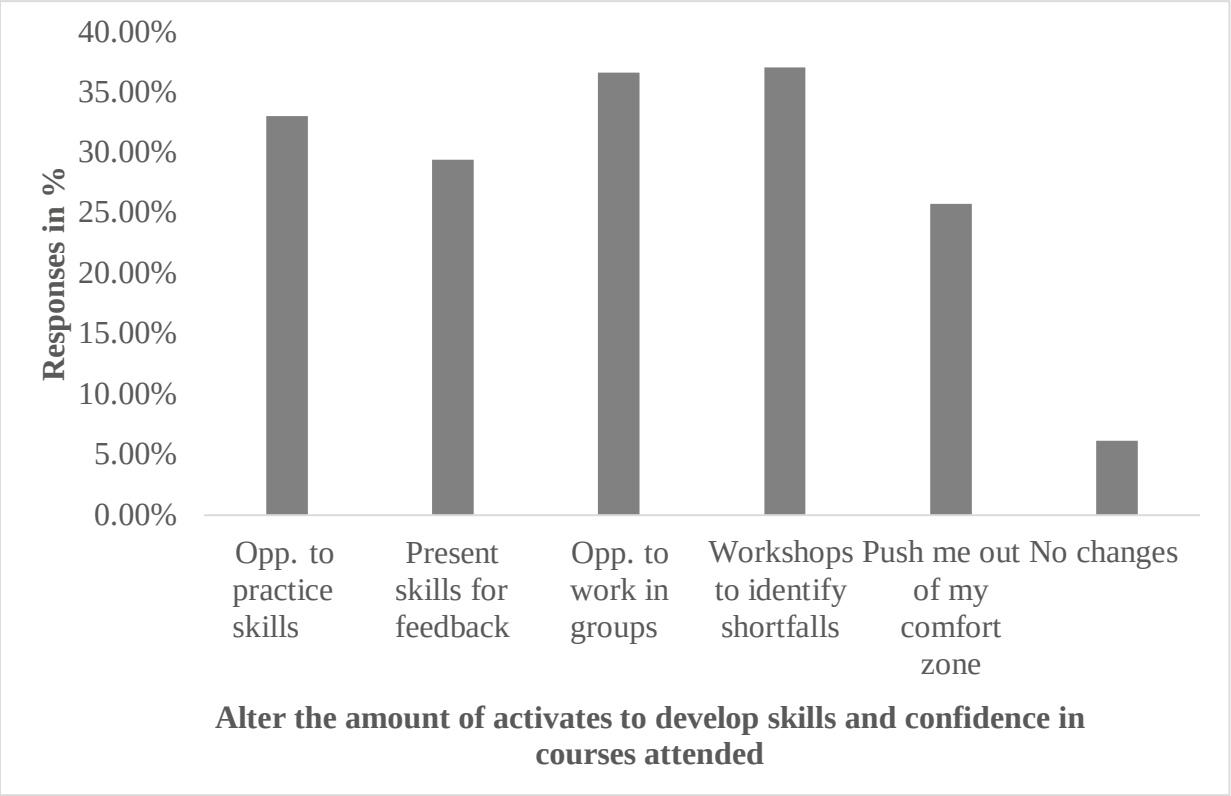

Figure 48. Graph Showing the Development of Confidence.

Table 30

Question 21

In an ideal training course, how would you alter the amount of activates to developing your skills and confidence? Tick all that apply

Answer Choices	Responses	
Opportunities to practice my skills and increase my confidence	33.05%	155
Present my skills in the training session for constructive feedback	29.42%	138
Opportunity to work in groups to develop better skills and more confidence	36.67%	172
Workshop skills to identify shortfalls in skills and confidence	37.10%	174
Push me out of my comfort zone	25.80%	121
Make no changes to the training courses	6.18%	29
No response	1.1%	5

Q22: Think about all the courses you have attended in your working life in the workplace. What were your favorite experiences? Tick all that apply

Question 22. is trying to find out what adult learners like about training courses. 471 participants answered the question, and three skipped the question. 33.05% are saying more opportunities to increase skills and confidence, which supports the results from questions nineteen to twenty-one. 29.42% wanted more participation in agreeing with the results of questions thirteen to fifteen. 48.41% enjoyed the use of films and clips in training, giving more weight to the results of questions sixteen to eighteen. 23.99% liked the idea, of course, handout to help with study at home. 19.96% said they enjoyed the course because the trainer interestingly revised the material. 19.96% were also happy with the way they were able to participate throughout training sessions. 6.79% could not relate to any of the positive experiences presented for selected in this question. Adult learners are telling us what they like to see in training courses, and here we have the andragogy assumptions that agree and recommend all the adult suggestions above. It is difficult it is to motivate and keep adult learners motivated in training courses (Pappas, 2013) so the variations in perceived experience are probably explained in part by difficulties as well the structural impediments discussed in Chapter Two.

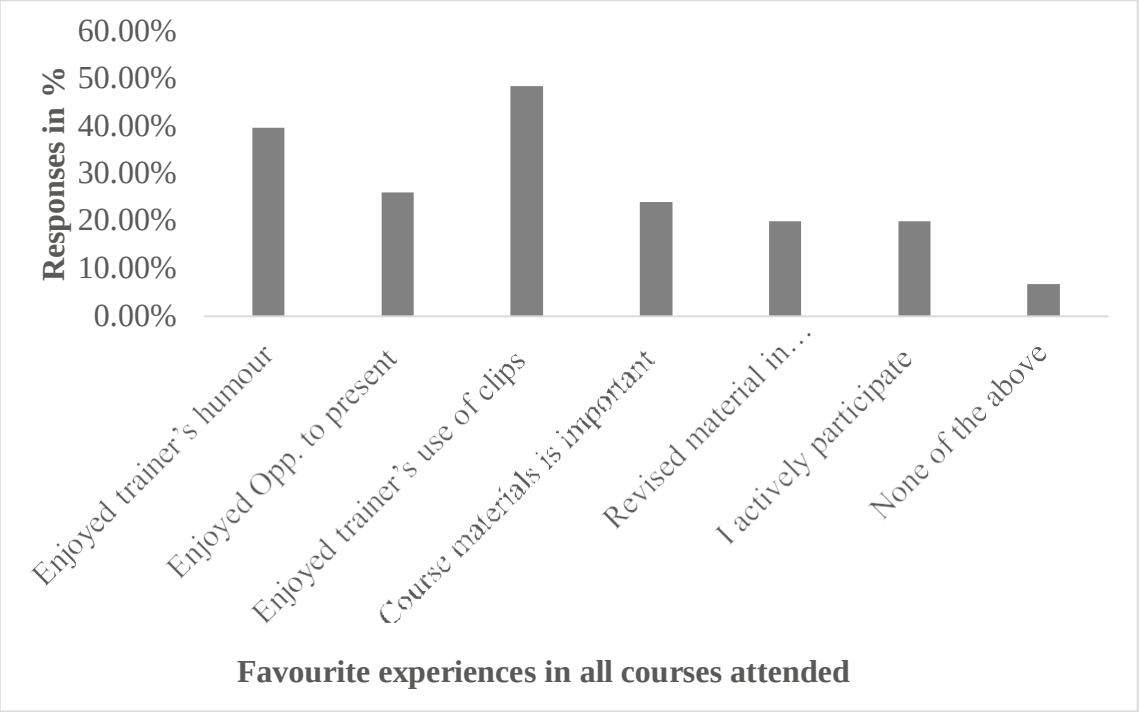

Figure 49. Graph Showing Favorited Experiences.

Table 31

Question 22

What were your favorite experiences? Tick all that apply

Answer Choices	Responses	
I enjoyed the trainer's use of humor	39.70%	187
I enjoyed the opportunity to present and improve my presentation skills	26.11%	123
I enjoyed the trainer's use of film clips and images to illustrate their points	48.41%	228
Course booklets training materials are important to help with home study	23.99%	113
The trainer revised material in an interesting and competitive way	19.96%	94
I was able to actively participate throughout the training session	19.96%	94
None of the above	6.79%	32
No response	.7%	3

Q23: Think about all the courses you have attended in your working life in the workplace. What were the strengths of these training courses? Tick all that apply

Question 23. asks about the participant's thoughts on the strengths of the courses they have attended in their working lives. 468 participants answered the question, and six skipped the question. At the top of the list of strengths, candidates liked training sessions that are organized well, with 36.97%. Adults do not have time to waste, which is one of the most common concerns of adult learners (Sabell, 2017). The following result is 34.62%, like courses to be delivered in a relaxed fashion. 29.27% liked the pace of the learning because it suited the class. 27.78% liked the feeling of ease in the class. 26.92% enjoyed the fact that people were asked to contribute to the class. 8.97% did not think the training courses they attended had any strengths - all in line with the general training needs of adult learners (Ota, DiCarlo, Burts, Laird, & Gioe, 2006).

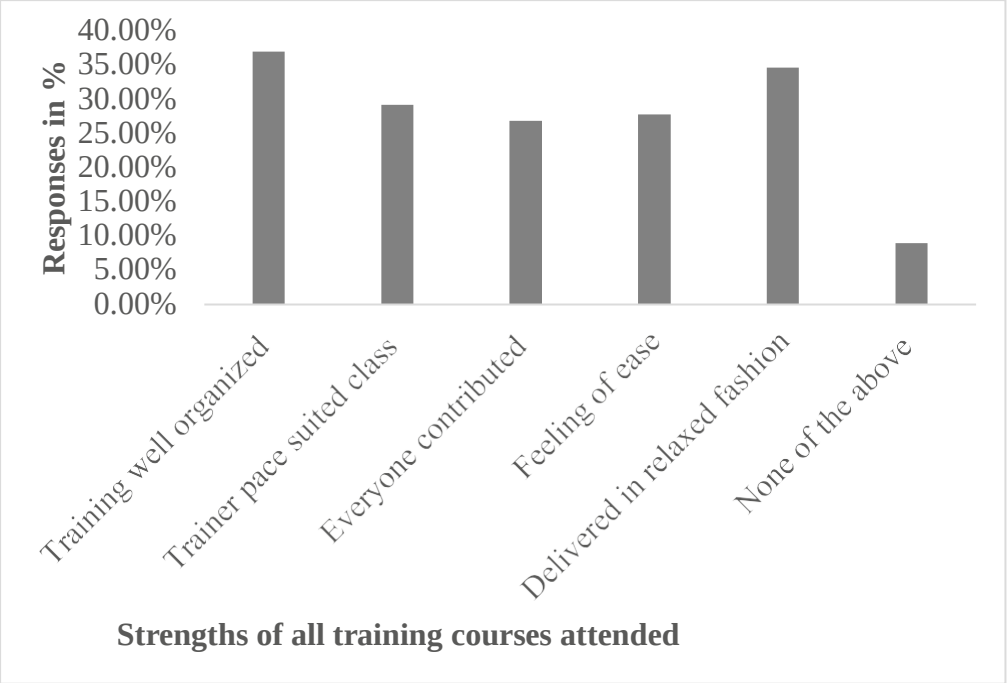

Figure 50. Graph Showing Course Strengths.

Table 32

Question 23

What were the strengths of these training courses? Tick all that apply

Answer Choices	Responses	
The training session was well organized	36.97%	173
The trainer pace of the course was suited to the class	29.27%	137
Everyone was encouraged to contribute	26.92%	126
There was a feeling of ease	27.78%	130
The training session was delivered in a relaxed fashion	34.62%	162
None of the above	8.97%	42
No response	1.3%	6

Q24: Think about all the courses you have attended in your working life in the workplace. What were the weaknesses of these training courses? Tick all that apply

Question 24 looks at the weaknesses of training courses attended. 466 participants answered the question, and eight skipped the question. 30.40% of respondents indicated poorly organized courses and trainers racing through the material. A surprise result was 26.82% of participants chose None of the Above. The category of not encouraging adults to contribute came in at 22.75%. Training sessions delivered at a pace not suited to the class was 15.88%, and the lowest result was 9.44%, with no feeling of ease in the course. The advice for adult trainers is to cater to diverse learning preferences by having a well-organized course, pacing the course material to the pace of the class, allow and encourage contributions from the class, allow for the telling of stories, using props, using peer to peer learning, games and use plenty of humor (DIRESTA, 2016). The results are in line with the andragogy assumptions, especially about contributing to class. Indeed, the self-concept assumption is also relevant here because adults want to decide on what they want to learn, when, and how.

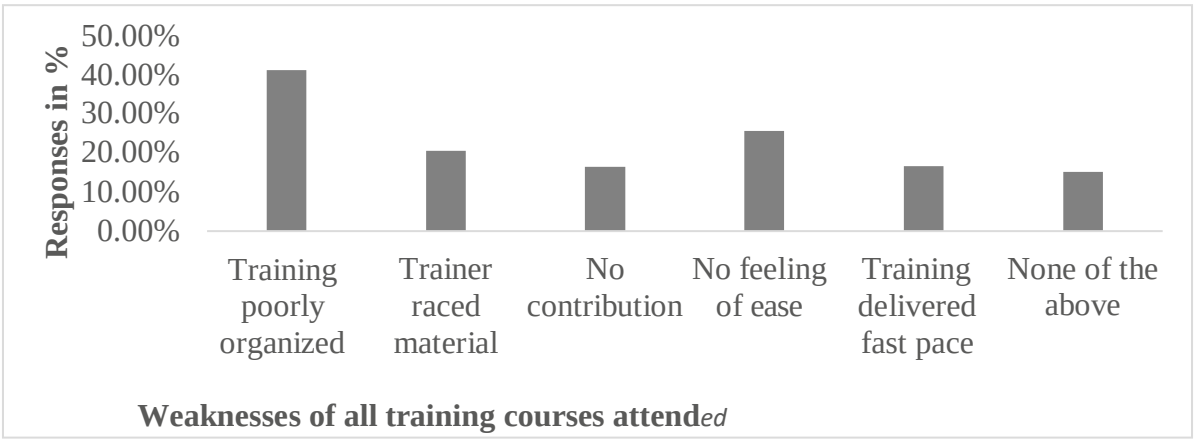

Figure 51. Graph Showing Course Weaknesses.

Table 33

Question 24

What were the weaknesses of these training courses? Tick all that apply

Answer Choices	Responses	
Training session poorly organized	30.40%	140
Trainer raced through the material	30.69%	143
No encouragement to contribute	22.75%	106
There was no feeling of ease	9.44%	44
Training session delivered at a pace that was not suited to the class	15.88%	74
None of the above	26.82%	125
No response	1.7%	8

Q25: Think about all the training courses you have attended in your working life in the workplace. How varied were the training methods used? Tick all that apply

After the results of Question 23. and 24., the results of Question 25 do not come as a surprise. 466 participants answered the question, and eight skipped the question. Question 25 is asking about the various methods used in training courses. The results are 44.64% of participants are saying the training course format is the same. 25.54% claim that there are limited course handouts followed closely by 22.75%, saying that too many slides were used during the course. 16.31% selected None of the Above, and 13.52% said there was a limited topic discussion and argument. The results suggest that trainers should provide more choices to adult learners, that training courses need to be an environment of collaborative learning fostering mutual respect. Exciting content and delivery retains adult students and keeps them interested and active (Bryson, 2013).

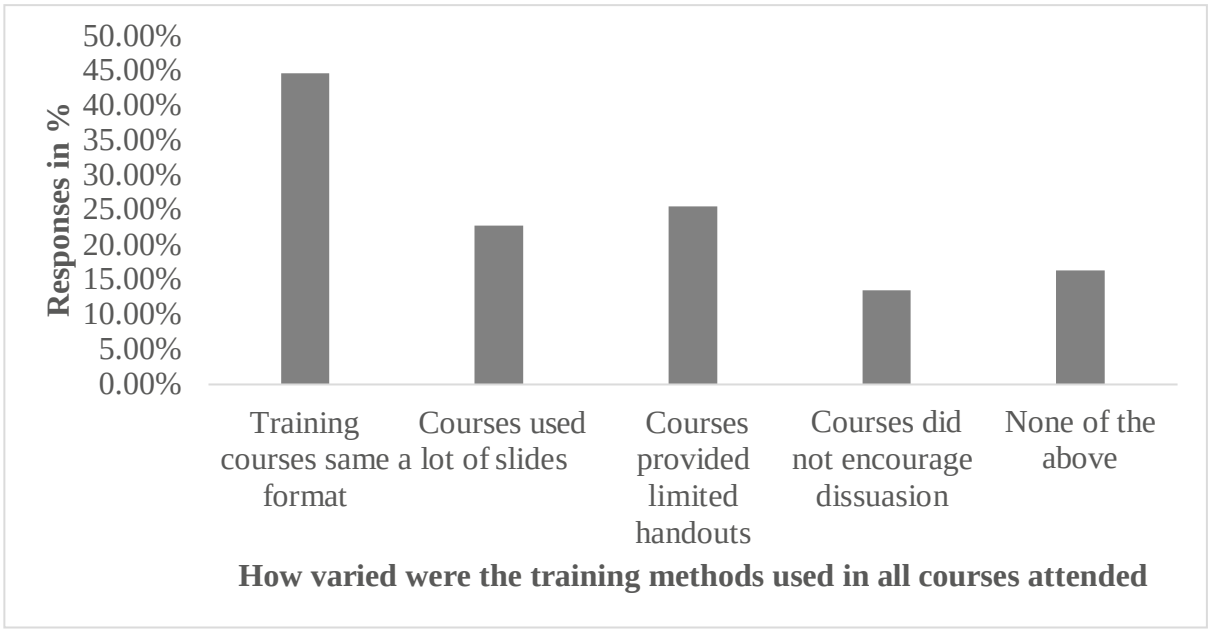

Figure 52. Graph Showing Varied Training Methods.

Table 34

Question 25

How varied were the training methods used? Tick all that apply

Answer Choices	Responses	
Training courses had the same format	44.64%	208
Training courses used a lot of slides	22.75%	106
Training courses provided limited handouts without additional information	25.54%	119
Training courses encourage or drove participants to lead a dissuasion or argument?	13.52%	63
None of the above	16.31%	76
No response	1.7%	8

Q26: Think about all the courses you have attended in your working life in the workplace. Was there respect between the trainer and you? Select all that apply

Question 26. explores perceptions of teacher-student respect. 467 participants answered the question, and seven skipped the question. 18.42% of the participants had no complaints about lack of respect, 44.11% agreed that the trainers showed respect to class contributors. 40.69% were happy with the trainer listening to their comments in class. 28.48% stated that the trainer did not use their first name. Respect here seemed to be in place, which is a credit to the trainers. Respect is a large part of the andragogy assumptions that fit into the self-direction. These results show this part of the training is close to being on track for training adults. A survey conducted by Beaudoin (2011) of 200 educators in California found an environment of respect fosters improved academic results for children and, especially, for adult learners.

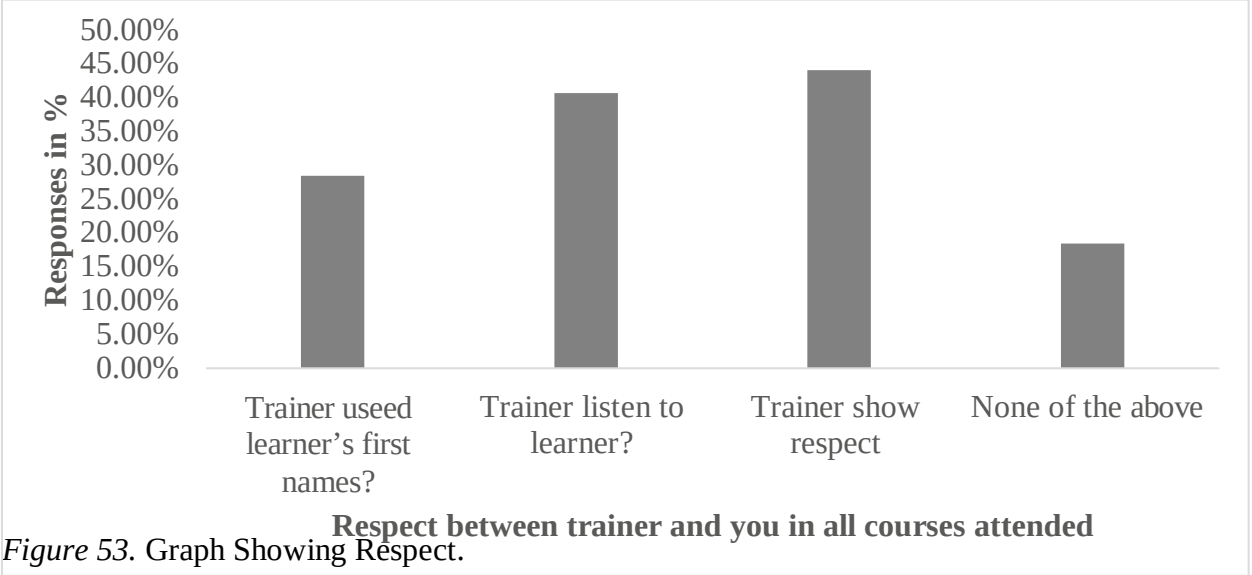

Figure 53. Graph Showing Respect.

Table 35

Question 26

Was there respect between the trainer and you? Select all that apply

Answer Choices	Responses	
Did the trainer use learner's first names?	28.48%	133
Did the trainer listen to the learner's comments?	40.69%	190
Did the trainer show respect to the learner's contributions	44.11%	206
None of the above	18.42%	86
No response	1.5%	7

Q27: Think about all the courses you have attended in your working life in the workplace. How approachable were your trainers? Tick all that apply.

Question 27 inquires about the perceived approachability of trainers. 471 participants answered the question, and three skipped the question. 3.61% selected None of the Above, with 12.74% saying they were Unsure. 11.04% said there was no opportunity to approach the trainer, and 2.97% were very dissatisfied with the trainer's approachability. 7.22% were dissatisfied with the opportunity to approach the trainer. This still left a result of 48.20% satisfied and 25.05% delighted with trainer approachability. Therefore, resulting in a combined 73.25% of participants satisfied with the approachability of trainers. However, the combined 21.23% that were not satisfied shows that there is room for improvement. The results do show that 21% of adult learners surveyed were not happy with the current state of affairs when it comes to approachability. Approachability is part of adult self-direction, the first andragogy assumption which needs to be addressed to win over the 1 in 5 adults who are currently dissatisfied. Is being approachable important whom better to ask than the adult learner. Jane Sherlock (2015) did just that, and she found that one of the top replies was teachers need to be approachable and willing to listen.

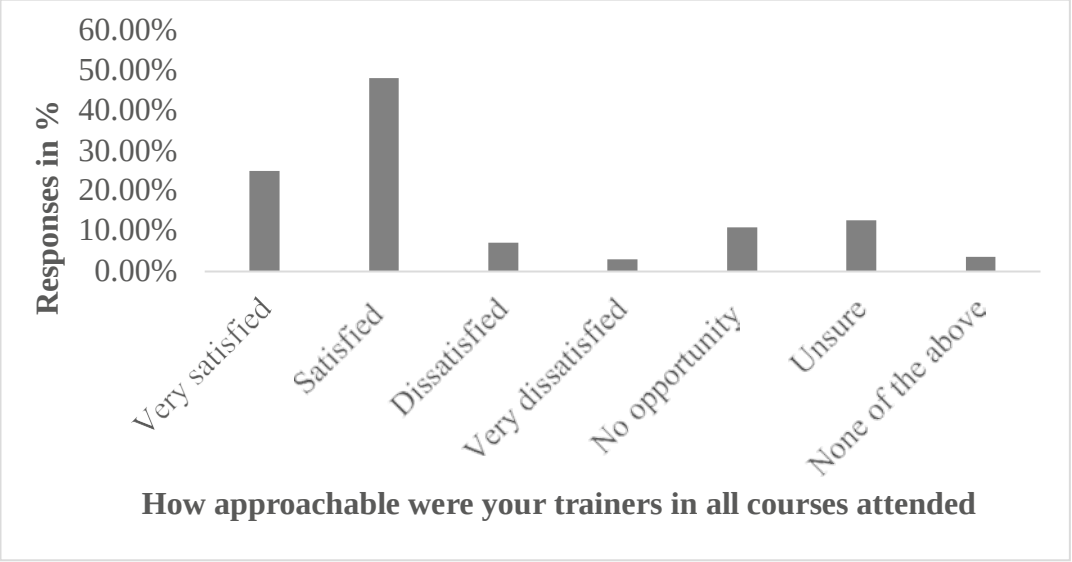

Figure 54. Graph Showing Approachability.

Table 36

Question 27

How approachable were your trainers? Tick all that apply

Answer Choices	Responses	
Very satisfied with the opportunities to approach the trainer	25.05%	118
Satisfied with the opportunities to approach the trainer	48.20%	227
Dissatisfied with the opportunities to approach the trainer	7.22%	34
Very dissatisfied with the opportunities to approach the trainer	2.97%	14
There was no opportunity to approach the trainer	11.04%	52
Unsure	12.74%	60
None of the above	3.61%	17
No response	.2%	3

Q28: If you have any other comments about this survey, please provide them here.

Question 28. was interested in general comments from the participants about the survey questionnaire. The participants were asked after the completion of the survey why people decide to skip this question. The primary reply was that the participants had nothing more to add to the survey because the survey was comprehensive. The language used by the participants who replied to this question is used below, with no changes or corrections made to their English or spelling. The results from the participants who are happy with the survey questionnaire, 3%, participants that were not happy with the questionnaire 21%. Participants that thought that the survey was of no value 11% and participants that thoughts that the survey added or might add value to their OH&S training 43%. There is also a miscellaneous category of 22%.

It was unfortunate that only 5% of the respondents left a comment. Still, the trend is positive indicating that the research survey questionnaire was worthwhile.

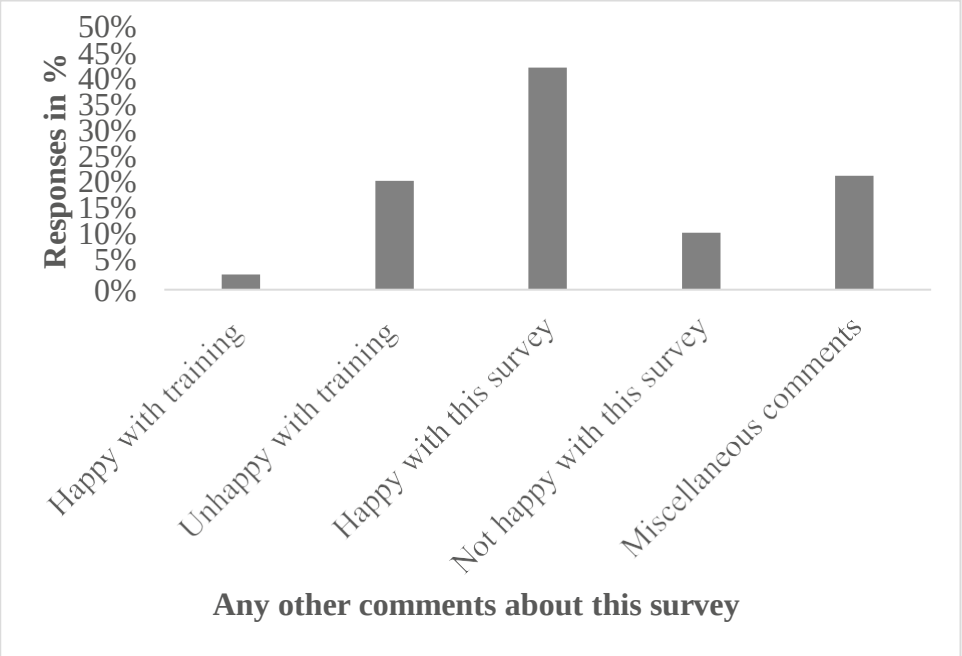

Figure 55. Graph Showing Positive and Negative Survey Comments.

Table 37

Question 28

If you have any other comments about this survey, please provide them here.

Answer Choices	Responses	
Happy with training as it is currently presented	3%	14
Unhappy with training as it is currently presented	21%	100
Happy with this survey	43%	204
Not happy with this survey	11%	52
Miscellaneous comments	22%	104
No response	92.6%	437

General comments from participants:

1. *A lot of refresher training courses are repetitive and act as a tick in the box only. I don't believe they add much value to a persons development.*
2. *Am so inspired with training general*
3. *Attendees for safety induction is too many, so there is a limit for class participation*
4. *Education is important*
5. *External trainers are more open to comments and feedback and know about the subjects they teach; national trainers really need to expose themselves and be opened to criticisms and changes required*
6. *Important needed!*
7. *In some training, there was no study materials reference to do personal further study.*
8. *It is amazing*
9. *It's a nice survey hope people will learn from this to improve on teaching techniques... Thanks, sir for the opportunity [name removed] is my name*
10. *Lettering are too small*

11. *My last study course heightened my interest in HSE and this survey kind of reassured me of the excellence of this career path that I have chosen.*
12. *My trainer is a man of integrity and understanding*
13. *My working life has been with the military, most courses are very rigidly presented and only certain types of lessons allow course interaction.*
14. *Nice survey and really makes one to think deep before ticking.*
15. *No comments*
16. *No comment*
17. *None*
18. *Nothing much but very interesting is simply a self development of human social interaction*
19. *Research is necessary for assessment of education.*
20. *Safety induction will be no use if he or she doesn't care about HSE and how important it is*
21. *Some explanation for terms are needed*
22. *Some of the options were not explicit enough. Please kindly check the coherence.*
23. *Survey is OK, I don't know much on this subject matter. However, I noticed a typographical error in Q. 21. Instead of activities, activates was rather spelt. Thanks*
24. *Thanks.*
25. *The questions are not specific*
26. *The questions where some how similar, looking a little bit confusing, like you are going through it over and over again. Question N0 18: i think that should be..... "training activities" not "training activates".*
27. *The survey got me thinking inwardly and it bothers on how the training's I have attended have impacted on me. I would have more question to ask if attend another training to enhance my learning*

28. *The survey had some typographical errors, but the overall presentation of the survey was cool.*
29. *There are too many repetition of words*
30. *The survey is encouraging. Thank you*
31. *This survey add a great value to my knowledge and career.*
32. *This survey is very coherent, I had no problem filling it. Great survey*
33. *Time wasted*
34. *Too much repeat of questions*
35. *Very ok*
36. *want a program which is not boring and use a lot of teaching materials*
37. *Well Done Sir!*

Questions 1. to 28. were designed to answer the four research questions posed for this research. The first question on the use of andragogy in the planning and delivery of OH&S training courses for adult learners in the South Korean shipbuilding industry was answered by responses to Questions 1. to 15. 19. to 21. 26. and 27. The results have been split into detail in the above graphs, but, to get an overall picture of what the results are saying the results are combined in the following categories and inserted into the tables below.

All the survey question results dealing with courses attended throughout the candidate's entire working life were combined and divided up into three categories, 1. Not 100% satisfied with all courses attended 2. Satisfied with all courses attended, 3. Unsure or None of the Above. Because of the combined survey question, the results percentage will not be used in any of the following graphs; instead, the number of responses is used.

Survey question results dealing with changes participants would like to see in courses were combined and divided up into two categories, 1. Not 100% satisfied and would like to see courses altered, and 2. Satisfied with no changes to the courses.

The research question is inquiring into the use of andragogy currently used to train adults. The results have a strong indication that adults are not satisfied with the current course delivery structure and the implication is there are areas for improvement.

The survey results indicate that, for the greater majority, andragogy assumptions are not used as widely and as consistently in adult training as they could be, according to respondents on this survey.

The results suggest participating adults would be more satisfied attending training courses if changes are made to closer comply with andragogy assumptions. The documents studies undertaken for this thesis indicate if andragogy assumptions are applied adults will likely take lessons learned back to the workplace and apply these immediately. The results of this survey questionnaire cannot answer the questions of application of knowledge, only that of perceptions of the learning experience and the types of activities recalled as undertaken.

The results do not speak to the use of andragogy assumptions in training adults in OH&S will help improve OH&S in the workplace. Established research and published documents support the notion that employees work better when trained by the use of andragogy. This cannot be proven from the survey results.

Table 38

Courses Attended Throughout Participants Working Lives

Answer Choices	Responses number
Not 100% satisfied with courses	3134 responses
Satisfied with courses	1024 responses
Unsure or None of the Above	163 response

Table 39

Changes to Courses

Answer Choices	Number of responses
Respondents indicating courses to be altered	4459 responses
Respondents indicating no changes to courses	199 responses

Table 40

Adult's Perceptions of OH&S Training Courses

Answer Choices	Number of responses
Respondents not satisfied (overall) with OH&S courses	1698 responses
People satisfied (overall) with OH&S courses	1859 responses
None of the above	316 responses

Research question three and four were: What techniques are used to deliver OH&S training courses to adult learners in the industry? What are industry adult learners' perceptions of OH&S training courses? Because of the similarities between questions three and four, they will both be answered together with the survey questionnaire replies to questions 17,18, 22, 23, 24, and 25. For a better overall picture of these question, survey results they will be broken up into three categories 1. Respondents were satisfied with the courses attended because they were indicated as interesting, interactive, had memorable experiences; the course had strengths and various training methods, 2. Respondents not satisfied with courses attended because they were indicated as not interesting, interactive, had no memorable experiences, courses had no strengths and no variety of training methods, and 3
— none of the above.

Over 28 questions, participants indicated there were not always happy with current training practices experienced in their workplaces. For these participants, workplace training could be deficient in autonomy and self-direction, social interaction, and limited opportunities for participants to contribute from life experience and display their knowledge. There was also an expression of low active participation and interaction with limited opportunities to develop skills and confidence. These survey findings will be discussed in the context of the overall research purpose in the next chapter.

Chapter Six:

Introduction

This final chapter will encompass a summary of the survey findings of this research project. To comprehensively cover the research undertaken this chapter will also reiterate why this research was started, how it was complete, and its initial purpose. Methodological aspects of the research will be referenced, and findings summarized in a holistic logical fashion to provide a clear overall picture of the research findings. Additionally, further research will be suggested to enhance what has been discovered in this research. It is also important for the reader to know that this research is important to me personally as an OH&S and Training professional as well as an individual who sincerely cares about people's safety in the workplace. I have to date invested 45 years of work in OH&S and Training which is why this research is so important. This research was conducted in a South Korean shipyard so the findings and lessons learned will be relevant to shipyards in that part of the world, with some recommendations applicable to training adults in OH&S in several high and medium-risk workplaces.

Research findings, recommendations, suggestions, and warnings in this chapter should be a chance for improving OH&S in the workplace. If recommendations from this research are headed there is every chance that OH&S standards in the workplace could improve through better training. However, if the OH&S training status quo remains then as this research has clearly shown OH&S standards could remain static or even worsen over time. Any OH&S system aims to always reduce the number of injured workers with the target of Zero Hard. To come anywhere near achieving this target every lesson learned must be applied diligently including lessons concerning OH&S training.

Purpose of This Research:

I have worked in OH&S and training for over 45 years (as of 27th January 2020) and in a variety of heavy industries, around Australia and the world. Unfortunately in this time, I have seen my share of injures and fatalities. I together with several safety teams have over the years worked hard to deliver the best possible OH&S systems and training. Delivering the best

OH&S system and training is no mean feat the field of OH&S is vast with OH&S training as the major component therefore the major contributor to improving safety in the workplace. My vast experience has given me a solid overall picture of OH&S in the workplace, its pitfalls, its problem areas, and the foundations that make a good safety system. This is how I first identified OH&S training as a critical aspect of a good OH&S system and decided to research the subject.

Coming close to the end of my working life I was determined to leave OH&S and the industries I worked in for so many years with more than just my toile and efforts. I envisage that I will retire after 50 years of OH&S work in 2025. I knew but could not prove at the start of this research that if the training of adults could be improved it would positively contribute to improving OH&S in the workplace reducing the number of injuries. I embarked on this research to prove that the research findings from this project would support, what I already knew to be true regarding the training of adults and what I have been practicing for years. If we can teach/train adults in OH&S subjects to the best possible standard they would take those skills and knowledge back to the workplace, implement them enabling a better system to deal with workplace hazards and risk improving the overall safety of the workplace.

Methodological Perspective of Constructivism

Constructivism looks at reality as an aspect of human intelligence that interacts with real-world experience. Accepting constructivism is acknowledging that reality is a construct of the human mind that makes reality subjective. The other aspect that I like about constructivism is the philosophical approach which is associated with pragmatism because of its practical approach to theories, beliefs, and relativism the doctrine that truth and morality exist. I have always leaned towards the constructivism approach because it is grounded in what we see and do in life day today and that is why it was chosen as the main methodological approach to this research.

The constructivism philosophy was also important as opposed to something like positivism. Positivism argues that knowledge can only be generated scientifically for example in a laboratory, but constructivism opposes the idea that there is only one method of generating ideas. I liked the freedom that constructivism philosophy presented me with to be able to think

and move outside the constraints of strictly scientific research and explore what people see and perceive around them in the real world.

Constructivism methodology also accommodated all aspects I needed in my research. Catering to my pre-determined approach to proving my hypnosis with closed-ended questions and the use of numeric data by observing than measures information numerically. The constructivism approach also covered several parameters that I valued and would never do without in any research. This included an unbiased approach, relates variables in questions or hypotheses, tests theories or explanations, and uses standards of validity and reliability. There are more attributes to the constructivism methodology, but the rest is a bonus.

To close off this section it is important to know that constructivism is the main teaching philosophy. The beauty of constructivism is that it is based on the idea of student understanding is formed through and via reflection of their personal life experience relating new knowledge to what knowledge they already possessed.

Logical Summary of Findings

In chapter five the findings of the research questionnaire were spelled out. To make sure nothing was lost from the survey results each question was explained and a conclusion Summarised. For ease of understanding, every question also had a table and a graph of the results. The survey questions were dissected and fully explored to provide in no uncertain terms the results and how they impacted the research hypotheses. The survey questionnaire encompassed 28 questions directly related to the research hypotheses and 13 demographic questions which will not be discussed further in this chapter. As for the 28 core survey questions they will be discussed logically and most importantly in a holistic fashion to give the reader a better overall picture of the results. The approach will be to look at the four questions developed to prove this research's hypotheses and link them to the results of the 28 survey questions.

The first question developed to test this research's hypotheses was: Are pedagogical principles used in the planning and delivery of OH&S training courses for adult learners in the industry? Questionnaire survey questions 1 to 22, 26, 27, and 28 (25 questions all up)

contributed to answering this question. The answers from the participants were loud and clear that the courses they have attended did not use most pedagogical principles. It was not all bad news there was a sprinkling of hope with some courses successfully catering for adults but nowhere near enough. The answers from these 25 questions showed that there were many dissatisfied adult learners, and this was highlighted by the comments left by the survey participants in question 28 where they were encouraged to leave general comments. The mood and dissatisfaction of adults attending OH&S training are epitomised by this comment "A lot of refresher training courses are repetitive and act as a tick in the box only. I don't believe they add much value to a person's development". A clear indication that adults are not happy with the current training practices. Results from these 25 questions showed that 89% of adults had issues and complaints about the OH&S training they receive.

The second Question asked to support the hypotheses was: How have these principles corresponded to best practice for training adult learners in industry? All 28 survey questions contributed to answering this. The results received have a clear message and that is little best practices for training adults in industry is used while training adults. From the answers received certain conclusions are apparent for example the answers from the 28-question asked highlighted that there is limited class participation, endless PowerPoint slides, training is rushed and boring and I avoid OH&S training whenever I can. From the 28 questions asked 86% of adults were not satisfied or happy with the OH&s training provided.

The third research question seeking calcification was: What techniques are used to deliver OH&S training courses to adult learners in industry? All 28-survey questions helped to answer this question with a clear message from the participants. The most feasible conclusion that can be drawn is little if any consideration is given to the requirements of adult learners. Also, hard to miss the fact that training is seen by trainers and the Korean Shipyard as nothing more than a chore that simply needs to be done. The answers also indicated very strongly that adult learner's level of competence at the end of the course was a minor consideration. The main intent of the course seemed to be expediency and getting the workers back to work as soon as possible. It would be very unfair to say that every course and every trainer fit into this category the results showed that some courses and trainers took the time to deliver an effective course and catered for their adult learners. The problem is these trainers are very much the

the exception to the rule. 91% of adults had issues with OH&S training and the way it is currently delivered.

The fourth and last question that required to be answered was: What are industry adult learner's perceptions of OH&S training courses? To say that the overwhelming reply was negative and that OH&S courses are boring would be accurate. From the replies to questions 23 – 25 and 28 several issues made the training boring including but not limited to poor organisation, no class contribution, the class conducted too slow or too fast, too many slides, and no class participation or teamwork tasks. Some of the comments in question 28 made it very clear stating that adults' learners did not look forward to OH&S training they dreaded it. 87% of adult learners agreed that the OH&S courses they attend add no value and are boring.

The logical summary of the survey results in this chapter is simplistic but there is no denying the message. Make no mistake to conduct a good training course for adults is hard work and required a lot of effort making training sessions very draining. However, if training is conducted like our sample population is telling us with little regard for anything except expediency then this most certainly is an issue worth worrying about and needs our attention.

Research Purpose, Contribution, and Further Research Recommendations

My research and consequent findings were broadly in line with existing formal and historical research. My research findings are in harmony with pioneers and well-known researchers in adult education such as R. Houle, M. Knowles, D. Kolb, and, more recently, H. Gardner, whose contributions to adult learning were discussed earlier in the literate review chapter. In published research, the advantages of applying the principles of andragogy in active adult educational settings were reported to be consistently positive. For my research, I investigated and discussed the history of andragogy, and found using andragogy principles is the 'best' way to teach adults – maybe not the most efficient in terms of notions of industrial productivity, but certainly 'the best' in terms of educational effectiveness, engagement, the pleasure of learning and purpose. My findings are consistent with widely expressed professional views of trainers and training organisations in industry today, which is to invest more resources in training adults

in OH&S at work. However, the decision to allocate more resources to training is not in the hands of the trainers; rather, these decisions are in the hands of senior management teams who, as discussed previously, don't seem to see the true value in effectively training adults in OH&S.

My research findings and their relationship to work previously done in adult training has similarities. The interpretation of my research's four research questions for this project was examined to see if adults are currently trained in OH&S using andragogy in shipbuilding. My research questions were derived from work by Knowles (1973, 1984, 1989, 1996) in adult education as well as many articles and papers discussed in the literate review. These published works reveal that teaching adult is essentially an art as well as a science and that adults cannot be adequately taught in the same way as children. My findings have resonance with this stance and the survey results undoubtedly are saying that adults are ready to learn, but that the teaching must meet their life requirements and needs as adult learners.

My survey research and analysis have focused on OH&S training in shipbuilding and how industry training conforms or not to andragogy. The findings of my research are both restricted and limited. The restriction is the fact that only one shipyard in South Korea (30,000 employees) was surveyed from a choice of three large shipyards ranging in size from 30,000 to 80,000 employees, as well as over 2000 smaller shipyards located in the same industrial area. Another limitation lies with the type of work that was limited to only shipbuilding work. These sizable restrictions and limitations will make it difficult for me to make my recommendations relevant to all industries, which were my hopes initially but if I do, it could be generalising. My only argument to that would be adult learners around the world have more in common when it comes to learning than not, so what works in South Korea should work anywhere and, in any industry, (Mathisen S. R., 2018).

I deliberately and intentionally surveyed workers in the shipping industry in South Korea. Although my initial thoughts were to address all high-risk industries for my research - which was naive on my behalf - the shipbuilding industry is a high-risk industry (Nugroho, Manfaat, Dinariyana, & Basuki, 2014). My findings could be applied to all industries, and to the process globally of inquiring into and learning lessons from accidents (Jens & Froge, 2019).

In this research, project problems arose because of the language and working circumstances of the South Korean shipyard research site. The most serious of these was the translation of the survey questionnaire from English to Korean. The translation was checked in detail, and the wording was precise, but some of the South Korean ship workers who participated in this survey were from China who could read Korean. This might have confused when reading some of the questions, but all survey questions were explained in both Korean and Chinese to participants. This anomaly was confined to the ship painting department women workers who made up under 1% of the surveyed population. A second problem was the interpretation of the written responses for question 28, a question related to the participant's general comments about the research. The comments made by the participants did not seem to make sense. These replies were verbally corrected by the Korean interpreter so that I could understand the intent of the reply, but no wording was changed when the results of the survey were presented in English. The third problem concerned trainers who explained the research questionnaire to candidates in training courses to encourage their participation. In the main, the people explaining the research were treated well by the course participants, but a small number of adult learners took out their frustrations on the trainers. The trainers explained to me later that this sort of negative feedback is common in these OH&S courses because of the frustrations of the adult learners who are forced to attend these bland and boring courses weekly.

The survey questionnaire was initially designed for the mining industry in Australia, but I ended up undertaking research in a South Korean shipyard due to changes in employment. When the change was made from mining to shipbuilding, much work went into not only making sure the survey questionnaire was appropriate to the sample population but that the wording of the questions was in plain English to avoid confusion, ambiguity and to provide the intent of the questions. The second problem was the sample population; it was initially envisaged that I would survey Australian mine workers. South Korean shipbuilding workers have little in common with Australian miners, but the health and safety risks in shipbuilding are like the risks faced by Australian miners. As an example, high-risk work in mining is working in a confined space, working at height, crane operations, welding, and grinding, and the interaction between people and large equipment (Western Australian Government, 2018-2019). The same can be said for the main shipyard hazards (MI News Network, 2017).

My study has contributed to the research problem of training adults in OH&S in shipbuilding. Research in this area is relatively unexplored. This absence of previously published research, in English, is what is novel about this study. Also, my study has provided some direction for further research. My contribution confirms that adult learners are not trained as expertly as they could be; i.e., the principles of andragogy are not extensively applied in training adults in OH&S. Heavy industry companies and corporations expend a lot of money on training, and on meeting training requirements. However, it appears that little effort is spent on explicitly tailoring that training to better suit the working adult learner. This may result in the adults not fully retaining the OH&S information, skills, and concepts explored and disseminated in the training courses. My research indicates that training adults in the South Korean shipyard are, at the time of the research, carried out to a standard that is not conducive to improving OH&S standards in the workplace. The number of accidents and fatalities still occurring in this large, South Korean shipyard suggests that OH&S training programs are not achieving the desired outcome of a safer workplace. The safety returns are not there for the dollars spent, and for the time adults are removed from their work to attend these courses. There is no argument from my reading of the research literature that well-conducted adult training using andragogy is of great value to employees and industry, but the key is in the delivery of these training courses. Most concerning is the adult learner's perception of training in shipbuilding today, who tend to 'avoid training' because it is seen to be of little to no value, at times tedious and a waste of time (Funnell, 2017).

Going through the experience of this research project has been a great learning awakening for me. I have, because of this study, gained so much more understanding of how and why adults learn and what keeps them motivated to come back and learn some more. Indeed, the research process is complex and dynamic that keeps on evolving as the study grows and concludes. For example, I have learned that not everything can be explained like culture and behavior, which makes research frustrating at times. My study provided me with key ideas that added value to my work in shipbuilding, and as a trainer and health and safety manager for large organizations. This study has encouraged me to keep on exploring the field of adult training and education now that better understand the mammoth impact that effective adult training can have on OH&S in the workplace. I am now more confident in mentoring colleagues and peers to help them better understand and deliver adult training. As for further research recommendations, this study barely scratched the surface of adult training there is so much more

work that can be done. In particular, I found that a lot of work has been done in educating adults and the best way to approach this, but little has been done around training adults in OH&S in the workplace especially in high-risk industries like mining, construction, and shipbuilding.

Recommendations

Research recommendations can be beneficial to any business or organizations that conduct OH&S training for adults. However, these recommendations are mainly intended to improve the way South Korean shipyards deliver OH&S training courses to adult learners. Based on the findings of this research, practical and specific solutions have been provided that will immediately add value to OH&S training; in other words, solutions that can be applied tomorrow. Each recommendation is detailed and supported by this study's findings.

This research was designed to answer four questions regarding the use of andragogy principles when training adults in OH&S in one shipbuilding yard in South Korea. The first recommendation is to encourage further research on training adults in OH&S in other high-risk industries like mining and construction. These recommendations would also strongly recommend this type of research for medium-risk workplaces for example factories, freight delivery services, and railway operations. Shipbuilding in South Korea is such a large sector encompassing 200,000 employees in three large shipyards with an additional 2000 shipyards in the country. This researcher's minute contribution is a fair start but a lot more research needs to be done in this industry. Continual Research in how adults are trained in OH&S is vital to work and should never stop. Improving the way adults learn and use OH&S in the workplace reduces the risk of injury and death. There seem to be opinions in the workplace that injures and even fatalities at work are an acceptable risk and even unavoidable and that they are impossible to prevent. There is a simple formula to apply to this belief and that is if you believe that something is impossible then yes, it is, and you will never solve the problem. However, if you believe that something even as huge as preventing fatalities in the workplace is possible then you will strive, toile, test and adjust, push, work, innovate to make sure it happens.

The second recommendation is that further investigations be undertaken of adult learning culture in the workplace and how that can be improved. Changing the learning culture will move the adult learners closer to a point where they are ready to listen and learn. There is

no point trying to teach adults who are not ready to receive and cognitively process the necessary OH&S training delivered. The current culture, as observed in this research, can be one of nonchalance. When adult learners hold the view that OH&S training courses are 'boring' and 'a waste' of their time and that 'they do not learn a lot', and their skillset 'only improves a little', this indicates a lack of training engagement. Not only have many adult learners surveyed in this research indicated that the OH&S courses are annoying, but they also hinted that, if possible, they avoid them at all costs which is tragic. Change this current culture of training perception will take time but will be worth the effort.

Published research on andragogy principles indicates that trainers can start winning back adult learners by using andragogy which directly influences adult learners. The first impression is always important; the training room needs to be set up correctly for workshops, breakout pods cabaret-style seating is recommended (Rose, 2016). More importantly, when people can identify with the material and relate it to their own life, they become more receptive to learning.

Implementing andragogy through synergies. Changes to training practices in an industry as large as shipbuilding will prove to be a drain on resources but will be worth it in economic and health and safety terms overall (Swartz & Bonini , 2014). To ensuring cost-effective as well as benefits to the organization's OH&S training, changes need to be made to implement the andragogy for OH&S training in the South Korean shipyard. The way forward is to form Synergy with other shipyards, which will distribute the cost of implementing andragogy. Synergy is the cooperation of two or more organisations, to produce a combined effect greater than the sum of their separate effects. With synergy, the work only needs to be done once and then shared by all the subscribing companies (Kaplan & Norton, 2006). Synergy is recommended for improving new systems and to increase productivity, revenue, customer satisfaction, competitive edge, and market share while reducing costs (Cent, 2016).

In a synergy, the work that needs to be done to improve a business or take a business to the next stage only needs to be done once and then shared. The main benefits of synergy to the shipyards are cost and revenue. Costs with synergy are where savings are achieved by cost savings to the business as a result of external growth. Whereas revenue in synergy is where

additional revenue is generated through external growth. Cost synergies between two or more shipyards when they combine their efforts is significant. These cost savings might include the elimination of duplicating functions, for example, convert a training course to simulate andragogy. Also, getting better deals from suppliers and sharing assets. Potential revenue synergies can produce increased profits. They are achieved by reducing accidents in the workplace (Mewes, 2015).

Closing Comments

I have worked in heavy industry for 45 years as of the 27th of January 2020. In that time, I worked in construction, oil, and gas both on and offshore, mining in open cut, underground, and shipbuilding. In all these industries, training was part of my position description. I have trained in my time adults in industry from Qatar in the Middle East to West Africa, where the workforce literacy was 20% or less. The main reason for undertaking this research project was my fear that poor workplace OH&S training would have a negative result in the workplace. This resulting in a drop in OH&S standards in effect injuring more people at work. For me, this is a professional and personal quest to do what I can to try and improve OH&S in the workplace. I owe this research to the industries that I have worked in for 45 years and I wanted to leave at least something that might outlast my working life and positively contribute to helping people get home safe to their loved ones. On personal bases, I have a lot of friends and family that work in these industries and I was compelled to do what I can contribute what I can to make their working life safer.

Appendix A: The Art and Science of Helping Adults Learn Survey Questions: 28 Training Questions & 13 Demographics questions

Survey questions 27th April 2016 translated into Korean.

Survey questions:

1. Think about the last training courses you attended in the workplace. Did this course include opportunities for you to experience autonomous learning and self-direction? Tick all that apply.

   Take responsibility for your learning Set
   your own learning goals
   Choose preferred learning strategies
   Monitor your progress
   Have some say on how the class activities are presented
   Comment on how the class is organized
   Contribute to how the material could be presented
   None of the above

2. Think about all the courses you have attended in your working life in the workplace. How representative were the course's use of autonomous learning and self-direction? Tick one.

   The representative of 0% (none) of the course I have attended
   Representative of 25% (a quarter) of all the courses I have attended
   Representative of 50% (half) of all the course I have attended
   Representative of 75% (three-quarters) of all the course I have attended
   Representative of 100% (all) the course I have attended

3. In an ideal training course, how would you alter the amount of autonomous learning and self-direction provided? Tick all that apply.

   Increase responsibility for your learning
   Increase your own learning goals
   Increase the choice of preferred learning
   strategies Increase monitor your progress
   Increase your say on how the class material is presented
   Increase comment on how the class is organized Increase
   Contribute to how the material to be presented

Make no changes to the training courses

4. Think about the last training course you attended in the workplace. Did this course include opportunities for social interaction? Were you provided with opportunities to participate? Tick all that apply.

Group introductions

Student free time

Individual introductions

Games such as Ice Breakers to get to know your

peers' Informal group lunches

Group activities to build group cohesion

None of the above

5. Think about all the courses you have attended in your working life in the workplace. How representative was the course's use of social interaction? Tick one.

The representative of 0% (none) of the course I have attended

Representative of 25% (a quarter) of all the courses I have attended

Representative of 50% (half) of all the course I have attended

Representative of 75% (three-quarters) of all the course I have attended

Representative of 100% (all) the course I have attended

6. In an ideal training course, how would you alter the amount and type of social interaction? Tick all that apply.

Group introductions

Social media to interaction

Student free time

Individual introductions

Games such as Ice Breakers to get to know your

peers' Informal group lunches

Group activities to build group cohesion

Make no changes to the training courses

7. Think about the last training course you attended in the workplace. Did this course include opportunities for exploration of relevant concepts, thoughts, and your ideas?This means you were provided with opportunities to. Tick all that apply.

Express your ideas to the class

Express your concepts to the class

Express your thoughts to the class

Openly discuss your ideas with the class

Openly discuss your concepts with the class

Openly discuss your thoughts with the class

Explore ideas, concepts, and thoughts with the class

None of the above

8. Think about all the courses you have attended in your working life in the workplace. How representative was your most recent course's provision for discussion around relevant concepts, thoughts, and ideas? Tick one.

The representative of 0% (none) of the course I have attended

Representative of 25% (a quarter) of all the courses I have attended

Representative of 50% (half) of all the course I have attended

Representative of 75% (three-quarters) of all the course I have attended

Representative of 100% (all) the course I have attended

9. In an ideal training course, how would you alter the number of opportunities for discussions around relevant concepts, thoughts, and your ideas provided in the course? Tick all that apply.

Express your ideas to the class

Groups or workshop to explore concepts, ideas, and thoughts

Work through ideas, concepts, and thoughts in detail in the class

Express your concepts to the class

Openly discuss your ideas with the class

Openly discuss your concepts with the class

Openly discuss your thoughts with the class

Explore ideas and concepts with the class

Make no changes to the training courses

10. Think about the last training course you attended in the workplace. Did this course include opportunities for you to contribute from your life experiences and knowledge? Tick all that apply.

Discuss your life experience related to the topic of discussion

Discuss your knowledge related to the topic of discussion

Contribute to the class from your experiences

Contribute to the class from your knowledge

Relate your life experiences and knowledge to add value to the class

None of the above

11. Think about all the courses you have attended in your working life in the workplace. How representative was your most recent course's use of contributions from your life experience and knowledge? Tick one.

The representative of 0% (none) of the course I have attended

Representative of 25% (a quarter) of all the courses I have attended

Representative of 50% (half) of all the course I have attended

Representative of 75% (three-quarters) of all the course I have attended

Representative of 100% (all) the course I have attended

12. In an ideal training course, how would you alter the amount of life experience and knowledge you contribute to the training. Tick all that apply.

Discuss your life experience related to the course topic

Discuss your prior knowledge related to the course topic

Contribute to the class from your experiences

Contribute to the class using your prior knowledge

Talk about relevant life experiences that your peers might learn from

Make no changes to the training courses

13. Think about the last training course you attended in the workplace. Did this course include opportunities for you to experience active participation? Tick all that apply.

Roleplay

Solve problems in groups

Competition –based group activities

Competition-based individual activities

Compete and an individual against others in your class

Workshop (meeting at which a group of people engages in discussion and activity on a particular subject or project)

None of the above

14. Think about all the courses you have attended in your working life in the workplace. How representative was your most recent course's use of active participation? Tick one.

    The representative of 0% (none) of the course I have attended

    Representative of 25% (a quarter) of all the courses I have attended

    Representative of 50% (half) of all the course I have attended

    The representative of 75% (three-quarters) of all the course I have

    attended Representative of 100% (all) the course I have attended

15. In an ideal training course, how would you alter the amount and type of active participation provided? Tick all that apply.

    Roleplay

    Solve problems in groups

    Competition –based group activities

    Competition-based individual activities

    Compete and an individual against others in your class

    Workshop (meeting at which a group of people engages in discussion and activity on a particular subject or project).

    Make no changes to the training courses

16. Think about the last training courses you attended in the workplace. What was your perception of the course? Tick all that apply.

    The course was boring

    I was not inspired to learn

    It was hard to stay awake

    There was little to no participation by attendees

    Too many slides

    Little to no discussion

    None of the above

17. Think about all the courses you have attended in your working life in the workplace. How representative were the courses when it came to be interesting and interactive? Tick one.

    The representative of 0% (none) of the course I have attended

    Representative of 25% (a quarter) of all the courses I have attended

The representative of 50% (half) of all the course I have attended

Representative of 75% (three-quarters) of all the course I have attended

Representative of 100% (all) the course I have attended

18. In an ideal training course, how would you alter the amount of activates in presentations to make the course more interesting and interactive? Tick all that apply.

    More participation by attendees

    Decrease the number of slides

    Increase discussion

    Increase learning activates

    Increase workshops

    Make no changes to the training courses

19. Think about the last training courses you attended in the workplace. Did it allow you to develop your skills and confidence? Skill development means developing yourself to be able to add value to the workplace and for your career development & confidence is about being certain of your abilities. Tick all that apply.

    Very satisfied with the level of skill developed

    Dissatisfied with the level of skill developed

    Very dissatisfied with the level of skill developed

    Nil skill developed

    Unsure

20. Think about all the courses you have attended in your working life in the workplace. How representative was the course's when it came to developing your skills and confidence. Tick one.

    The representative of 0% (none) of the course I have attended

    Representative of 25% (a quarter) of all the courses I have attended

    Representative of 50% (half) of all the course I have attended

    Representative of 75% (three-quarters) of all the course I have attended

    Representative of 100% (all) the course I have attended

21. In an ideal training course, how would you alter the amount of activates to developing your skills and confidence? Tick all that apply.

    Opportunities to practice my skills and increase my confidence

    Present my skills in the training session for constructive feedback

    Opportunity to work in groups to develop better skills and more confidence

    Workshop skills to identify shortfalls in skills and confidence

    Push me out of my comfort zone

    Make no changes to the training courses

22. Think about all the courses you have attended in your working life in the workplace. What were your favorite experiences? Tick all that apply.

    I enjoyed the trainer's use of humor

    I enjoyed the opportunity to present and improve my presentation skills

    I enjoyed the trainer's use of film clips and images to illustrate their points

    Course booklets training materials are important to help with home study

    The trainer revised material in an interesting and competitive way

    I was able to actively participate throughout the training session

    None of the above

23. Think about all the courses you have attended in your working life in the workplace. What were the strengths of these training courses? Tick all that apply.

    The training session was well organized

    Trainer pace of the course was suited to the class

    Everyone was encouraged to contribute

    There was a feeling of ease

    The training session was delivered d in a relaxed

    fashion None of the above

24. Think about all the courses you have attended in your working life in the workplace. What were the weaknesses of these training courses? Tick all that apply.

    The training session was poorly organized

    Trainer raced through the material

    No encouragement to contribute

    There was no feeling of ease

Training session delivered at a pace that was not suited to the class

None of the above

25. Think about all the training courses you have attended in your working life in the workplace. How varied were the training methods used? Tick all that apply.

Training courses had the same format

Training courses used a lot of slides

Training courses provided limited handouts without additional information

Training courses encourage or drove participants to lead a dissuasion or argument?

None of the above

26. Think about all the courses you have attended in your working life in the workplace. Was there respect between the trainer and you? Select all that apply.

Did the trainer use learner's first names?

Did the trainer listen to the learner's

comments?

Did the trainer show respect to the learner's

contributions None of the above

27. Think about all the courses you have attended in your working life in the workplace. How approachable were your trainers? Tick all that apply.

Very satisfied with the opportunities to approach the trainer

Dissatisfied with the opportunities to approach the trainer

Very dissatisfied with the opportunities to approach thetrainer

There was no opportunity to approach the trainer

Unsure

None of the above

28. If you have any other comments about this survey, please provide them here

Demographic data:

1. Are you male or female?

Male ☐ Female ☐

2. What is your age?

a. 18 – 25
b. 26 - 30
c. 31 - 35
d. 36 – 40
e. 41 – 45
f. 46 – 50
g. 51 – 55
h. 56 – 60
i. 61 – 65
j. Over 66

3. In what country do you currently reside? .....
4. In what country do you usually reside? .....
5. What is your nationality?.....
6. What is the highest level of school you have completed? ……...
7. What was the primary language spoken in your childhood at home? _____
8. What is the primary language spoken at your current workplace? _____
9. What industry do you work in? _____
10. What industry have you worked in for most of your life?
    _____
11. What is your occupation? _____
12. How many workplace training courses would you estimate that you have attended across your working life?
    a. 0-5 courses
    b. 6-10 courses
    c. 11-15 courses

d. 16-20 courses

e. 21-25 courses

f. 26-30 courses

g. 31-35 courses

h. 36-40 courses

i. 41-45 courses

j. 46-50 courses

k. Over 50 courses

13. Which of the following categories best describes your employment status?

a. Employed, working part-time

Employed working full time

b. Employed working casually

c. Employed as a contractor

d. Self-employed

e. Not employed, looking for work

f. Not employed, NOT looking for work

g. Retired

h. Disabled, not able to work

Appendix B: List of Courses Presented by Frederick Guirguis from 2011 to 2019

List of courses I conducted between the years of 2010- 2019 with attendance of 100 adults or more.

Formal course title	Course accreditation	Intellectual property	URL	Comments
1. Cert. IV in WOOH&S. 2011 - current	Australian National Accreditation (ANA)	Parasol Emergency Training (PET)	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
2. Cert. IV TAE Trainer Assessor. 2011 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
3. Enter and work in a Confined Space. 2012 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
4. Supervise work in a confined space. 2012 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
5. Working at height. 2013 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol

Formal course title	Course accreditation	Intellectual property	URL	Comments
6. Drug and Alcohol testing accreditation. 2013 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
7. Follow safe manual handling practices. 2014 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
8. Certificate III in Mine Emergency Response and Rescue. 2014-current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
9. Certificate III in Mine Emergency Response and Rescue. 2015 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
10. Demonstrate first attack firefighting equipment. 2015 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
11. Issue work permits. 2016 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol

Formal course title	Course accreditation	Intellectual property	URL	Comments
12. Undertake helicopter safety and escape. 2016 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
13. Prevent injury. 2016 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
14. Identify, prevent, and report potential workplace emergencies. 2017 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
15. Ensure workplace emergency prevention procedures, systems, and processes are implemented. 2017 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
16. Respond to workplace emergencies. 2017 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol

Formal course title	Course accreditation	Intellectual property	URL	Comments
17. Hazchem training. 2018 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
18. Cert. IV in WOOH&S. 2018 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
19. WOOH&S Diploma. 2018 - current	ANA	PET	http://www.parasol.edu.au/?gclid=COLw1K-bkM8CFQsjvQod4ekG7A	I am an accredited trainer with Parasol
20. NGC Safe 2018	No formal accreditation	Peabody Energy Australia	N/A	Course developed and presented by F. Guirguis
21. BGT OOH&S E Annual Workshop The dangers of mobile phone use. 2018	No formal accreditation	Braemar Engineering	N/A	Course developed and presented by F. Guirguis
22. Root Cause accident investigation course. 2018	No formal accreditation	Braemar Engineering	N/A	Course developed and presented by F. Guirguis

Formal course title	Course accreditation	Intellectual property	URL	Comments
23. Countdown to disaster – Piper Alpha workshop. 2019	No formal accreditation	Braemar Engineering	N/A	Course developed and presented by F. Guirguis
24. Risk management course. 2019	No formal accreditation	Braemar Engineering	N/A	Course developed and presented by F. Guirguis
25. OOH&S E Induction course for newcomers and contractors. 2019 - 2016	No formal accreditation	Braemar Engineering	N/A	Course developed and presented by F. Guirguis
26. Job safety analysis course. 2019 - current	No formal accreditation	F. Guirguis	N/A	Course developed and presented by F. Guirguis
27. Defensive driving. 2019	No formal accreditation	Qatargas	N/A	Course developed and presented by F. Guirguis
28. Incident and Injury-free for Ras Laffan Loading Facility (RALF) project. 2019	No formal accreditation	Qatargas	N/A	Course developed and presented by F. Guirguis

29. Incident and Injury-free. 2019	No formal accreditation	Qatargas	N/A	Course developed and presented by F. Guirguis

Formal course title	Course accreditation	Intellectual property	URL	Comments
30. Fire warden's course. 2019	No formal accreditation	Hidden Valley joint venture	N/A	Course developed and presented by F. Guirguis

Note: The above table includes only significant courses. Upon request, copies of these courses can be supplied. Omitted from this table are minor courses such as Lunch and Learn sessions, workshops, and site-specific courses that are the intellectual property of employers.

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