Deep learning during the South African National Defence Force's Joint Senior Command and Staff Programme

by

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Supervisor: Prof J.M. Wassermann

DECEMBER 2020

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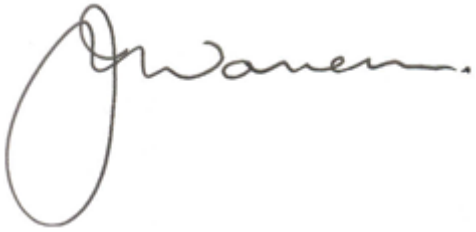

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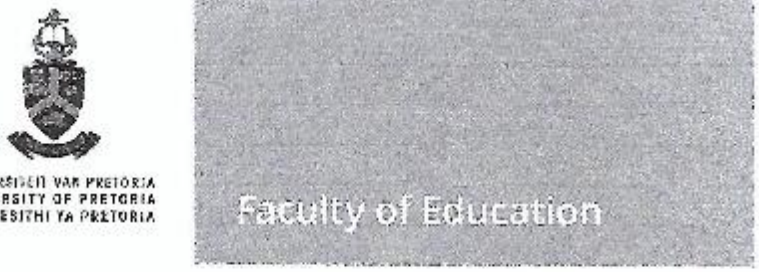

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Dedication

I dedicate this research to the staff members of the South African National War College for their commitment to excellent education and training on the Joint Senior Command and Staff Programme.

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To have achieved this milestone in my life, I would like to express my sincere gratitude to the following people:

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Abstract

Since 2002 the Joint Senior Command and Staff Programme was annually presented at the South African National War College (SANWC) in Pretoria. This qualification was from 2008 to 2018 accredited with the Safety and Security Seta (SASSETA) as an NQF level 7 diploma in Defence Studies. In 2019 the qualification migrated to the Council on Higher Education as an NQF level 8, postgraduate diploma in Defence Studies. The aim of the qualification is to enable graduates to function as commanders and staff officers on the operational level of war (the planning and conduct of major operations and campaigns) to be utilised within the African battle space. It is also an entry requirement for the highest National Defence Force qualification, the Security and Defence Study Programme, presented at the South African National Defence College in Thaba Tshwane. This programme is accredited on NQF level 9, a master's degree in Defence Studies. The credibility of the academic subject disciplines presented on the programme is an important facet of education and the development of problem-solving skills. Deep learning also develops a critical mindset in students with the approach that the educator's knowledge is but an expression of current scientific research results, something that can change. The main research question is, to what extent did deep learning take place in the academic subjects on the programme of 2018? Secondly, why did the learning process during 2018 take place the way that it did? The third question is, what can be done to improve the level of deep learning as it stands to reason that it will contribute to the credibility of the qualification in a postgraduate dispensation? The research focused on the phases of the learning process, curriculum design, facilitation and assessment of selected subjects and educational quality assurance. The research findings were that the curriculum design only partially complied with the tenets of deep learning and the adherence to deep learning during the facilitation, and assessment processes were incidental. In accordance with the third research question, it is recommended that the learning process can be improved if some aspects of the programme are redesigned.

Key terms

South African National Defence Force – South African National War College – Joint Senior Command and Staff Programme – Joint Warfare – Military History

List of abbreviations

AU	African Union
CAPS	Curriculum and Assessment Policy Statements
CHE	Council on Higher Education
CPP	Campaign Planning Process
DOD	Department of Defence
IMPP	International Military Planning Process
JSCSP	Joint Senior Command and Staff Programme
LTM	Long-Term Memory
MCC	Military Command Council
NATO	North Atlantic Treaty Organisation
OBE	Outcomes-based Education
OOTW	Operations other than War
MOOTW	Military operations other than War
SANDF	South African National Defence Force
SANWC	South African National War College
SASSETA	Safety and Security Sector Education and Training Authority
SMMP	Strategic Military Management Programme
STEM	Science, Technology, Engineering and Mathematics
STM	Short-Term Memory
SRD	Syndicate Group Discussions
SWAPO	South West Africa People's Organisation
UDL	Universal Design for Learning
UN	United Nations
USA	United States of America

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CHAPTER 1
THE EDUCATION OF SENIOR OFFICERS IN MILITARY STAFF PROGRAMMES

1.1 Introduction

This thesis focuses on the education of senior officers in the armed forces during senior command and staff courses, now called programmes. In synchronisation with global tendencies, from 2001 the SANDF redesigned the educational approach of senior command education and training including a larger academic component in the curriculum. The objective was to prepare the student to solve work-based problems and improve the quality of the academic component of the programme. In this thesis, there will be an investigation into the possibility that adjusting the academic programme to the theory of deep learning will promote this objective.

The credibility of the academic subject disciplines presented on the staff programmes is an important facet of education and the development of problem-solving skills. The assumption is that adherence to the theory of deep learning will align this process with the international trend in university education, which is focused on developing the insight of students and research skills. Deep learning also develops a critical mindset in students with the approach that the educator's knowledge is but an expression of current scientific research results, something that can change. Such students focus on what authors of academic text are getting at in their arguments, facts that relate to the argument and relating it to personal experience. This contrasts with the traditional approach of rote learning with its main focus on the memorisation of facts to be regurgitated in closed-book tests and examinations based on universal truths as presented by the educator (Entwistle, 2009:34).

This chapter will focus on the background and context of the role of academic education in staff programmes as experienced in some countries and specifically in the SANDF. It will also explain what the student is prepared for in this education, in terms of operational deployment, the day-to-day management of military organisations and the next level in the education process after the completion of the staff programme. It will also clarify the difference and relationship between training, which is related to the development of skills,

and education, which focuses more on the development of insight. This is followed by the context of the study, the presentation of the Joint Senior Command and Staff Programme (JSCSP) at the South African National War College (SANWC) with specific reference to the programme of 2018.

The rationale for the study is also explained, as this demonstrates why I am in a good position in terms of experience and current activities to conduct this study. The next step is to explain the focus of the study, which is the application of a learning theory – deep learning – on the academic education in the programme. Thereafter, the research purpose and research questions are addressed.

1.2 Background and context

Military organisations are extensions of society and are thus influenced by social revolutions. The different phases of what is collectively known as the Industrial Revolution each had a different impact on educational systems. In the so-called First Industrial Revolution within the time span of 1760–1850, economic activities changed from small family – based industries to people moving to cities and working in factories, where power was generated by coal, cotton production led to manufacturing of large amount of clothes and iron production to the building of railways. Produce could thus be moved faster between growing cities, where the concentration of people created markets for clothes. Primary education became compulsory for the whole nation and the education system focused on training people for different trades (Olivier, 2019:L246).

The Second Industrial Revolution was characterised by fast standardisation and industrialisation, starting in the late 19th century and culminating in the early 20th century. It was a period when advances in steel production, electricity and petroleum drastically changed society with inventions, such as the motor car, steel ships and aeroplanes. Assembly lines were the hallmark of machine-manufactured mass production of goods. School systems focused on the ability of the learner to eventually follow standardised procedures to keep up production standards (Olivier, 2019:L246).

The next stage of social revolution is known as the Third Industrial or Digital Revolution in which there was a shift from mechanical and analogue electronic technology to digital electronics during the latter half of the 20th century. Digital computers and digital record-keeping spread around the world and computer-based, digitally programmed production

lines took mass manufacturing a step further by using robots instead of human workers. Humans performed maintenance and quality assurance tasks. The purpose of education was to produce students with standardised sets of skills so that they could work in standardised industrial or information occupations (Olivier, 2019:L275).

The Fourth Industrial Revolution is the one we are currently living in. In this revolution, the way we live and work is drastically changing. The revolution is not merely building on the previous one: the tempo of technological breakthroughs makes it difficult for the average person to keep up with new developments. Production, management and governing of countries are changing at a roller-coaster tempo. Most people are connected by mobile devices with rapidly growing storage capacity and processing power. Added to this, breakthroughs in fields such as artificial intelligence, robotics and nanotechnology make it impossible to predict the limits of social development (Schwab, 2017:vii-viii).

While educational systems are still based on teaching methods designed for the first three industrial revolutions, mass production of knowledge in the current revolution means that people entering the job market are required to be critical thinkers. In the contemporary work environment, we are nearing the situation where the challenges faced by managers and leaders change on an hourly basis (Olivier, 2019:L275). Against the background of these developments, military education had to adapt to the societal changes.

Until the 19th century, officers in the armed forces were co-opted in terms of specialist staff work to help a commander plan warfare, but this would not suffice any more. Warfare became more complex and commanders and staff officers who had to plan and conduct military campaigns needed specialist education and training in the process of the conduct of war, including more emphasis on academic subjects such as Military History. Staff officers also made a career out of specialist functions such as intelligence or logistics. This led to the development of the General Staff System in the armed forces during the 19th century, which strengthened the need for the establishment of staff colleges to play a larger role in the education and training of senior officers in Europe and later in the rest of the world (Van Creveld, 1985:51, 73). At senior level, these colleges are sometimes called war colleges in countries such as South Africa and the United States of America (USA).

What is clear from a study of international tendencies is that the above process led to a fusion of military training and academic studies. The two worlds would complement one another. According to Chilcoat (1999:59), a former commandant of the USA Army War College, professional military education as presented at the different war colleges is characterised by a unified, continuous and career-long or lifelong learning process. According to him, it is needs-based, accessible on demand and offered just in time, with the ideal being that it is fused with military operations and also addresses the civilian and military components of conflict.

After its founding in 1903, the USA Army War College developed military leaders who commanded the massive American forces involved in the two world wars, 1914–1918 and 1939–1945, respectively. The study of Military History and the use of wargames during the 1920s and 1930s enabled the USA Navy to use wargaming at the Naval War College to prepare for a future war against Japan. Everything was not predicted with absolute accuracy, but the wargames enabled the Americans to optimally deploy their maritime resources, contributing substantially to their victory in the Pacific theatre of operations in 1945. Winston Churchill, British Prime Minister 1940–1945, remarked that the Second World War in this theatre was won based on the thought processes generated at the war colleges in the inter-war years (Chilcoat, 1999:59).

The success of Operation Desert Storm 1991 – the United Nations' liberation of Kuwait from Iraq's occupation – is seen as further proof of the success of the war college system as Generals J. Yeosock and C.A. Horner, the land and air component commanders respectively, were fellow students in the class of 1976 at the National War College as well as General Colin Powell the then Chairman of the Joint Chiefs of Staff. Chilcoat pointed to the fact that the American system of professional military education is a model for the rest of the world and that officials at the United Nations (UN) and the North Atlantic Treaty Organisation (NATO) praised the ability of American military leaders to find creative solutions to conflict situations (Chilcoat, 1999:59-60).

The changing nature of conflict, however, made the future even more unpredictable, such as the testing of nuclear devices by India and Pakistan in 1995 and the developing of asymmetric military threats against the American homeland. Another factor was the compression of conflict time. In 1994 military leaders had seven days to develop a contingency plan, while by 1999 the time came down to two hours. To Chilcoat's mind,

by 1999 it was already clear that war college graduates must be more empowered to think critically and creatively and take decisive action when conditions were ambiguous and uncertain. Proof of this was the different types of conflicts that erupted in places like Somalia 1992–1993, Rwanda 1993-1994, Bosnia 1995 and Kosovo 1998, that demanded fresh thinking and the development of different strategic concepts, as these were wars within states rather than between states. A report of the Chairman of the Joint Chiefs of Staff stipulated that war college graduates must have a strong sense of joint, interagency, non-governmental and multinational operations. The modern officer is part warrior, diplomat, humanitarian relief worker and law enforcement official. This could only be achieved through a new vision in professional military education, exploiting network-centric teaching systems to share knowledge through distance learning and promoting a career-long study approach (Chilcoat, 1999:60-62).

In 2001 Newland (2001:34) also pointed to the disappearance of the bipolar world of the Cold War era dominated by the USA and the Soviet Union and the return of a multipolar system with the addition of other power centres such as China, India and Brazil. According to him American war colleges expanded their curriculums to encompass topics such as the revolution in military affairs and armed forces transformation, focusing on future developments. According to him, at the USA Army War College the possibilities of change and the impact of this on doctrine are constantly being tested.

The Canadian armed forces also adopted the above-mentioned approach. The process in that country was described as a tug of war between military traditions and approaches to warfare (the ambit of training) and the need to adapt to a changed world with more emphasis on education (Foot, 2006:13-14). Even junior officers were going to find themselves working in remote settings, in an alliance context, dealing with delicate political, ethnic, religious and social conditions. Courage, tradition, procedures and discipline would still be relevant but only sensible and mature judgement could save them from making serious errors. Military training was still needed to master military skills, but staff colleges would focus on the process of education of senior officers, which could only be achieved by installing a habit of permanent learning in their graduates (Foot, 2006:19). The introduction of this new approach, however, took long and only got going when the minister of national defence in 1997 intervened to obtain greater emphasis on education. By 2002 the focus on staff programmes was to get senior officers to think

critically, not just on warfighting, but also the role of military power at the strategic, governmental and international level (Kennedy & Neilson, 2002: L3842).

In 2016 there was again a re-evaluation regarding new pedagogical trends in military education in Canada (Scoppio & Covell, 2016:139-140). The main impact was that the coming of the internet brought, which brought forth a new technological challenge – the danger that with online learning, military education could develop into just another variation of face-to-face learning in the traditional sense, with the main focus on lecturing. Technology had to be adapted to the reality that the new trend in education was to see learning not as a single event but as an ongoing activity that should encompass a person's whole military career, in other words, lifelong learning. Technology had to adapt to a system where officers made more use of group work and assisted each other in the learning process. However, the role of lifelong learning in promoting critical thinking, creativity and the ability to solve work-based problems would not change. This would constantly demand of military leaders a new vision of learning and the allocation of resources to enable new technology to adhere to the above-named pedagogical guidelines.

In other countries, the importance of focusing more on military education and less on training was also emphasised. At the National Defence University of the Malaysian Federation, it was pointed out that Samuel Huntington had already in 1963 stressed the importance of placing more focus on education as military officers in the era of rapid technological innovation needed to be highly educated and well trained (Mohameda, Nasira, Ab & Rahmana, 2018:1). This trend of thinking even found fertile ground in the armed forces of Bulgaria. It was propagated to all military training and, by implication, education and training should be redesigned to be team-centred and learner-oriented (Berchev & Stefanov, 2019:1461).

Currently in South Africa, a staff programme in terms of content can be compared to a master's degree in Business Management (MBA) or master's degree in Business Leadership (MBL), but whereas these qualifications focus mainly on general leadership and business management issues, the staff programme's focus is on the management of warfare and military leadership, although a management component is included. This observation is based on my experience in business world and the military domain.

The focus on military education originates in a framework based on the assumption that modern military professionalism is rooted in a need for training to develop military skills, education to understand and develop the military body of knowledge and experience for the application of skills and knowledge. It is also based on the identification of four knowledge clusters that need to be the focus of officer education, namely the external security environment within which armed forces operate, the nature of armed forces as organisations, the professional employment of armed force(s), and the physical environment within which armed forces operate (Esterhuyse, 2007:i).

Military education at staff programme level is the dissemination of knowledge through formal or informal study in order to explain the basic concepts of operational art as a theory about the planning of military campaigns and major operations, to foster an appreciation of its technique and practice and to promote informed discussion on related subjects. Training entails practising central activities and conducting exercises designed to improve performance of recognised tasks that must accompany education as the means of conserving and improving the skills necessary to conduct sound military operations in a theatre context. Both are necessary to build the experience that leaders will rely on in future conflicts. They are interdependent, interactive and of equal importance. For example, insight into the nature of war and solving military problems would be in the realm of education, but at the same time the officers must be, for example, practised in headquarters' procedures which is in the ambit of training (Newell & Krause, 1994:173).

The education and training of senior officers in the armed forces are thus experiencing a transformation on a global scale, as well as closer liaison between different armed forces in terms of military doctrine and education of personnel. The reason for this is, in all probability, because of the more complicated security environment and closer cooperation between different countries within the framework of the UN and regional organisations such as the African Union (AU) (Williams, 2008:8). This is mainly due to the fact that since the end of the Cold War in 1991, conflict has become even more intricate, strengthening the trend in conflict management towards a closer integration of military activities with the political, economic and social processes. Thus, the current and future character of conflict dictates a redesign of the academic and military components of staff programmes to ensure that senior officers can cope in a constantly changing work environment (United Kingdom Ministry of Defence Publication, 2013:1).

In spite of the idealistic notion that there should be a balance between education and training, for a variety of reasons military institutions are comfortable with and have a natural preference for training. Military training focuses on the provision of skills – teaching the officer 'what to think' and not 'how to think'. Education, on the other hand, aims at developing a mental flexibility to look beyond the horizon, to anticipate and to shape the future (Esterhuyse, 2007:3).

There is also a tension between the military world with its focus on a disciplined regimental ethos and the academic world focusing on the need for freedom of thought. This is especially acute at institutions that have to address the training and educational needs of military organisations, particularly military academies and defence colleges. Training focuses on the need for disciplined skills to operate in a dangerous environment and discourages independent thought and critical inquiry. The emphasis is on obedience, loyalty, pervasive doctrine, regulations, and operating procedures that breeds orthodoxy and drives out any need for original thought. Education aims to develop critical, creative and broad-gauged visionaries with the intellect to dissect the status quo, grasp the bigger picture, discern important relationships among events, generate imaginative possibilities for action, and operate with comfort in the conceptual realm (Esterhuyse, 2007:3).

Another source of tension between military training and education is that military leaders must be true professionals in the profession of arms, but being in service of the government, they must be good bureaucrats. Military education has to prepare officers in the management of violence, but they must also be able to manage the organisation. Therefore, military management forms part of the curriculums of staff programmes although the focus is more on issues such as strategy, security and military affairs (Esterhuyse, 2007:3–4).

The above-mentioned has a direct impact on the attitude of senior officers to academic studies on staff programmes. There is even the claim that some of them arrive at the war colleges with preconceived attitudes of being anti-academic. These officers will do the minimum in terms of academic performance and will always fall back on drills and doctrine with which they are familiar. The challenge is to convince them that to be educated they must read more and ideally become writers of military ideas to balance out the fact that most of the writers on military affairs are civilian academics (Foster, 1996:1).

1.3 Developments in South Africa

In South Africa, senior command and staff education and training was introduced in 1920 at institutions such as the then Military School, from 1924 at the Military College, and from 1968 at service colleges. They were located at what was initially called Roberts Heights, then Voortrekkerhoogte and currently Thaba Tshwane. The education and training were conducted as part of officers' development until 2001 with the main focus on single service staff training.

Military education and training had to adapt to the fact that the nature of military operations changed from the focus on conventional warfare in the world wars and counter-insurgency such as the operations against the South West Africa People's Organisation (SWAPO) in the border war in Namibia in the period 1960–1989, with the emphasis mainly on military training with a small academic component, mainly Military History (Alexander, 1995:2).

Since 1994, the end of the apartheid era, the new National Defence Force – the amalgamation of the old South African Defence Force (SADF), the Bantustan armies and the so-called non-statuary forces such as Umkhonto we Sizwe (MK) – had to play a new role. The focus was now more on peacekeeping operations and the role of the military in crisis situations, such as the current Covid-19 pandemic, where the academic component had to expand beyond Military History, demanding the inclusion of other related academic subjects in the curriculum and more time being allocated to its facilitation. Project Team Profusion was tasked in 2000 to design and develop a new senior staff programme as part of the transformation of higher education for senior officers in the SANDF. This had to replace the existing courses presented at the service colleges, Army, Air Force, Navy and Medical and Health Services, with a joint programme to be presented in a new training institution (SANDF, 2000:1).

In 2001 the SANWC was established, based on the recommendations of the project team. The result of the project was the current JSCSP, based on a Military Command Council (MCC)-approved curriculum. Although the curriculum was adapted to fit into unit standards to be accredited with the Safety and Security Sector Education and Training Authority (SASSETA) in 2007, it was already in line with international trends where the focus had shifted from training to education, with the study of military art and science as the link between the military and academic worlds (Esterhuyse, 2007:73). The issue was

then, to what extent did the above-named developments in the SANDF adhere to international trends in terms of the academic education on the JSCSP?

1.4 Formulating the research problem

Formulating a research problem entails the identification of a real-life problem and translating it into a research problem. In order to describe and clarify this and other aspects of the logic of research, I used the structure of the Three Worlds framework developed by Mouton. In this framework, World 1 is the world of everyday life and lay knowledge – the ordinary social and physical reality that we exist in (Mouton, 2001:137). In this thesis, it will be a certain facet of the workplace at the SANWC, specifically the presentation of the JSCSP. The social reality facing the SANWC is, what is the level of readiness of the institution and its qualification to adhere to the guidelines of the Council of Higher Education (CHE) with specific reference to the presentation of a postgraduate diploma (the qualification evaluated in this study) that became a postgraduate diploma during 2019?

The next question in Mouton's framework is the world of science and scientific research with specific reference to finding an appropriate theory that can address the identified research problem. The already mentioned international trend in terms of the education of senior officers in the armed forces globally can provide a guideline to a tertiary institution such as the SANWC in terms of curriculum development and application. Therefore, in this study, the focus will be on what the SANWC can do to promote deep learning, an educational approach whose end state focuses on preparing students by conducting tertiary studies to solve work-based problems in which a strong emphasis is placed on educating and not just training senior officers in the armed forces.

Globally educators ask the question, what value do students get out of university studies early in the 21st century – a mass of theoretical knowledge, with little value afterwards in the workplace or an experience that leads to self-development, critical thinking and the ability to apply the learning experience in the workplace and everyday life (Entwistle, 2009:1–2)? Deep learning enables the student to master rigorous academic content through the application of higher-order skills, including critical thinking and creative problem-solving in the workplace. That creates the ability to respond effectively to new situations, providing individuals with expertise in a discipline subject area that goes

beyond the rote memorisation of facts. This is the profile that students must adhere to if a high level of deep learning is practised (Bellanca, 2015: L479).

Deep learning can contribute to the development of military commanders whose profiles adhere to being self-critical thinkers, who are better at figuring out the contradictions in the dynamics of evolving situations, who are more circumspect about their forecasting powers, more accurate in recalling mistakes and less prone to rationalising those mistakes. They are more likely to update their beliefs in a timely fashion, and thus better positioned to affect realistic probabilities in the next round of events (Gaddis, 2019:9), that is, if a military commander gets a second chance in war and is thus fortunate to be able to prevent the repetition of mistakes.

The trend towards deep learning is also demonstrated in a recent publication about teaching approaches in universities in the USA and Canada. It is claimed that strategies to promote student interactions and cognitively engage students with content lead to gains in learning and attitudinal outcomes for students in Science, Technology, Engineering and Mathematics (STEM) courses. An analysis of 2 000 classes in 550 faculties, 700 different courses and 25 different institutions was done by the University of Nebraska-Lincoln's researchers. It was found that 55 per cent of STEM classroom interactions consisted mostly of conventional lecturing, the least effective way of engaging students, while 27 per cent featured interactive lectures with students participating in some group activities or answering multiple-choice questions with handheld clickers. Just 18 per cent emphasised a student-centred approach that was heavy on group work and discussions. Several universities indicated that they would use these findings to encourage their lecturers to make a paradigm shift towards the student-centred approach (Stains, Harshman, Barker, Chasteen, Cole, DeChenne-Peters, Eagan, Esson, Knight & Laski, 2018:1468-1470).

The client needs of the South African Department of Defence (DOD) correlate in broad terms with the above idealistic exposition of the impact of deep learning in the eventual profile that graduates of the staff programme must adhere to. The *South African Defence Review* of 2014 stated that the Republic of South Africa's (RSA) military capability must be in line with the country's international status, strategic posture and leadership role on the African continent in order to promote peace and stability in Africa. Therefore, military

leaders participating in peace missions and other military operations on the continent must be critical thinkers and able to adapt to changing circumstances (SANDF, 2014:vii).

In the *Defence Review*, emphasis was placed on the development of personnel to add to individual competence in the workplace and by their contribution to the success of military operations. According to guidelines by the South African Minister of Defence, the education and training concept propagated is described as broad–liberal, that is, it focuses on higher order intellectual skills of analysis (dissecting and illumination of concepts), synthesis (combining concepts and generating new ones) and evaluation (establishing criteria and making judgements). Also, the development of personal attributes that apply to life in general and educational skills that can assist in the creation and development of military doctrine (Lawson, 1989:4 cited in SANDF, 2014:11-13).

The *Defence Review* of 2014 further states that the development of SANDF personnel is measured by the value that development initiatives have added to individual competence in the workplace and their contribution to the success of military operations. Education is perceived to be directed towards achieving the cognitive development of personnel to think independently. Thinking requires higher order intellectual skills. This is deemed to be vital if senior officers want to make a contribution to the development of military doctrine (SANDF, 2014:11-14).

The vision of the South African Minister of Defence was that the above-named broad–liberal education must be provided by societal higher education institutions with specific provision for the needs of the military world. In practical terms professional military education had to be provided by military institutions in conjunction with tertiary institutions of higher learning. This would be directed towards specific military–professional and occupational-specific knowledge. On balance there would still be an important component of military training involved, which constitutes the foundation of a military culture and is more of a closed process for the translation of doctrine into action (SANDF, 2014:11–14).

It seems that there is a correlation between international trends in university education and the need of the SANDF regarding the education of senior officers, with the emphasis on the student's ability to apply critical thinking and solve work-based problems.

In terms of the SANWC, the guidelines of the Ministry of Defence (SANDF, 2014:11-13) determined that the SANW on the JSCSP must adhere to three educational guidelines in preparation for deployment in the workplace:

a. Academic education and training that covers security studies, warfare studies at the joint and multinational operational level and corporate management, all at postgraduate level. In 2000 the SANDF identified the graduate profile as the ability to command and/or execute the duties of a staff officer at the operational level of war. The following elements were identified in this regard:

The development of insight into the strategic level of war in order to understand the context of strategic direction from this level. As the mandate stipulates a distinct overlap into the strategic level, the design of the programme must include education and training on this level.

Command, staff and analytical skills. It was specifically stated that the Campaign Planning Process (CPP) must be used for this.

A broadened professional understanding of single service capabilities – including a sound knowledge of the tactical level of war, joint and multinational operations; and defence management and the wider aspects of conflict.

b. The use of foreign learning opportunities where students and directing staff be provided the opportunity to study at foreign military institutions such as the British Staff College at Shrivenham or one of the USA War Colleges.

c. Course accreditation at honour's degree level. Until 2018 the South African qualification was on National Qualification Framework (NQF) Level 6 at the Quality Council for Trades and Occupations (QCTO) as quality assured by SASSETA, pending transformation to a postgraduate diploma in Defence Studies under the CHE in 2019.

The SANWC is currently situated in the Old Boulevard Hotel in Struben Street, Pretoria. The study programme is over two years. During the first year there is a short contact session in which the students participate in an orientation course in computer skills and

English language proficiency to prepare them for the residential phase of the programme the next year. During the second year the programme is presented residentially at the SANWC. The level of education and training, as identified by Project Profusion in 2000 and later confirmed by the *Defence Review* of 2014, is on the operational level (planning and conducting military campaigns and major operations) with a distinctive overlap with the military strategic level (the use of military power within the framework of a national security strategy) (SANDF, 2001:1-2). It is in this work environment that the graduate must be able to apply critical thinking and adapt to changing circumstances, which will be explained in the next section.

According to the career development plan for officers, the last step in the process is the progression to the South African National Defence College. It stands to reason that the standard of the education at the SANWC must be at such a level that it provides a firm foundation for that which is expected from the student at the Defence College. The programme at this institution (Security and Defence Study Programme) provides an advanced strategic studies programme to prepare officers for supreme command and strategic-level staff work. The focus is on the formulation what is required to develop, maintain and implement a defence capability for South Africa with comprehension of security and strategic issues. Comprehension of the military and national strategic levels of war and the ability to conduct academic research constitute the most important competencies on this programme (SANDF, 2014:11-13; Conversation with Directing Staff in 2019).

The following flow diagram (Figure 1.1) describing the discussed process correlates to the concept explained by Esterhuyse (2007:68–101) as the education and training in the making of lieutenants, up to the level of functional training, the making of colonels, the services tactical training level (Junior Staff Duty courses) combined with the operational and overlap into the military strategic level (JSCSP). The last step is the making of generals on the strategic level (Security and Defence Study Programme at the Defence College).

It is important to understand the work environment for which the graduates of the JSCSP must be prepared as well as the foundation for the further education process at the Defence College, as it will be the foundation of all the arguments conducted in this study. It is also important to understand at what level foreign staff colleges conduct the

education process, in order to conduct appropriate comparisons. For example, in the education processes at the war colleges in the USA, the focus is on the military strategic level, whereas the South African JSCSP at the SANWC is on the operational level with a distinct overlap with the military strategic level.

The levels of war are identified by the scope and nature of military objectives to be accomplished. The lowest level is the tactical level where the actual fighting takes place, the operational level where campaigns are planned and managed, and the military strategic level where the role of military power is determined in the formulation of a national security strategy which is on the national strategic level (Vego, 2000:17-23).

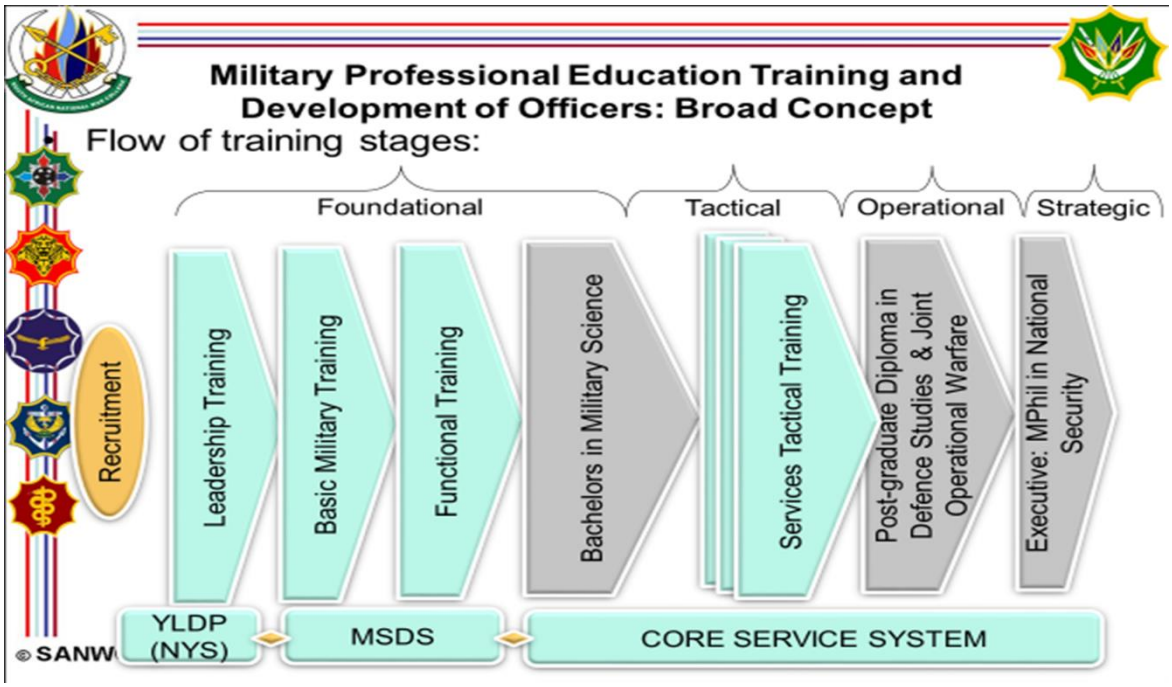

Figure 1.1: The pathway of learning for officers in the SANDF (Vermaak, 2010:1)

The core aspect of the academic studies on the JSCSP is the development of an operational strategy or operational art, the practical use of military power on the operational and military strategic levels of war. Also, as the level of the programme overlaps into the military strategic level or war, a basic comprehension with regard to the role of military power in the formulation of a national security strategy is also needed. Strategy is thus a process by which military force creates political effect (Jordan, Kiras, Lonsdale, Speller, Tuck & Walton, 2011:22).

Strategy is difficult, due to a number of factors, taken together, that produce substantial challenges to the practitioner. It is assumed that deep learning can contribute to alleviate this somewhat. The first factor is disharmony between the levels on which strategy is practised. An example is the German armed forces that excelled on the tactical and operational levels in two global conflicts, but the mistake at the strategic level in conducting war against too many enemies caused a serious mismatch between national strategic means and ends, eventually leading to defeat (Vego, 2000:4).

War is also multi-dimensional, consisting of the morale of the population, its physical nature, the impact of geography, statistical realities, the impact of technology, operational factors and logistic support to the armed forces. There is also the reality of interacting with an intelligent foe, which must never be underestimated. The nature of war is also such that it must be understood within its political, economic and social contexts. It is a very unpredictable process and its polymorphous character stands central in what senior officers have to cope with (Jordan, Kiras, Lonsdale, Speller, Tuck & Walton, 2011:25-30).

From 2015 to 2018, the Military Academy developed the details of the curriculum for the new programme. The JSCSP is now a registered programme with the CHE and SASSETA. On completion of the JSCSP the graduates will be awarded either a Postgraduate Diploma in Defence Studies (PGDDS) from Stellenbosch University or a National Diploma in Joint- or Multinational Operations from SASSETA. The latter qualification is to the benefit of those students without a pre-graduate qualification and will provide pre-entry to postgraduate studies at a chosen tertiary institution which the student can obtain after completion of the JSCSP. The aim is that most senior officers, when nominated to participate in the Security and Defence Study Programme at the South African National Defence College, will be able to also register for a master's degree in Philosophy in Defence Studies.

The academic component of the programme was altered with the addition of new subject disciplines in 2019 such as Project Management, Human Resource Management, Research Methodology, Geopolitics and Strategic Theory. These were most probably added to address the need to understand the military strategic level of war better. However, the evaluation of the education process with regard to the academic subjects of

2018 is still valuable as they still constitute a component of the current curriculum (Nombewu, 2018:3; SANDF, 2018,1-35).

In light of the above, the conceptual motivation for this study is the evaluation of the pre-course programme, including subjects such as language and computer training in the first year (2017) and in the second year (2018), specifically the use of warfare subjects, such as Security Studies, Law of Armed Conflict, Military History and Operational Art, Operations other than War (OOTW) (peacekeeping) and to what extent deep learning is practised. Subjects such as Corporate Management, that focuses on the day-to-day management of the SANDF will not be evaluated, for the focus is on those subjects that, to my mind, can form part of a postgraduate diploma. The Research and Development Section can use the research methodology to evaluate all the academic subjects as they are facilitated from 2019.

The academic studies led to the education and training in the SANDF CPP, the British Estimate Process and the UN's International Military Planning Process (IMPP) for peacekeeping operations. These are military problem-solving models based on inductive reasoning where the student conducts the planning of a military campaign based on a fictitious scenario. In these models, critical thinking is vital. The question is, Did the learning process in the identified subjects contribute to this? The quality of academic research in the identified subjects on the programme will also be investigated as it is vital in the preparation of the graduate for the next education level at the South African National Defence College.

In conclusion there is in the SANDF a correlation with a global trend in the education of senior officers in the armed forces to place more emphasis on education and, to a lesser extent, on training, a process in which I was personally involved for several years.

1.5 Rationale and motivation for the study

My personal motivation has its origins in my experience as a lecturer in Military History at the Military Academy (Faculty of Military Science of Stellenbosch University). I was frustrated by the tendency of colleagues to cling to an approach to teaching and assessment that focused on transferring factual knowledge that students had to memorise and regurgitate in tests and examinations. I was also frustrated by the fact that an approach to encourage students writing open-book tests and examinations to establish links

between military theories and historical facts was frowned upon, even when these students achieved higher marks when they studied at the main campus during their postgraduate studies.

Studying at the Faculty of Educational Sciences of the University of Pretoria in 2004, I came across a booklet in the library written in 1971 by professors Noel Entwistle and Hillary Tait of Edinburgh University on the promotion of learning on the higher cognitive levels of learning at university. Returning after a few days to study the booklet, the librarian explained that it, together with several other older books, were deemed outdated and destroyed. Research on the internet indicated that Entwistle (Duff, Boyle, Dunleavy & Ferguson, 2004:1907-1920) made it his lifelong quest to study and find solutions to the inability of university students to function at the higher cognitive levels of learning.

I served at the SANWC as the Head of Research and Development and the Resident Military Historian from 2005 till 2014 and was the project leader for the design of the new curriculum that would serve as the framework of the postgraduate diploma. My section was also responsible for the application of quality assurance of the education and training process on the JSCSP. I experimented with Entwistle's theory on deep learning to determine if the SANWC could improve the academic performances of the students.

Entwistle and Tait's 1995 model of learning approaches, the so-called Revised Approaches to Studying Inventory, was used to try and find solutions to the problem of higher order learning at the SANWC. This culminated in a scientific article in 2007, (Jacobs, 2007) and laid the foundation for this study. The article investigated only the inability of students on the JSCSP in the studying of Military History, but data from 2004 to 2007 was analysed. Certain factors had a direct influence on the learning process. The average age of 45 years implied that the students had ample experience to cope with the higher cognitive levels of learning, yet the workload of the programme was detrimental to their ability to cope with the stress of academic studies on a staff programme. The relatively small number of students with a background of university studies would also retard the process; the majority had a school background of studying in townships or Bantustan schools with an inferior quality of learning (Jacobs, 2007:44-56).

It seems that the origins of the inability to apply deep learning can be traced to the South African school system. The evidence over a number of years indicates that the South

African education system is one of the least productive in the Southern African region. The value of the matric qualification implies that tertiary institutions receive students without a foundation that can lead to deeper learning (Mbeki, 2011:99-100). Thus, educational institutions such as the SANWC will have to make plans within their own environments to enable the students to function on the higher cognitive level of learning.

The above-mentioned research experience motivated me to do more research on the problem, which culminated in a staff paper to the Commandant of the SANWC in 2011, re-analysing data collected by the Research and Development Section since 2004. The measurement instrument was the quality of academic essays written on the programme. The following were the main findings:

- In terms of academic qualifications, the fast majority of students had only Grade 12 and lower qualifications, although since 2009 more students had post-school certificates, diplomas and degrees.
- On average, 15 per cent of the students had on average a 19-year gap between their Junior Staff course and the JSCSP and the majority between 10 and 19 years. Considering that most of the students only on the JSCSP again are confronted with theoretical studies on war and warfare, this group, representing the worse-case scenario, demonstrates why the majority of students struggled to master academic studies on the programme.
- Language proficiency did not paint a better picture as on average only 6 indicated that they were English speaking, implying that the vast majority had to study in a second, third and even fourth language.
- Lack of technical skills such as computer proficiency
- The inability to manage time

The following recommendations were made based on the 2007 article and the staff paper:

- The need for assessment centres to determine beforehand the potential of the student to cope with the academic studies on the programme.
- The student group's average age must be 35 years as was recommended during the original design of the programme.
- Within the framework of the career path for officers, they must be encouraged to conduct academic studies or bridging training to prepare them for the programme.

- Career path planners must ensure that members are nominated for the JSCSP no longer than ten years after completing their Junior Command and Staff Courses.
- Specialised education and training in language proficiency is vital such as the bridging courses developed by the University of South Africa's English Department (Jacobs, 2011:1-11).

The above-named research was valuable when in 2013 the Research and Development Section with me as the project leader, was appointed to investigate the redesigning of the JSCSP with the aim of converting the qualification into a postgraduate diploma. By the end of 2014, upon my retirement, I submitted an alignment report (Jacobs, 2014:1-60) to the Director of Education, Training and Development of the DOD. The following aspects were investigated with the aim of providing a framework for the redesign and redevelopment of the qualification:

- The need analysis of the DOD in terms of staff programme ETD
- Identifying and determining the role of an academic partner
- Shortcomings in the education process, especially the inability of students to function on the higher cognitive levels of learning in the academic subjects
- The balance between functional training and academic education
- A comparison with the following foreign staff programme curriculums:
    - The Indian Command and Staff College at Wellington
    - The United Kingdom Defence Academy
    - The United States of America Army War College at Carlisle, Pennsylvania and the Army Command and General Staff College at Fort Leavenworth, Kansas
    - The Ethiopian Staff College, Addis Ababa
    - The Kenyan Staff College, Nairobi
    - The Zambian Staff College, Lusaka
    - The Canadian Staff College at Kingston, Toronto
- The 19 criteria of the South African CHE for the structure of ETD institutions and curriculum design and educational quality assurance
- The most appropriate methods to help achieve the learning outcomes in terms of pre-course training, facilitation methods, assessment practices, education and

training quality assurance and resources needed. This included the exit level outcomes of each subject on the programme.

- The graduate profile at the end of the programme
- The structure of learning material
- The overall design of the programme
- Financial and logistic requirements

I am currently still employed on a part-time basis as a member of the Reserve Force to assist in the process of transformation to a new academic dispensation, and the successful migration of the qualification to a postgraduate diploma is important to me from a professional point of view. As this process no longer influences my career per se, the process will not entail that I become too personally involved in the activity. With this background, I embarked on this PhD study. All the above-mentioned cannot be part of this study, therefore a certain facet of the programme will be investigated. Some of the findings and recommendations were implemented from 2015 to 2018, but it will be worthwhile to research the development of the teaching of the academic component of the programme as it was utilised in 2018.

This thesis provides an evaluation of the level of academic teaching on the JSCSP. I will identify the existing barriers to learning with which students arrive on the programme and how it influences their approach to their studies. It also investigates how these problems can be overcome. The next step is to determine to what extent the education process promotes or retards deep learning, looking at the curriculum design, facilitation, assessment, and quality assurance practices on the programme.

The Research and Development Section at the SANWC can use the result of this research project to adjust the research methodology to the new curriculum and through a process of Action Research evaluate programmes since 2019. This can form part of the quality assurance process on the programme. The SANDF and organisations such as the AU and the UN will be provided with senior officers that are intellectually better prepared for operational deployment. Graduates will also be better prepared for the final phase of their education when they are nominated to participate in the Security and Defence Study Programme at the South African National Defence College.

1.6 The focus of the study

The focus of this study is on the state of the use of deep learning on the programme in terms of the extent to which the named academic subjects adhered to deep learning on the JSCSP of 2018. It entails to what extent deep learning is prescribed in the curriculum and to what extent it is practised during facilitation, assessment and quality assurance. The next question is, how is the extent of deep learning determined? Perhaps it can be answered in the negative. Students do not engage in high-level cognitive processes, such as reasoning about ideas and solving complex problems (Bellanca, 2015: L262). If they did, this approach would enable students to understand the nature of war, a prerequisite for making sound decisions in utilising the three named problem-solving models. The reason for this is that the clients – the SANDF, the AU and the UN respectively, – deem these models to be the norm in determining the ability of the individual to solve military problems.

The challenge is to determine if the utilisation of the deep learning approach in the study of the warfare subjects can contribute towards reaching the ideal of students properly utilising the named military problem-solving models, and thus contribute to work-related problem-based learning. My personal experience is that in a military environment this is not always achieved as other factors such as a preference for structured thinking sometimes impedes the learning process. One example is the quest of students to focus mainly on short-term practical solutions without an appreciation of the complexity of war as a social phenomenon. Thus, deeper academic understanding is vital in the solving of real work-based problems.

The approach in the facilitation and the design of assessment instruments is also based on Hermann's theory of whole brain learning in order to guide the student to understand the complexity of planning and managing military campaigns (De Boer, Du Toit & Bothma, 2015:3-4). It also measures certain tenets of historical studies such as how to use the historical comparative method linking a past event with a contemporary problem and a hermeneutist analysis that understanding that people's actions are related to their past experiences.

Moderating practical assessments in military planning on the JSCSP also demonstrated to me how the majority of students tended to follow the guidelines of the said problem-solving models, but that their proposed solutions demonstrated a lack of insight into the

nature of the problem of the fictitious war scenario they had to analyse. This is also confirmed by research in the USA Army War College (Johnson-Freese, 2013:90) and the United Kingdom and German staff programmes (Jordan, Kiras, Lonsdale, Speller, Tuck & Walton, 2011:119) where students also tend to devise oversimplified, short-term solutions to complex problems.

In the above-named research, the problem is identified in a similar manner, but not as a lack of the application of the theory of deep learning. The doyen of this theory, Entwistle, based his research mainly on pre-graduate students at civilian universities (Entwistle, 2009). In 2016, Thamrini, Land and Rattray (Land, Meyer & Flanagan, 2016:77-91) wrote about the use of deep learning in military education, but focused primarily on basic and officer formative training, whereas this study will focus on a staff programme. In the literature study (Chapter 2) the extent of writing on the application of deep learning on staff programmes globally, will be analysed.

1.7 Research purpose

The purpose of this research is to determine to what extent the learning process in the pre-course subjects (such as language training and computer skills) and the warfare subjects on the JSCSP contribute to the ability of students to apply critical thinking in solving work-based problems (the ultimate aim of deep learning) and to determine measures to improve this. The above is measured by determining the state of the use of deep learning on the academic component of the programme. This will be in terms of the extent to which the named academic subjects, with specific reference to the programme of 2018, adhere to deep learning and contribute to the ability of the student to understand the nature of war in order to utilise the three named problem-solving models.

The problem if only a small number of students adhere to deep learning entails more than just focusing on teaching methods, but also to understand what approaches enable the student to adapt to a learning strategy that will lead to critical and independent thinking and experiences that contribute to the solving of work-based problems. Thus, the problem is conceptual in that it must be determined to what extent the said programme adhere to the theoretical guidelines for deep learning. At the same time, it is also empirical as solutions must be found to elevate the learning process to a level where deep learning is part of the learning culture at the SANWC.

To adhere to the special intellectual demands of a doctoral degree, this study intends to extend the forefront of the discipline of education through original research. This is the first time that the role of deep learning in academic studies in a military staff programme in South Africa will be investigated and especially as the programme migrated from a pre-graduate to a postgraduate diploma in 2019. The situation at the JSCSP will be compared with the above-named findings at other staff colleges, but the main focus will be on the unique situation at the SANWC. By this I strive to demonstrate my ability to conceptualise as a strategic necessity in a doctoral study (Meyer, 2008:273-274) providing the SANWC with the opportunity to align the programme with international trends in military education and addressing similar problems in other staff programmes. The issue of a measurement instrument to determine the level of deep learning will be discussed under the theoretical framework.

The whole learning process will be investigated. Even if the curriculum does not explicitly prescribe deep learning, is it not implied? Furthermore, do the facilitation, assessment and quality assurance approaches of the programme adhere to the guidelines of the theory of deep learning? The students' experience of the process is part of the information that will determine the level of deep learning, but, in the end, the aim is to improve the qualification to assist in the migration to a new educational dispensation. The last issue is the ability of students to conduct research. In deep learning, there is a stronger emphasis on student research and it is the needed foundation for the graduate to prepare him/her for the Security and Defence Study Programme at the South African National Defence College and the possibility to participate in a master's degree on that level. In this regard, the standard of the academic essays will also be investigated.

1.8 Research question

The main question is:

a. To what extent does deep learning take place in the education of senior officers on the JSCSP at the SANWC with specific reference to the subjects in warfare studies?

b. Why does the learning process take place in its present manner?

c. What can be done to improve the level of deep learning on the programme?

1.9 Research design

The theoretical underpinnings of this thesis are based on an approach to understanding people, their motivations, and their actions within the context that they are studied. Thus, the design of the research manifests itself in the following manner:

- The paradigm within which the research is conducted is interpretivism. This is the belief that people are different from substances and cannot be studied in the same way as objects in natural science. Humans change constantly and are permanently being influenced by the learning environment (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:27-28).
- The research approach is within a qualitative framework. Relating to the research problem, qualitative research design is one of exploring and understanding the meaning that individuals or groups ascribe to a social or human problem, in this case the extent that deep learning is utilised on the JSCSP. Also, as a form of inquiry, it honours an inductive reasoning style, individual meaning and the importance of reporting the complexity of the situation, and at the same time makes provision for a deductive approach in theory utilisation (Creswell & Creswell, 2017:4-5).
- The setting of the research is a study of the JSCSP of 2018, the last year before the postgraduate diploma was introduced in 2019. The aim is to determine what can be retained from the old dispensation to adjust to a postgraduate system.

1.10 Research methodology

Methodology is concerned with how to find out about a phenomenon; the approach to be used; the principles which support it and the justification for using the kind of research approach; the type of study to be conducted; and how the research is undertaken. Methods concern instrumentation: how data are collected and analysed, whilst methodology justifies the methods used (Cohen, 2018:186).

Within the above design, the research methodology involves examining a bounded case study with a specific problem in which the researcher is involved. In this study, the approach of the research methods will be firstly to understand the extent to which deep

learning is utilised in the war studies subjects in the JSCSP in order to solve a practical problem. Also, to determine to what extent the transformation of the learning process in the said subjects align with the prerequisites of a postgraduate qualification. The assumption is that adherence to a deep learning approach will increase the credibility of the qualification on a postgraduate level. The crux is thus to determine to what extent deep learning is taking place in the warfare subjects and if it can be improved in order to better prepare the student to plan campaigns and participate in the formulation of a national security strategy.

The research methods entail an extensive documentary study in the archive of the SANWC such as the curriculum, facilitation and assessment plans, assessment instructions and the assessment products submitted by the students. Also, policy documents in terms of assessment, moderation and accreditation. The weekly programme spells out in detail the facilitation and assessment activities in each forty-minute period. This will be supplemented by studying a sample from the portfolios of learning, group and individual interviews and questionnaires completed by the students of their experience of the learning process. I also will make use of reflective learning by referring to my personal experiences as captured in a research journal.

Purposeful sampling was used by utilising 20 out of 120 students' portfolios of learning, 21 students of 120 that completed the questionnaire and interviews with two syndicates each with 12 students as well as key persons such as the Chief Instructor.

The approach towards analysis was to compare the learning process with the theory of deep learning and specifically within the framework of Entwistle's heuristic model to determine the extent of deep learning in the academic subjects and to what level this contributes to the development of critical and creative thinking.

The purposes for using a case study fits into the nature of the research problem in the following ways:

- The research can generate an understanding of an insight into a particular instance and its relation to its broader context, the path for learning of officers in the SANDF.

- It is a good example of using a case study to explore a general problem within a limited and focused setting. In this case, why some students struggle to apply deep learning.

- It can be used to generate theoretical insights through grounded theory or in developing and testing existing theory with reference to the case. The focus will be on using a theory, but also adding to the theory.

It can shed light on other similar cases, for example the influence of the Junior Staff Duties course which precedes the JSCSP or staff programmes in other countries and to what extent the student is prepared for the Security and Defence Study Programme, (Rule & John, 2011:7).

1.11 Overview of the study

The introduction to the study investigates the state of education of senior officers on staff programmes and the development in South Africa and why the theory of deep learning can contribute to an improvement of this process. In the table below the rest of the thesis is explained.

Table 1: Thesis structure

Chapter Highlights	Description of Chapters
Chapter 1: The education of senior officers in armed forces in staff programmes	A general background to the study
Chapter 2: Literature review – the theory of deep learning	An analysis of the literature on the evolution of the theory of deep learning
Chapter 3: Theoretical framework	An evaluation of Noel Entwistle heuristic model of deep learning
Chapter 4: Research design and methodology	A focus on the research within the paradigm of interpretivism, a design

	based on qualitative research and the research methodology of a case study
Chapter 5: Curriculum evaluation	An evaluation of the extent to which the curriculum adheres to the tenets of the theory of deep learning
Chapter 6: Evaluation of the processes of facilitation and assessment	Description: An evaluation of the extent to which the facilitation, assessment and quality assurance promote deep learning
Chapter 7: Concluding the study	Summary of the research findings

1.12 Conclusion

There is a need for the re-adjustment of Senior Command and Staff Programmes to align their academic tuition in order to promote critical thinking during operational deployment and to prepare them better for the last step in the pathway of learning of officers in the SANDF, participation in the Security and Defence Study Programme at the South African National Defence College. The theory of deep learning provides a theoretical framework that can address this need as it provides in a requirement of the clients in the real social world. These are the SANDF, the AU and the UN.

This is the first time that this theory will be applied to a specific case study, the JSCSP at the SANWC, and the research could in future be used to improve the education process. In the next chapter the evolution of the theory of deep learning will be evaluated.

CHAPTER 2
A LITERATURE REVIEW OF THE THEORY OF DEEP LEARNING AND ITS RELATION TO STAFF PROGRAMMES

2.1 Introduction

In Chapter 1, it was explained why the theory of deep learning fits the appropriate answer to Mouton's second tier of the Three World View, namely what theory would address the research problem. In this chapter, the evolution of ideas in the 20th century that culminated in the theory of deep learning will be analysed.

The literature review will be historical, as it will explain how the theory developed over time. It is combined with a theoretical review, which is a specialised review in which different concepts focused on deep learning will be compared on the basis of assumptions, logical consistency and scope of explanation (Neuman, 2014:127).

2.2 The origins of the theory of Deep Learning

Ramsden claimed as early as 1929 that there was an approach towards university studies that focused on imparting information imaginatively that had to transform knowledge using thoughts. According to A.N. Whitehead:

> Thoughts should not be a burden on memory, but the architect of our purposes. Imagination must not be separated from facts but illuminate it. This is done by eliciting the general principles which apply to the facts as they exist and must be accompanied by an intellectual survey of alternative possibilities which are consistent with those principles. (Ramsden, 2003:19).

To my mind, with these words Whitehead most probably laid the foundation for the theory of deep learning because a critical approach to a social problem eventually leads to the development of options, of which one should be chosen to solve problems.

Philosophers in the 20th century also examined thought processes that could solve work-based problems. In 1940 the French writer/philosopher André Maurois claimed that the thinking process in the human brain works according to a specific model. According to him the mind is a little interior world in which is reflected the huge exterior universe without limit of time or space. This model sees this reduced process as the creation of a

microcosm and the world that we live in and would like to understand and transform as a macrocosm (Maurois, 2007:101). But it is not a simple process.

> Let us say rather that the mind tries to take possession of all things and that the reflection of the world within us is distorted … But all memory, anticipation, and reasoning are at the mercy of as if our brains are a sea, disrupted by continuous waves as our ignorance, passions, errors and forgetfulness cause distortion, but everything continually undergoes changes that are new and strange. Thought is then an effort to guess or foresee, by combining symbols and images what our actions will produce in the world of reality. (Maurois, 2007:101-102)

He evaluated different methods of thinking to minimise the errors in trying to find solutions to problems in the real world such as the Cartesian method of elimination of errors in reasoning, experimentation, concept formulation and the use of hypotheses. His thinking coincides with ideas on the education of military officers as his solution is to find a road map for military commanders based on historical knowledge, personal experience and information received on a military problem that must be solved. There is no perfect recipe for success, and military leaders must act to get results. The microcosm then provides this road map for solutions in the macrocosm, the real world, if critical thinking is applied (Maurois, 2007:121-122).

The question, however, is, how do you educate students in military tertiary education to apply the ideas of Whitehead and Maurois?

In 1949 R.W. Tyler developed a model for curriculum development based on educational aims followed by specification of objectives. After teaching had taken place, educational measurement could be used to test if the objectives had been reached. If not, the instruction process had to be modified. The result was that educational phenomena became the behaviour of systems and educational problems could be seen as technical problems to be solved by educational technology such as teaching machines and also in the form of programmed instruction and packaged curricula. Consequently, pedagogy focused on so-called principles of education or a teaching method within a specific subject discipline. Also, that ‘knowledge’ is defined as justified true belief (Carr & Kemmis, 2003:14-15, 43).

Until the mid-1960s, one of the dominant theories of learning was based on this behaviourist belief that the role of the teacher was no more than shaping of correct responses by students through intermittent reinforcement (Entwistle, 2018:18-20). The alternative theory from behaviourism was constructivism which focused more on the student participating in the learning process, but the main focus was still the teacher/facilitator as the centre of all knowledge, transferring it from a curriculum in a linear pattern (Olivier, 2019:L627).

Student performance at university was seen as to be dependent on characteristics such as intelligence, personality and motivation. Intelligence being described as the ability to reason critically with the most popular tests those assessing general abilities. Later on, the focus shifted to the tendency to perform successfully in a task within a specific situation. Gradually it was broadened to include not just cognitive abilities, but also the conative and affective characteristics to create the propensity to be successful in academic work. The affective domain was described in terms of personality. Gradually research in the field shifted toward a greater emphasis on the influences of the social contexts within which people adjust their behaviour and when they alter their reactions to situations (Entwistle, 2018:20).

Until the 1970s, traditional models studying student approaches to learning still focused mainly on intelligence and motivation as the vital factors influencing the learning process but further research demonstrated the issue to be more complicated than that (Andreou, Andreou & Vlachos, 2005:23).

Knowles developed a theory on adult learning, claiming that pedagogy was not the suitable term to be used in tertiary education as it related to the art and science of teaching children. In his book, *The adult learner: A neglected species*, published in 1973, he coined a new concept, andragogy, in which he explained how it would serve as a better model for educating and teaching adults. To him adults want to know the purpose of their training and see themselves as responsible grown-ups that should be more self-directing in their education and training. Further, they have a wealth of experience for educators to use and they want to learn something to be used in everyday life, solve problems, and are internally motivated if a safe learning climate is created (Knowles, 1973:92-105).

At the same time, cognitive psychology developed as a reaction against the behaviourist tradition. This approach focused specifically on thinking processes and learning. The impact on the educational processes was that academic understanding was identified as a distinctive form of learning. Jerome Bruner and David Ausubel were among the most influential researchers that developed such theories. Bruner coined the phrase, the nature of complex learning. In 1968 Ausubel focused on previous knowledge and on the ways in which students organised that knowledge, developing a cognitive theory of meaningful verbal learning. He made a distinction between meaningful and rote learning, but also between discovery learning (learning for oneself) and reception learning (learning from the teacher). He recognised the importance of the organisation and structure of the category system through which incoming information was coded, as structure is hierarchical, with specific concepts being subsumed under more general ones and new information being assimilated within the existing cognitive structure. According to him, this is the most effective way of using information stored in the long-term memory of the brain. Novak and Gowin then developed the idea of concept mapping as a way of encouraging students to explore the connections between concepts used to describe a specific topic as part of the process of 'learning to learn' (Entwistle, 2018:21).

2.3 Theories on brain processing during learning

In the late 1960s, Hunter introduced the notion that teachers should use what science was learning about learning and modify the traditional classroom procedures and instructional techniques accordingly. A part of this process was to understand the different theories about how the human brain is structured and utilised during the learning process (Sousa, 2016:5).

According to Entwistle, Pask developed ideas that contributed significantly to the growth of research on student learning by concentrating on the thinking processes underlying the differing strategies students use in tackling their everyday academic tasks (Entwistle, 2001:4). This coincided with the research done by Entwistle who investigated the learning process in depth. According to him, the starting point of the whole learning process is attention (Entwistle, 2009:14). Attention is directed towards incoming sensory indicators which are initially recognised and then passed on to short-term memory (STM), where their meaning is interpreted by comparing it to previously stored information. This is related to classical habituation in which an association is made

between a previous stimulus that does not evoke a response and one that does (Mann, 2016:69) in the same way that early hominids survived by being able to recognise a potential threatening aspect of the milieu and reacting to it. In everyday life, attention is driven in a similar manner, but in university education it is the need to pass examinations that provokes and maintains attention in lectures or while studying. Until the 1970s, this was the main focus of educational research even though there was a vague idea that STM was linked to long-term memory (LTM) to unravel complex problems (Entwistle, 2009:14).

There were, however, individual researchers who developed models which tried to focus more on the combination of STM and LTM such as Tyler, Bloom and Carrol who stated that learning should progress logically from the simple to more complex levels. Bloom took this a step further and in 1978 he stated that he placed great emphasis on problem-solving, applications of principles, analytical skills and creativity, calling it higher psychological processes that should be accentuated to enable the student to relate his or her learning to the many difficulties met in everyday life. This formed the foundation of his taxonomy of learning demonstrating different cognitive skills within a hierarchy of activities (Maree & Fraser, 2008:9-11). The taxonomy, which was first developed in 1949, underwent several changes and by 2001 was structured in a way that further promoted an approach to deep learning in facilitation and the design of assessments (Krathwohl, 2002:214).

Herrmann's theory of whole brain learning as postulated in 1995 lent a new dimension to the learning process (De Boer, Du Toit, & Bothma, 2015:56). Herrmann focused his initial research on understanding how the creativity of the human brain was unleashed. He documented the fact that the human brain comprises four distinct learning modes and not only two hemispheres, where each of the modes has its own ways of processing information and functioning. Herrmann's research led to the development of a scientifically validated instrument that can quantify the degree of thinking preferences for specific modes within the whole brain. The Herrmann Brain Dominance Instrument is a questionnaire consisting of 120 profiles that provides scientifically validated items that quantify thinking preferences. The results of the questionnaire are a visual plot of the thinking preferences of the individual. However, it should be mentioned that the instrument does not measure competencies but thinking preferences.

When an individual displays a preference for a specific quadrant(s), an avoidance of another might be displayed. Such avoidances usually become present in assignments that one struggles with when not using part of one's preferred mode of thinking. Individuals – in our context, lecturers and students – with a preference for A-quadrant thinking struggle with vagueness, expressing emotions, imprecise concepts and ideas, and a lack of logic. Lecturers and students who prefer B-quadrant thinking typically struggle with taking risks, unclear concepts and instructions, and ambiguity. C-quadrant thinkers struggle with too much data and analysis, lack of interaction and time for relationships, while an individual with a preference for D-quadrant thinking struggles with autocratic excessive strictness, time management, lack of flexibility and too much detail (De Boer, Du Toit & Bothma, 2015:57–58). It stands to reason that the curriculum, and designs of facilitation, assessment and quality assurance must integrate the above-named elements in order to activate deeper thinking processes in the brain.

2.4 Models of information analysis processes in the brain

The above discussed theories are based on practical experimentation in educational practice. But what actually happens in the brain during the learning process?

Swaab, a Dutch neurosurgeon (2014:13-14), compared STM and LTM with the memory function of a computer. According to him, STM was similar to the working memory of a computer – called Random Access Memory (RAM) – in which information changes every second, depending on which tasks are performed and which programmes utilised. LTM was compared with the hard drive where information is permanently stored. The utilisation of STM and LTM was crucial. According to Entwistle (2009:14-15) information passed into the LTM is linked to relevant areas of knowledge and experience. To recall information accurately, it had to have been filed correctly, making sure it is related to similar prior memories, and linking it with associated experiences, images or patterns within episodic LTM. It seems to be similar to the storage of books in a library or information on a computer, but the difference was that people do not just store information, they keep it continuously under review to make networks or expand existing knowledge at the conscious and subconscious levels.

New technologies for looking inside and seeing the workings of the human brain has developed rapidly over the previous decade. These medical machineries and how they work is not part of this study, but from the point of view of education it is important to

briefly discuss what had been discovered by them and how it influences the learning process as it underwrites the findings of practising educationalists as discussed in the previous section.

This development gave birth to a new field of study known as educational neuroscience, which looks at how what we are learning about the human brain can affect the curricular, instructional and assessment decisions that educators make daily. According to one educational neuroscientist Caroline Leaf (2018:205), one has to comprehend the complexity of how the brain functions in the creating of remembrance and develop specific techniques in utilising it.

The starting point in understanding this process is to comprehend our thoughts in action. Humans experience events and react to it on a daily basis. Different reactions occur in the brain, but not everything is remembered. First, it is for the health of the brain so as not to overload it but information is also forgotten because memories are not built correctly, thus denying us access to important information. At the front of the brain are the frontal lobes and the part lying just behind the forehead is called the prefrontal cortex. These lobes deal with planning and thinking. It is the rational and executive control centre of the brain, monitoring higher-order thinking, directing problem-solving and regulating the excesses of the emotional system. It is also where personality and short-term memories are stored (Sousa, 2016:16).

Located near the base of the limbic area is the hippocampus. It plays a major role in consolidating learning and in converting information from working memory via electrical signals to the long-term storage regions. It constantly checks information relayed to working memory and compares it to stored experiences. This process is essential for the creation of meaning (Sousa, 2016:54).

Leaf (2018:209) used the same metaphor as Maurois when she claimed that every thought of the brain is a small replica of the universe. Thus, one can deduce that the brain's natural function is to consider a multitude of perspectives, which is vital in the development of critical thinking. Brain cells will convert STM into LTM if there is a deliberate and aimful thought process and stimulation over a period. Therefore, the building of LTM demands more time and work and the way to retain the LTM is to understand the meaning of what

is being studied. The deeper and more aimful one thinks to understand, to remember and apply information, the more the information will be stored as LTM (Leaf, 2018:215, 220).

Sousa (2016:101) developed a model that has been updated over the years so that it can be useful to the widest range of teacher educators and practitioners. It uses common objects to represent various stages in the process. Even this revised model does not pretend to include all the ways that researchers believe the human brain deals with information, thought and behaviour. It limits its scope to the major cerebral operations that deal with the collecting, evaluating, storing, and retrieving of information – the parts most useful to educators. The model starts with information from the environment and shows how the senses reject or accept it for further processing. It then explains the two temporary memories, how they operate, and the factors that determine if a learning is likely to be stored. Finally, it shows the inescapable impact that experiences and self-concept have on present and future learning.

The model is simple, but the processes are extraordinarily complex. Knowing how the human brain seems to process information and learn can help teachers plan lessons that students are more likely to understand and remember. The Information Processing Model represents a simplified explanation of how the brain deals with information from the environment. Information from the senses passes through the sensory register to immediate memory and then on to working memory for conscious processing. If the student attaches sense and meaning to the learning, it is likely to be stored (Sousa, 2016:102-104).

At first glance, the model may seem to perpetuate the traditional approach to teaching and learning – that students repeat newly learnt information in quizzes, tests and reports. On the contrary, new research is revealing that students are more likely to gain greater understanding of and derive greater pleasure from learning when allowed to transform the learning into creative thoughts and products. This model emphasises the power of transfer during learning and the importance of moving students through higher levels of complexity of thought (Sousa, 2016:107-108). After all, the true test of rigour in studies is for students to be able to look at material they have never seen before and eventually know what to do with it in the workplace. But, demonstrating a deeper understanding through planning, the use of evidence and abstract reasoning is more demanding than rote memorisation because related ideas must be connected within the content areas and they

must also be able to devise approaches to solving complex problems (Bellanca, 2010:L283).

Does this make sense? This question refers to whether the student can understand the item on the basis of past experiences. This has implications for teaching, especially with regard to deep learning. Now think of this process in the classroom. Every day, students listen to things that make sense but lack meaning. They may diligently follow the teacher's instructions to perform a task repeatedly, and may even get the correct answers, but if they have not found meaning after the learning episode, there is little likelihood of long-term storage. Teachers spend most of their planning time devising lessons so that students will understand the learning objective (that is, make sense of it). But to convince students' brains to persist with that objective, teachers need to be more mindful of helping them establish meaning. Helping students to make connections between subject areas by integrating the curriculum increases meaning and retention, especially when students recognise a future use for the new learning. The encoding process takes time and usually occurs during deep sleep (Sousa, 2016:125-126).

The total of all that is in our long-term storage areas forms the basis for our view of the world around us and how it works. This information helps us to make sense out of events, to understand the laws of nature, to recognise cause and effect, and to form decisions about abstract ideas. This total construct of how we see the world is called the cognitive belief system. In other words, one extraordinary quality of the human brain is its ability to combine individual items in many different ways (Sousa, 2016:128).

Memory allows individuals to draw on experience and use the power of prediction to decide how they will respond to future events. Learning is the process by which we acquire new knowledge and skills; memory is the process by which we retain the knowledge and skills for the future. Most of what makes up our cognitive belief system, we have learnt. Investigations into the neural mechanisms required for different types of learning are revealing more about the interactions between learning new information, memory, and changes in brain structure (Sousa, 2016:132).

As Swaab (2014:187) explained, the importance of being conscious of the environment and oneself has its origin in social interactions such as observance and continuous

interpretation of situations in comparison with that of other people and the mistakes that one makes during the learning process.

Activating LTM simultaneously brings together a recollection of our thoughts and experiences. The brain stores an extended experience in more than one network. Which storage sites to select could be determined by the number of associations that the brain makes between new and past learnings. The more connections that are made, the more understanding and meaning the student can attach to the new learning, and the more likely it is that it will be stored in different networks. This process now gives the student multiple opportunities to retrieve the new learning (Sousa, 2016:178-80).

2.5 Implications for teaching

It seems that human society has struggled since medieval times to escape the notion that the source of meaning is external, initially as prescribed by religion, and later how the teacher interpreted social events. Yet, as seen, humanist education believes in teaching students to think for themselves (Harari, 2016:271).

Thus, how the student processes new information has a great impact on the quality of what is learnt and is a major factor in determining whether and how it will be retained (Sousa, 2016:196-197). Rote rehearsal is valuable for certain limited learning objectives. Examples are learning the alphabet and the multiplication tables. But rote rehearsal simply allows the student to acquire information in a certain sequence: it does not promote understanding of the information or the ability to apply it to new situations. Too often, students use rote rehearsal to memorise important terms and facts in a lesson, but they are unable to use the information to solve problems (Sousa, 2016:200-2001).

However, researchers at Oxford University found that even the students adopting a deep approach to their studies would be aware of the need to remember significant facts, principles, claims and arguments. The law student must remember the facts of cases and key judicial pronouncements. The historian must remember significant events. The chemist must remember key formulae. The process of making knowledge one's own rests in part on being able to remember important information. But it also implies being able to make sense and make meaning from that information. It implies discovering or creating structural relationships, understanding or transforming relations of significance, spotting gaps, recognising and formulating important questions. To achieve this requires an active

engagement with remembered information. It cannot be done by memorisation alone (Shale & Trigwell, 2004:3).

Scheduling is important, as today's students are accustomed to quick change and novelty in their environment, mainly because of their digital devices, and many find it difficult to concentrate on the same topic for long periods of time. They fidget, drift, send text messages to each other, and get into off-task conversations. This is particularly true if the teacher is doing most of the work, such as lecturing (Sousa, 2016:210).

2.6 The idea of phenomenography and the theory of variation

The theories about the functioning of the brain support the findings of educational practitioners about the learning process in the development of critical thinking. While neuroscientists since the 1960s, and especially during the last decade made major discoveries about the learning process, other educationalists did not rest on their laurels. Research in Sweden and the United Kingdom revolutionised university education.

The theoretical basis was that human beings start off in life with the formulation of simple impressions, recognising similarities and differences and then grouping them in a process that later makes use of language to form concepts. This is the foundation of perception which refers to how we make sense of the world when we interpret sensory input in order to understand it (Mann, 2016:33). As life goes on, more complex concepts are formed from our everyday environment. Concepts are established through meeting varied examples of them in contrasting circumstances and discriminating them from similar thoughts (dog from cat). These are easy to discern and there is general consensus on their meaning, but with more abstract concepts such as – 'justice', 'freedom', 'learning' and 'understanding' – it is difficult to get general consensus. In this process, previous experience, knowledge, values and feelings become entwined. Therefore, the challenge is to learn which conception is the most appropriate for each task or situation that we meet (Entwistle, 2009:15).

Research in the 1970s, focused on how to trigger this process of utilising a combination of STM and LTM. According to Marton, learning by humans differs from that of the animal kingdom in that animals learn from examples set by elders, while humans develop tools for learning that must be understood before one can learn from another human. Thus, knowledge and skills developed by one generation can be passed directly to the

next one and as this is going on, a culture can accumulate successful innovations from earlier generations and from other cultures. According to him, pedagogy is a servant of the cultural evolution of humans (Marton, 2014:2).

But what is important is that, if need be, there must be a change in the pattern of participation by the student, from being a peripheral to becoming a central participant. The reason for this is that learning should eventually provide the student with the ability to handle novel situations in powerful ways. This is achieved during studying when a student learns to discern the critical aspects of the object of learning and some critical features simultaneously, thus enhancing the likelihood of being able to discern the same or other critical features of original tasks (Marton, 2014:9, 22).

Marton and his colleagues in Sweden in 1976 introduced the term 'approach to learning' or phenomenography. In the development of critical thinking, students must be encouraged to develop different ways of looking at social phenomena or experiencing them differently. Different meanings are also grouped together in terms of what their meaning (Marton, 2014:105).

Humans obtain sensory information from the world, which in itself is meaningless, but it is put together somehow to form an inner representation of the world out there. It is, however, realised that the object (humans) and the subject (the world) are two separate entities. Because each individual sees it in a unique way, it is called the enrichment view of perception (Marton, 2014:105-107). This relates to the observations done by Maurois in 1940 about the thought process.

Marton and his team of academics acknowledged the counter-argument, that meaningless bits of sensory information cannot necessarily be put together to make meaning. They then questioned the approach of treating the observer and the world as separate entities calling it subject dualism. Accordingly, they decided that the alternative is that we learn to see meaningful wholes, features, patterns and structure of the environment as the information about objects may be through our senses, but we also experience it.

There was in the past, however, too much emphasis laid by researchers on patterns of variation as the driving force and the outcome of learning, while Marton's research presented patterns of variation and invariance. The description of sameness was previously described as conceptions. The different ways of seeing, or conceptualising are

logically related to each other in a hierarchically organised space, relative to the specific object of learning and the students participating in the process. Learning is thus about how to find the novel meanings of phenomena (Marton, 2014:116).

Is there an art of learning? Experiments using problem-solving, playing games and reading exercises demonstrated that there are two ways of going about learning: the deep approach and the surface approach. The former refers to students focusing on the meaning of text being read while the latter is concerned with the text itself. In the deep approach, the student is trying to understand the written text in order to be able to explain it to somebody else, while the surface approach is concerned with memorising the text in order to recall it. Deep learners will try to find the main point in the text and the words for capturing it – by trying alternatives while in the surface approach the student just wants to remember what he/she has read. Variation and invariance can also be used in problem-solving through a process of rewriting the problem or looking at it in a different way (Marton, 2014:135, 141).

Marton emphasised that experiencing patterns of variation and invariance in learning illuminates what deep learning is. The object of learning must be decomposed and brought together again. This happens through delimiting parts and wholes and through the discernment of critical aspects and it refers back to the ability to create the patterns of variation and invariance. He called this the theory of variation (Marton, 2014:144). But Entwistle points to the fact that the discerning of critical features depends on the active use of prior knowledge and experience. Also, being told which the critical features are will not suffice, it has to be experienced. Therefore, student reflection on the meaning of variations and invariance is vital in order to understand how they fit together. The links between the various parts that create the coherent whole can only be understood if dimensions of variation are kept in working memory and combining it with active exploration of the interconnections that make up a concept, phenomenon or process. The next step is to compare and order the interconnections until a clear overall pattern of variation is seen (Entwistle, 2009:17-18).

In the end, Marton and his team came to the conclusion that in order to handle a situation in a powerful way, there were certain features of that situation that you had to be able to discern and take into consideration simultaneously. That could only be done by experiencing a certain pattern of variation and invariance. The task had to be explored as

freely and systematically as possible. In some respects, variation should be created while in other cases invariance was maintained. The crucial question that should constantly be asked, they argued, is, 'What if?' Nothing should be taken for granted. The solution was in the task, but to find it you had to go outside the task. It had to be studied in depth and compared it with other situations, similar and different. The more you know, the more you have to compare with the problem. In that way, you will find novel meanings (Marton, 2014:161).

Discerning the appropriate concept relates to critical reading, thinking and eventually writing, what Bak (2004:68) identified as the development of academic discernment. Yet, some students treat academic work as being essentially meaningless and see rote learning as a suitable approach to use habitually and being strengthened by some facilitators.

Marton emphasised the importance of learning as differentiation because students must be able to discern critical aspects of the object in order to make them their own, as well as being able to handle novel instances of the object of learning. In learning as differentiation, also called perceptual learning, an internal representation of model of the 'world out there' is built up in one's mind, and it is this 'inner world' that is the source of our awareness. It enables the student to discern relevant features of the environment and thereby perceive the world in more and more differentiated ways (Marton, 2014:32).

2.7 Towards self-directed learning?

Different ways of seeing a problem – also known as conceptions – were identified and found to be hierarchically related to each other and different approaches were identified by research. Eventually it is about comprehending the process of understanding, as learning is a process of widening the space of the object of learning (Marton, 2014:104).

The core aspect of the research is thus the use of the term 'understanding'. Bloom described cognitive processes in six levels of increasing complexity. On the first level, knowledge can be linked to rote learning and its use is to memorise certain facts that must be recalled quickly in order to function in a specific subject discipline. Further levels are comprehension, application, analysis, synthesis and evaluation (Maree & Fraser, 2008:69-70). For general purposes, Entwistle's comprehension of the term 'understanding' will be used. Comparing it with Bloom's original taxonomy the term can be equated to levels two to six, comprehension, application, analysis, synthesis and

evaluation. However, according to Bloom's new taxonomy on the first level, knowledge has been refined into metacognitive knowledge involving knowledge about cognition in general and one's own cognition (Krathwohl, 2002:214).

Entwistle's (2009:45) interest in the term 'understanding' originated from a question by a student on what the term meant exactly and to his own humiliation that he did not have a clear answer. Eventually he discovered it to be an active process, a connection of facts, the relating of newly acquired information to what is already known, and the weaving of bits of knowledge into an integral and cohesive whole. In other words, it was not just having knowledge, but doing something with it, while understanding that all understanding is transitory, being understood in terms of the concepts and theories of our time.

The nature of academic understanding depends on the effective combination of target understanding set by teachers and personal understanding as experienced by students. It must be kept in mind that each subject discipline has an inner logic, which is also linked to its pedagogy and the first step is to comprehend what students take away with them once they have completed their tertiary studies. This is called personal understanding, while the role of the facilitator is called teacher understanding, which will be discussed later (Entwistle, 2009:48).

As indicated, understanding is based on the student's experience of the learning process. To dissect this further, it is important to note that a surface approach is not just focused on a reliance on memorisation, but the student concentrates almost exclusively on the parts of a phenomenon, inter alia the specific facts or details, that are mainly incidental features rather than important ones. By contrast, the deep approach sees the student looking at the facts and the relationship between ideas, which is a holistic approach, using organising principles of various kinds such as narration, logic and theoretical models. This enables the student to make sense of the topic as a whole through its linkages with its parts, inter alia the constituent concepts and evidence. This is the critical trigger that leads to deep learning and is even more important than just being able to use technical skills of studying such as note-taking or essay-writing methods (Entwistle, 2009:49). What comes to mind is the old metaphor of looking at a picture of trees, is the focus on individual trees, or how they combine to form a wood?

The next step is to use the developed understanding in the application of ideas and information flexibly by adapting and using it in new situations. This is made possible by the development of confidence by being able to explain the phenomena under investigation. Students who master the above approach to studying visualise their comprehension by constructing and using knowledge objects such as diagrams, mind and concept maps, which not only eventually help them to remember core details but also serves as a logical route map for explanation (Entwistle, 2009:50, 53).

Mind maps are usually rudimentary drawings that explain the composition of phenomena, but concept maps demand explicit labelling of the links drawn between concepts. The process starts off by drawing simple connections but developing them into integrated webs of relationships, demonstrating a structured understanding just like knowledge objects. A few simple words are initially used to describe the relationships between concepts but on their own they are not enough to explain the complete complexity. What is needed is a new approach, called dialogic concept mapping, in which students are encouraged to explain the connections not only within the maps but in relation to various activities that influenced their understanding (Entwistle, 2009:54). Costa and Kallick in (Bellanca, 2015:L1695-1696) see this as a process of building the habits of mind to help students become more aware of the significance of their attitudes toward learning.

The word ‘understanding’ seemed to attract sets of related ideas, which could be organised into a series of further concept maps, each with a different focal concept. Changing the target of understanding can bring different sets of ideas together, each of them attracted to other concepts. The new target of understanding then emerges as the central idea of subsequent concept maps. Thus, drawing a sequence of concept maps and explaining them provides understanding in a different light, thereby challenging the fixity of a knowledge object. Again, the importance of using memory in order to create this is emphasised. This reiterates the importance of organising memorisation in a way that can contribute to enhancing incoming information in the development of options in problem-solving (Entwistle, 2009:54-55).

The drawing below is used to illustrate the form of a concept map and to summarise the arguments about understanding. The dialogic element comes from using separate concept maps which are now combined in a final one. It is in the form of a flow diagram to demonstrate a series of logical pathways. The target understanding was selected by the

lecturer from academically agreed ideas and theories. This was then explained to the student, who drew a personal reading to confirm the understanding (Entwistle, 2009:55).

The approach of the student again comes into play. A passive surface approach will lead only to the reproduction of unstructured aspects of what is being learnt. On the other hand, a deep active approach enables the student to sort out the selected aspects and place them in a 'knowledge group'. More reflection and dialogue may result into a tightly organised 'knowledge object' that provides a provisional understanding with the purpose of preparing for an assessment. In the next step, the student must align the content of that knowledge with the target understanding set by the facilitator. It can also be altered from its original form for deeper understanding with the purpose of seeking out new ideas and evidence. This can help in the interpretation or making sense of new situations. This enables the student to evaluate ideas in order to demonstrate and contrast a new relationship between them (Entwistle, 2009:56).

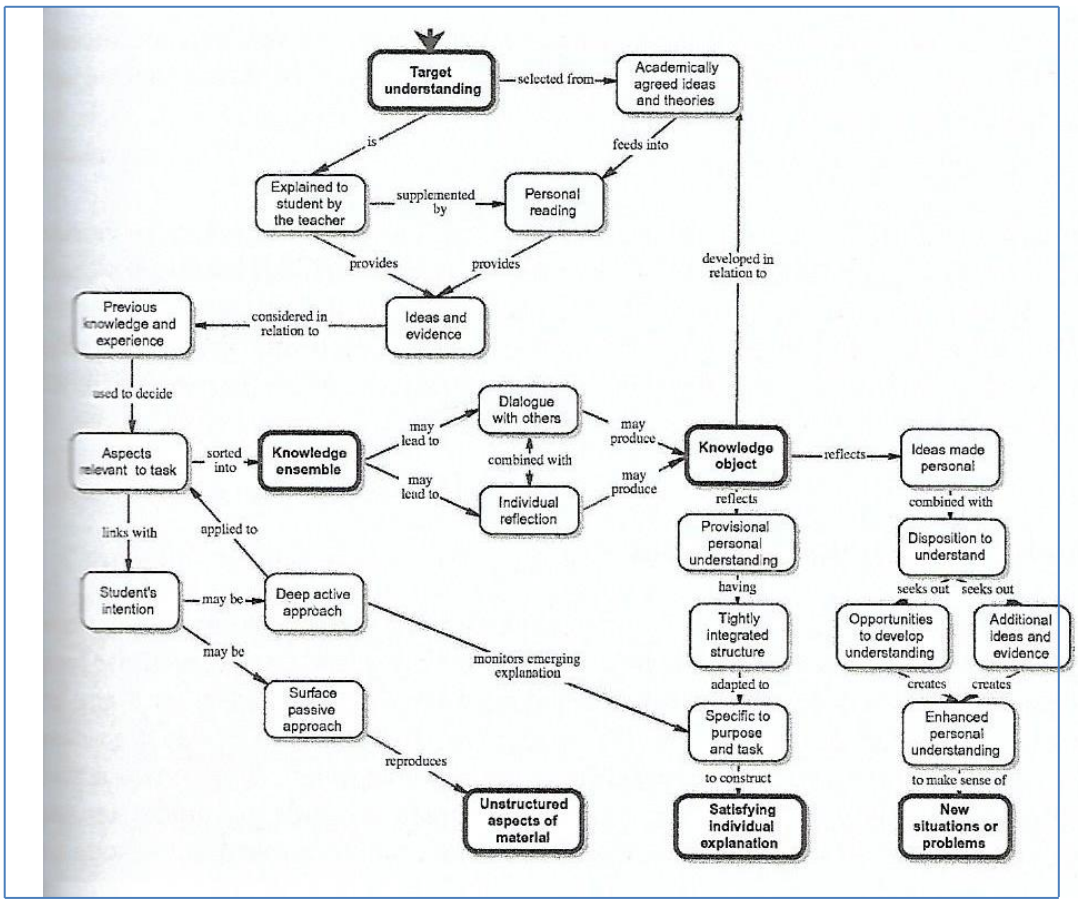

Figure 2.1: Example of a concept map (Entwistle, 2009:55)

The next step in the process is integrative personal understanding. To merely understand the main ideas is not enough. It must take a particular form. Reaching a personal deep understanding brings together ideas in a holistic fashion, with supportive detail that makes it academically satisfactory. The understanding is not just integrated but becomes actively integrated as it combines with additional related ideas to create an enlarged understanding. The tendency to focus on personal understanding can become habitual when encountering new problems and issues in later life. It is, however, important to construct it within the conventions and conceptual frameworks agreed within a discipline or a group of disciplines (Entwistle, 2009:56).

Entwistle (2009:57) further argues against single-minded personal understanding in an eccentric manner explaining that there is a strong argument for helping students to reach an integrative understanding for themselves. But the facilitator's interpretation is only the starting point. Through written work, discussions and concept maps, the student must develop a more powerful individualistic understanding of phenomena. This point of view confirms the arguments of Entwistle himself, Leaf and Marton, as already discussed, for the strong emphasis in developing unusual ways of thinking, from the structure of thinking in the brain throughout the process of activating the STM and LTM leading up to a personal integrative understanding. Leaf referred to the importance of asking the question, what if? Killen also emphasised the importance of giving students multiple opportunities to display their understanding in a variety of circumstances, demonstrating critical and creative thinking (Killen, 2000:xxii).

Subject disciplines are unique, but collaboration between subject experts, especially in applied research areas, demonstrated that the boundaries between disciplines are increasingly being broken down. Nevertheless, the differences determine the unique nature of different disciplines, but, in the contemporary world, less as sources of knowledge than as methods for the use of the mind. This provides the structure that gives meaning to the particular. The aim of education is to help the student to make the structure of the subject discipline his own as soon as possible. It is, however, not enough just to grasp the general principles, but the student must also to develop an attitude towards learning and inquiry, toward guessing and hunches, and the possibility of solving problems on one's own. Informed guessing is, after all, more amenable to the use of the mind, rather than memorising (Entwistle, 2009:58).

A very important facet in the quest towards self-directed learning is the development of a strategic approach to study. Research indicated that this approach was found among both students focusing on rote learning and those that adopted a deep approach. It is related to how the student manages the study process during a course. Strategic behaviour points to a systematic organisation of the studying and is linked to time management, effort and concentration (Entwistle, 2009:38). The ideal is that all assignments and assessment dates are provided at the beginning of a programme so that the facilitators and students can plan their time management, as well as opportunities to take breaks from the study process.

2.8 Threshold concepts and the learning process

Recent research has determined that the problem not only relates to the cognitive domain of learning, as difficulty in understanding concepts may leave the student in a state of 'liminality', a suspended state of partial understanding. Insights gained by students as they cross this threshold can be exciting, but also unsettling. Thus, the affective domain of learning also comes into play as the management of the experience by the student is also important in the promotion of deep learning (Meyer, Land & Baillie, 2010:x). Research in the United Kingdom, focusing on the affective domain of learning and dealing with what are called threshold concepts, commenced in 2002 and was published in four books based on the presentations and discussions of seminars in Meyer and Land, (2006), Meyer (2008), Meyer, Land and Baillie (2010) and Land, Meyer and Flanagan (2016).

Meyer and Land's research opened a new world of understanding of the process of deep learning. The use of threshold concepts as part of the process of deep learning had its origins in subject specific disciplines, and in the named books, a variety of chapters on subjects and its relation to deep learning were published. Examples are Languages, Computer Science, Electrical Engineering, Economics, Biology and Grammar Studies (Meyer, 2008:v-vii) Philosophy, Academic Numeracy, Nanoscience and Technology, History (Meyer, Land & Baillie, 2010:v-vi), and Business School Education, Doctoral Studies, Nursing, Legal Practice, Education and Architecture (Land, Meyer & Flanagan, 2016:v-vii). Additionally, in 2010, Schwartzman argued that from a phenomenological analysis, it was found that threshold concepts as part of deep learning occur in common across all disciplinary contexts (Meyer, Land & Baillie, 2010:21-44).

Perkins (cited in Meyer, 2008:3) took the argument of what knowledge is back to the thinking process that would help the student make sense of a complicated world and help to make it better. Thus, the learning process has to move beyond mere understanding towards the ability to apply it in life and specifically to solve work-based problems.

Sousa (2016:153) calls this activation of the brain in using new and old knowledge, the power of transfer. This is the process that allows the inventiveness of the brain to unfold and it encompasses the ability to learn in one situation and then using that learning, albeit in a modified or generalised format, in other situations. Transfer is the core of problem-solving, creative thinking and other higher mental processes, with inventions and artistic creations being the ultimate goal of all education processes. Transformation takes place when a student grasps a key concept within the discipline's view of the world and in the process experiences a change of world view themselves (Meyer, Land & Baillie, 2010:45).

Perkins' criticism against the research done by the Gutenberg group (Marton's team) and Entwistle until 2003 was that it provided a framework for learning in an academic context but with uncertain implications about the fate of the knowledge beyond this process. To him, proactive knowledge, on the other hand, emphasised what students did with that knowledge, not only within but also outside the settings of formal study. The threshold in possessive knowledge is its sheer volume and understanding, while the challenge of proactive knowledge is the connection-making across diverse contexts. This pattern of thinking calls for alertness to occasions, a positive attitude towards its potential relevance and the ability to apply it (Meyer, 2008:9-10).

The core of the problem is the misconception that possessive knowledge would automatically promote understanding and make the application of knowledge easier. This is caused by knowledge not being learnt in depth and no transfer of learning to what Sousa alluded to taking place. There is thus very little transformational learning taking place. The net result is an inability to apply knowledge because the learning experience did not promote it. Transfer of knowledge can only take place when reflective abstraction, deliberate connections and spontaneous activation of patterns are rehearsed in a variety of applications. What is at stake is the contrast between the classroom situation and the real world. What is needed is an epistemological shift, using proactive knowledge as a threshold concept with its three ingredients namely:

- The ability to apply knowledge with understanding
- Serious energetic engagement with the knowledge
- Alertness to where it applies

In the end, it must be remembered that education should prepare students for encounters with a complicated and challenging world in which they must find unique solutions (Meyer, 2008:10-16).

2.9 Further roles of facilitation

The next facet in this process is specific approaches to facilitation in order to promote deep learning. Ramsden and Entwistle's research initially focused on how the students perceived the proficiency of the lecturer in terms of preparation of their lectures, whether they pitched the learning material at the right level and appreciated students' difficulties and were prepared to provide advice and support. That is, however, just an extension of how students experience the learning process.

Therefore, Entwistle's research had to include how the educators saw their own teaching practices. Some were divided into two groups:

- Those that focused on improving certain teaching techniques and assessment procedures
- Those that were more reflective about their teaching, as they were drawing on their experience of staff development seminars and considering the nature of the knowledge of the specific subject

At the same time, students must be encouraged to reflect on what they have learnt, to deviate on concentration on the contents of the subject, and to be always on the lookout for how new knowledge can be applied in the workplace. They must understand that assessment is but one of the outcomes of meaningful learning, a supplementary process, rather than a primary aim. The facilitator's approach should be to see the education process as an interaction between understanding the subject area and the students and that it can, with time, be fundamentally altered (Entwistle, 2009:71-72).

The raw material for forming concepts or organising ideas in subject disciplines comes from experiences, either first-hand or provided and organised by others. Simple concepts are formed subconsciously, but more abstract ideas in higher education require

considerable effort before the underlying meaning of an idea can be comprehended. Academic concepts also come at different levels as some form the building blocks of a discipline like ‘current’ in electronics or ‘price’ in economics, while others are introduced to show important links between groups of basic concepts which may be articulated as theories or laws (Entwistle, 2009:72).

These threshold concepts play a critical role in understanding of a topic area, sometimes by integrating lower-level concepts, but always by opening up a new perspective on the background of knowledge to the student. Grasping such integrative concepts allows students to understand the subject better, but if the ideas are not comprehended thoroughly, progress in the subject proves to be challenging. Higher-level threshold concepts are even more difficult to understand as they involve the distinctive ways of thinking within a discipline that provide the basis of a professional approach to the subject. Therefore, the majority only come to terms with these later in their tertiary studies (Entwistle, 2009:72). Bloom’s revised taxonomy of learning, relating to the cognitive levels of learning improved on Entwistle’s initial ideas as levels of understanding were spelled out, which was especially useful in the redesign of facilitation and assessment processes in order to promote deep learning by working from the simple to the complex issues of social phenomena (Krathwohl, 2002:214-215).

The role of the facilitator is important in terms of the guidance provided during the learning process, encouraging students to focus on the relationships between facts rather than on rote memorisation. Jarvis (2006:80) claimed that facilitation could be seen as a process of regenerating latent talents and a store of unconscious wisdom. Starting with existing knowledge, helping students to realise their capacity to learn is the hallmark of the facilitator, moving education from a delivery of static knowledge to a dialogical relationship where knowledge is co-created. Brockbank and McGill (2007:5) took this a step further and saw it as a process in which students and teachers engaged and worked together to jointly construct new meaning and knowledge of the learning material – reflective learning.

Some educationalists (Hase & Kenyon, 2000:1-7) even felt that the shift must even move away even further from andragogy towards truly self-determined learning, called heutagogy. This approach claims that andragogy is still focused too much on face-to-face teaching and that a new education revolution recognises that we live in a changed world,

where information is readily and easily accessible and where change is so rapid that traditional educationalist methods are inadequate. The focus is on a more holistic development in the student of an independent capability, the capacity for questioning one's values and assumptions and the critical role of the system-environment interface. Heutagogy is also focused on the fundamental skill of knowing how to learn, given the pace of innovation and the changing structure of communities and workplaces.

A strong protagonist of this approach to learning is Cas Olivier. In his book, *Potential development using thinking tools: The key to flipped teaching*, he claims that his thinking tools kit method even goes beyond deep learning in placing the student in a position to conduct self-directed learning. According to him, this is in contrast with a teacher-centred approach still focusing mainly on lectures, which is not actual facilitation (Olivier, 2019:L1436).

Another theory on how education should be conducted is meta-learning. Certain key drivers in the contemporary workplace are the sustainment of high productivity, open-mindedness, curiosity, deliverance of quality and creativity in solving problems, and a willingness to seek truth and understanding. Meta-learning is seen as the ideal approach to achieving the above-named drivers in the workplace, in that students must be in control of their own thinking and learning. This is deemed to be essential as the modern worker is regarded as a perpetual learner. Therefore, individuals must plan, execute, monitor and assess their own learning to be become lifelong learners (Slabbert, De Kock & Hattingh, 2009:16-17).

In the USA, educational researchers such as James A. Bellanca wrote extensively on the theory of deep learning and how the application of relevant principles in practice could influence the educational system in that country, even at school level. The book, *21st century skills – Rethinking how students learn* in 2010 focuses on an education system that promotes a learning process where students experiment, do projects (focusing also on the psychomotor domain of learning), take risks, and solve meaningful problems (Bellanca, 2010:L1). This was followed by *Deeper learning – Beyond 21st century skills* (Bellanca, 2015:L381) where education in the USA went even further and focused on breaking new ground. Bellanca claimed that researchers are not only identifying new ways of learning; they are also pinpointing the best practices in education, curriculum, assessment, and leadership that show the highest promise for renovating learning from

the artificial recall and regurgitation of facts, figures and procedures to the intentional development of crucial cognitive, affective and psychomotor skills.

Let us return to the beginning of the argument on the role of the facilitator. There is a lot of focus on methods of learning such as lectures, tutorials, practical exercises, e-learning, problem-based learning and work-based learning. However, good teaching also depends on understanding why a specific method works better for a specific purpose or context and how it can be used to support learning. But as there are two approaches of how students learn, there are also contrasting ways of thinking about university teaching and learning. Seen from the facilitator's perspective the intention is to convey information as efficiently as possible but adding the students' perspective shifts the focus towards encouraging active learning and conceptual change (Entwistle, 2009:74-75).

Thus, learning activities must be designed to support the development of understanding, leading to a recognition of the status of conceptual change. In student-focused teaching, the content is not seen as insignificant, but the focus is on imagining how best to help a student to understand it. This approach encourages students to think for themselves and to be critical about evidence and theory, thus facilitating learning rather than teaching. Information must always be conveyed in relation to a broader picture. If not, it makes it difficult for the students to make generalisations and to anticipate what to expect further on in the learning process. They also will struggle to comprehend general principles, and knowledge without structure is easily forgotten. What is thus needed is a holistic approach to facilitation. This encourages reflective thinking (Entwistle, 2009:75).

Leaf claims that reflective thinking is only possible after switching over to living consciously by focusing attention on the self-conscious mind. To do this, one must overcome the overreliance on social media and start using the brain again to create workable memories as learning is, in essence, a process of building a useful memorisation system with comprehension. The key is to focus and the way in which we are thinking will determine how well we will remember information which is not by repetition and overloading the STM for the purpose of passing an examination. Thus, the use of memory is the key to remembering and the solving of problems (Leaf, 2018:169-170). Problem-solving involves the ability to access large amounts of relevant knowledge from LTM for use in working memory (Sousa, 2016:250-251).

2.10 Barriers to learning

Learning is the activation of the dimensions of the brain, but first one must be able to live consciously, thus recognising how you think and feel at a given moment. It seems as if people struggle how to think deeply and intensively about knowledge because of the technological revolution. Research at Birmingham University indicated that LTM is not correctly structured when people become passive in their thought processes as they continuously look for information on cell phones and computers. The more we depend on technology, the more we weaken our intellect as digital platforms have the potential to suppress the potential to learn, store knowledge, using memorisation and recognition of information (Leaf, 2018:169-170).

Extensive research has been done on barriers to the learning process in the South African context. Prinsloo (As cited in, Landsberg, Kruger & Nel, 2007:27-37) identified several socio-economic issues such as poverty, unplanned urbanisation and the disintegration of family life that form barriers to learning. These issues are not directly relevant to the students on the JSCSP as they are all senior officers, receiving good salaries, they do not pay for their studies and they had good accommodation and regular meals. They are also selected through a screening process to be nominated for the programme. If the cultural background and socio-economic issues have a direct negative influence such cases are referred to the Military Psychology Institute of the SANDF. This process will not form part of this study. Other learning barriers, however, influence the learning process.

The reality in the learning environment of higher learning is, however, that students are not stereotypes all reacting in the same manner as there are different influences on the learning process. Jarvis and Griffin (2003:42-43) did extensive research on this and found that the socio-cultural environment and its influence on the individual was vital. It determined to a large extent, depending on the degree to which individualised behaviour was developed, the ability to create construction of substance frameworks in the interpretation of facts, what Jarvis describes as deep processing and reflective learning. Age, gender and personality play a role and reading abilities are vital factors determining learning abilities (Hout, Wolters & Schnotz, 1992:3-30).

One factor that influences the learning process, as observed by me, in the assessment of academic essays at the SANWC, is the use of second-language learning and how that influences the student's capacity to focus on deep processing for execution during the

learning activity. Research at the University of Athens, where students had to study in English, indicated that self-confidence in the language of learning (in this case, English) was vital in enabling the student to focus on deep processing (Andreou, Andreou & Vlachos, 2005:1-11). This was confirmed by research in the USA where extra classes in English enabled immigrant children from Asia and Latin America to gain self-confidence and adopt a deeper approach to studying as a consequence (Goldenberg, 2008:14).

Within the South African context, students from former township secondary schools demonstrated a peculiar lack of reading with comprehension in the use of English during the learning process. For many, English is not even a second, but sometimes a third and even a fourth language (Ngwenya, 2004:2). This had an impact and as head of the Research and Development Branch at the SANWC from 2005 to 2014, I observed a correlation between the number of students from township and former homeland education systems and their ability to practise deep learning in their arguments in the academic essays of the Military History staff ride. What I also observed was an increase in Black people matriculating in private and former model C schools, former White-only, semi-private institutions, leading to an improvement in communication skills. Prinsloo (Landsberg, Kruger & Nel, 2007:150-169) reiterated this and suggested solutions that might be of help on the JSCSP. What must be evaluated here is if the language training during the distance education phase of the programme suffices in preparing such students to overcome this problem during the residential phase.

The problem is that some educators assume that students can read with comprehension while research indicated the opposite. This can be addressed by helping students develop reading strategies that enhance the process of deeper reading – reading for long-term retention of learning material and for comprehension at a level that can be perspective - transforming – involving constructing meaning while reading. The teaching strategy recommended to achieve this is an assignment based on multiple intelligences and fostering reading comprehension. This is linked to metacognitive reflection, to actively think about one's own reading processes and strategies, thinking about how information is processed (Roberts & Roberts, 2008:125, 128). This will have to form part of the investigation in terms of deep learning on the JSCSP.

In education there is currently a strong sensitivity with regard to the position of students with disabilities. Special measures such as braille translations of lecture notes, provision

of special laptops, allowing extra time for students with dyslexia (Entwistle, 2009:40) and adjusting the learning environment to accommodate wheelchairs create the opportunity for these students to also participate in the programme. The extent to which this influences the learning process will be examined to determine to what extent it forms a barrier to deep learning.

A unique barrier to learning, especially on staff programmes, is the sleeping patterns of students. The philosophy in staff training is that the student must be put under pressure to simulate similar pressures in time of war. In the old staff programmes, it was carried to the extreme where students were given assignments, but the time scales were deliberately worked out so that they could not complete it in time. The argument was that the student must learn to plan under pressure. Therefore, staff programmes are sometimes notorious for the little amount of sleep that students get in order to put them under pressure (Geldenhuys, 2008:25).

The encoding of information into the LTM sites occurs during sleep, more specifically, during the rapid-eye movement (REM) stage. This is a slow process that can flow more easily when the brain is not preoccupied with external stimuli. Consequently, the brain blocks external sensory input during REM sleep. (The brain also blocks motor output to prevent us from physically acting out our dreams.) When we sleep, the brain reviews the events and tasks of the day, storing them more securely than at the time we originally processed them. What we think and talk about while awake very likely influences the nature and shape of the memory consolidation that occurs during sleep (Sousa, 2016:228). It stands to reason that without adequate sleep little deep learning can take place.

2.11 A global view of deep learning on staff programmes

To what extent do staff colleges adhere to the idealistic view of officers' education on staff programmes as discussed in Chapter 1? In 2000 G.A. Emilio obtained a Doctorate in Education with the title, 'Promoting critical thinking in professional military education' (Emilio, 2000). The staff programme at the USA Air Command and Staff College was used as a case study. The author emphasised the importance of the development of critical thinking on such a programme in order to operate in a complex, changing world. Yet, in comparison, other national education, training and development programmes demonstrated that this qualification seriously lagged behind in terms of the

tenets of critical thinking, calling for a redesign of the curriculum to promote a system where officers learnt how to think and not what to think in the USA Air Force. It was recommended that the educational approach should focus on problem- solving, decision making, the development of inductive and deductive reasoning, and divergent and evaluative thinking skills. Also, that this should be augmented with the ability to use philosophy and reasoning with the emphasis respectively on the dialogical (ability to use verbal communication) and the dialectical (considering ideas that are opposed to each other) in academic argumentation.

Some authors were positive that the military colleges in the USA were trying to emphasise the importance of military education and its adaptation to a changing world. Persyn and Polson explained that a large percentage of the defence budget was allocated to achieve this and that education and training programmes provided military members with the opportunity to experience lifelong learning with continued efforts to improve the application of the principles of adult education (Persyn & Polson, 2012:1-2). This argument was supported by Zacharakis and Van der Werff (2012:1-5) who stated the professional military education was based on the principles and learning theories of adult education with a desire to educate senior officers for higher order thinking. They claimed that the focus was on improving critical thinking skills and creating an organisational learning environment.

On the other hand, there was also strong criticism against the system. Although she did not use the term deep learning, Johnson-Freese (2013:20) identified certain problems in the quest for developing critical thinking in students at the USA Army War College. Some aspects I recognise from my experience at the SANWC and the research will determine to what extent this is true and what possible solutions can be found to overcome these problems.

The first area of concern is her claim that the military bureaucracy sees training and education as synonymous and tend to favour the former. Consequently, intellectual agility becomes sacrificed to training-friendly metrics. The next step is that higher authorities in the USA Armed Forces strive to shorten the course and during the day try to change the system of facilitation of learning for only half a day to include classroom activities up to 17:00. It is clear that time for reflection and research are deemed to be unimportant in a

programme where after ten months of study the individual receives a master's degree in Military Science (Johnson-Freese, 2013:21).

Another area of concern is that most American officers' pre-graduate qualifications are in subjects such as engineering where the focus is mainly on technical skills. Thus, the critical analysis of historical case studies is alien to them. At the same time, there is pressure on the college from higher authorities to let all students pass the programme (Johnson-Freese, 2013:22-23). In general, students lack substantial background knowledge on subjects in which critical thinking must be dominant, such as Military History, Leadership, National Security Affairs and Joint Military Operations. This is a critical knowledge gap as the students are required to apply higher order security concepts as determined by strategy. She asks the question. How do you have a seminar discussion on the future of the NATO when the majority of the students do not even know when or why this organisation was created? After all, the programme at the War College is supposed to be an opportunity for military leaders to expand their education to match their civilian peers at the national strategic level of decision making. In order to achieve this, they must understand and address strategic issues as the future advisors of civilian authority, seeing that the USA is globally committed in conflicts.

According to Johnson-Freese, the core of the problem lay in the fact that the curriculum was designed by career officers in the Pentagon, the USA Defence Headquarters, with little contribution from the academic world (Johnson-Freese, 2013:90-125). These findings were underwritten by other researchers who found that soldiers struggle to make the paradigm shift from the tactical level and a predominant military approach to the solving of problems. In the study of war and warfare, it is important to understand these two related but distinct concepts require a different approach and more focus on the study of strategy. Thus, the accusation is made that, globally, military staff colleges focus primarily on training and military procedures at the expense of true analytical reflection in a conflict situation.

There is also too much emphasis on simplistic concepts such as the principles of war, with too little time for studying strategic theory within the framework of education rather than training. This is not seen as an outright condemnation of the military profession's attitude to study or a call for abstract theoretical methodology. There is empathy with a profession that is focused on practical considerations and that they would necessarily

neglect deep analytical ruminations. Therefore, a balance between aspects in which senior officers must be trained in and academic studies focused on education, specifically strategic theory, must be struck. The latter is not meant to provide quick-fix solutions, but to educate the mind of the future commander, to guide him in self-education and not a recipe book that must accompany him in war. The focus must be on the development of insight (Jordan, Kiras, Lonsdale, Speller, Tuck & Walton, 2011:20).

Johnson-Freese points out another problem, that students at the USA Army War College did not take seminar discussions seriously and most of the time arrive ill-prepared for it. Whether this is the case on the JSCSP was determined by interviews with members of the directing staff with regard to syndicate group discussions. Johnson-Freese also claimed that the teaching strategy was wrong, as students were provided with notes on academic writing rather than being expected to read the original source. Furthermore, that teaching staff were allowed little comments during seminar discussions, leading to students just reinforcing each other's points of view. The focus was on long lectures and in class discussions the students were not allowed to criticise the political and military leaders of the USA, even those in the past. At the same time, they were expected to cope with reading assignments of up to 80 pages an evening and in one case even 300 pages. Also, social and sport events were deemed to be more important than academic studies (Johnson-Freese, 2013:43, 99-105).

Zacharakis and Polsen suggested a solution to this conflict situation. To meet future critical and decision-making challenges for military leaders they propagated a change in military education grounded in outcomes-based education and training (Zacharakis & Polson, 2012:103). At the Malaysian Defence University, the recommendation was that the education on the staff programme must be conducted on the basis of teaching the student to identify and understand concepts in a subject discipline and the big picture. Educators should use this to achieve a cascading effect of working from the simple to the complex in the teaching of strategic concepts (Mohameda, Nasira, Ab & Rahmana, 2018:x).

2.12 Conclusion

It is clear that research in education points to the need to move away from rote learning to a situation where the student is not only more directly involved in the learning process, but must develop the ability to provide an input into how learning takes place. The main

aspect is the development of an ability to understand the world of the future workplace which, for senior military officers is even more complicated than for their civilian counterparts in the business world, as war also involves constant danger, adding to the stress under which management decisions must be taken. Without critical thinking and the ability to provide creative solutions, senior military officers will not be able to cope with the demands of contemporary conflict situations. Education must thus be focused on the development of abilities to recognise a multitude of methods to solve problems.

Resistance to this from the military hierarchy and students alike must be expected as the clash of cultures between the military and academic worlds is part of a growing process in preparing senior officers for new challenges in a constantly changing world. Also, too much emphasis on training destroys an innate opportunity to build a student's intellectual agility.

What is interesting is that the research method was based on Ference Marton and Noel Entwistle's theoretical constructs of phenomenography, encouraging students to find and define a variation of ways of experiencing reality, which forms the foundation of deep learning. Up until the start of the residential phase of the JSCSP in South Africa, their careers had focused on training but the higher an officer moves up in the military hierarchy the more important it becomes to develop his/her conceptual skills. In some students there was a strong resistance against this, and they claimed that academic studies did not prepare them for the workplace. What they forget is that their workplace until then had been on the tactical level of war, while a staff programme prepares them to function on the operational and military strategic levels of conflict (Jacobs, 2018b).

CHAPTER 3
A HEURISTIC MODEL OF THE THEORY OF DEEP LEARNING IN UNIVERSITY EDUCATION

3.1 Introduction

In this chapter, a theoretical model encompassing the trends in thinking about deep learning described in Chapter 2 will be explained. As explained in Chapter 1, the SANWC is not a university but has the Faculty of Military Science of Stellenbosch University as an academic partner in order to present a postgraduate qualification from 2019 onwards. Therefore, the focus in this thesis is to investigate to what extent the programme of 2018 would signify the readiness to transform to the above-named dispensation.

Entwistle's interpretation of the model forms the foundation but it is augmented with inputs from other authors. This will form the foundation for the evaluation of the education processes on the JSCSP, which will be done from Chapter 5 onwards. As explained in Chapter 1, the assumption is that the extent to which the learning process adheres to the theory of deep learning will determine the level of readiness of this qualification for the academic subjects on the programme to be presented on a postgraduate level.

3.2 The functioning of theory

A theory can be described as a systematic account of the concepts and relationships of specific processes in a discipline. It also explains how specific concepts are related, how they provide the academic foundation of disciplines, and how they function to transform information into knowledge (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:36).

In this thesis, the focus is on using a theory to evaluate the learning ethos of an education and training service provider, the SANWC, in the presentation of the academic component of the JSCSP. Four forms of teaching/facilitation culture can be identified. The programme does not adhere to the first form, that of independence or autonomy, as it is part and parcel of the education process of officers in the SANDF. It needs to be investigated if the SANWC in the presentation of the JSCSP falls within the second category, namely that of collaboration where the facilitators are cooperative and collaborative with well-developed personal interaction, teamwork and open communication. Some theories claim that in the third form of education culture, norms

for behaviour and collaboration are imposed by management. I do not agree that this is in contrast with the second culture. Can both not be true? The last form of culture is the forming of subgroups within an organisation with no collaboration between these subgroups (Wellington, Bathmaker, Hunt & McCulloch, 2005:60).

Another approach is to engage with different theoretical perspectives (Wellington, Bathmaker, Hunt & McCulloch, 2005:60). As explained in Chapters 1 and 2, deep learning is seen as a strategy by which students extract meaning and understanding from course materials and learning experiences (Warburton, 2003:1) a seemingly dated description, but in terms of conciseness and accuracy without equal. As explained in Chapter 2, to my mind this constitutes a revolution in educational studies. Because the main focus is on the student's experience of the learning process, the paradigm for the evaluation, which asks to what extent the theory is applied on the JSCSP as explained in Chapter 1, is in the interpretivist tradition where behaviour is studied based on the understanding of the meaning and purpose that individuals attach to their personal actions and experiences. The main focus is to understand the phenomenon – student approaches to the learning process, − not to predict outcomes and not based on generalisations (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:52).

I could not find any explicit criticism of the theory of deep learning as developed by Marton and Entwistle, but rather found further developments of the theory such as the writings of Bellanca and Sousa. The other authors in the theoretical model were used to supplement Entwistle's concepts of the learning process. In the end, the practicality of the theory of deep learning on the JSCSP, with specific referencing to the academic subjects, will be determined and out of that some points of criticism might emerge. In that way, I ensured that the theoretical discussion was targeted on the specific issues that the fieldwork would address as advised by Wellington (2005:61).

Entwistle distinguishes the following approaches by students during the learning process (Entwistle, 2001:593):

3.2.1 Surface Approach

a. Intention to simply reproduce parts of the content

b. Accepting ideas and information passively

c. Concentrating only on assessment requirements

d. Not reflecting on the purpose or strategies in learning

e. Memorising facts and procedures routinely

f. Failing to recognise guiding principles or patterns

3.2.2 Deep Approaches

a. Intention to understand material for oneself

b. Interacting vigorously and critically on content of learning material

c. Relating ideas to previous knowledge and experience

d. Using organising principles to integrate ideas

e. Relating evidence to conclusions

f. Examining the logic of the argument

3.2.3 Strategic Learning

This approach was later added to the theory by which time Entwistle also deemed it important to determine how students organised their studies. Consequently, questionnaires were also used in his research on deep learning in universities in the United Kingdom to measure strategic behaviour in terms of the systematic organisation of studying, time management, effort and concentration (Entwistle, 2009:37).

In this thesis, the aim of the research process is to measure the level of deep learning as indicated in the case study in Chapter 1. This will be done by the use of indicators of deep learning as outlined above, indicators being signs of the presence or absence of the theoretical concept or construct being studied (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:109-110). The above-named indicators constitute the starting point in this investigation of the level of deep learning on the JSCSP, but the detail of the theory is subsequently explained.

3.3 An overview of Entwistle's heuristic model

In 1987 Entwistle developed a heuristic model for teaching and learning. It is heuristic in the sense that it was designed to guide the thinking, rather than as a computable model to predict the outcomes of learning (Entwistle, 2009:114). According to the *Oxford Dictionary*, heuristic teaching or education encourages one to learn to discover things by one's self (Turnbull, 2015:704). By 2009, the model showed several adoptions, based on later research. The framework (a compilation of ideas already discussed) draws attention to four main influences on learning – namely students characteristics, the nature of the subject matter, the teaching/facilitation as conducted, and the learning environment provided by the educational institution (Entwistle, 2009:114). Entwistle uses the term teaching, but I prefer facilitation within the deep learning environment as it implies guidance in the learning process rather than just teaching. At this stage, my personal observation is that the model implies that student's approach to the learning process can be changed through proper facilitation, assessment and educational quality assurance.

The top half of the model below (Figure 3.1) shows the characteristics of students, with the relatively more consistent individual differences, such as abilities and personality, shown on the left and those more likely to be affected by the experience, such as attitudes and study skills on the right. The lower half of the model describes influences on learning coming from approaches to facilitation on the left and the learning environment on the right. The selection of content is placed between them. Aspects of facilitation that help students to learn are positioned so as to suggest links with student characteristics directly above them. The connections between students' characteristics and approaches to facilitation are shown across the centre of the model through their perceptions of meaning and relevance, while those from facilitation policies are linked with the perceptions of task requirement (Entwistle, 2009:114-116).

The separation of facilitation from the rest of the facilitation-learning environment can then be justified in terms of the inner logic of the subject and its pedagogy that binds together content and facilitation approaches. Certain parts of the facilitation-learning environment are more directly related to the actual subject content than others and are indicated on the left-hand side of the model. The influences from the rest of the learning environment are indicated on the other side, although some of them, such as assessment, also involve content. The model is not meant to describe 'best education practices' but is

meant to open up discussion about which specific facilitation and learning activities will encourage the forms of understanding and ways of thinking and practising being developed within a particular education programme, which are core aspects of deep learning (Entwistle, 2009:115-116).

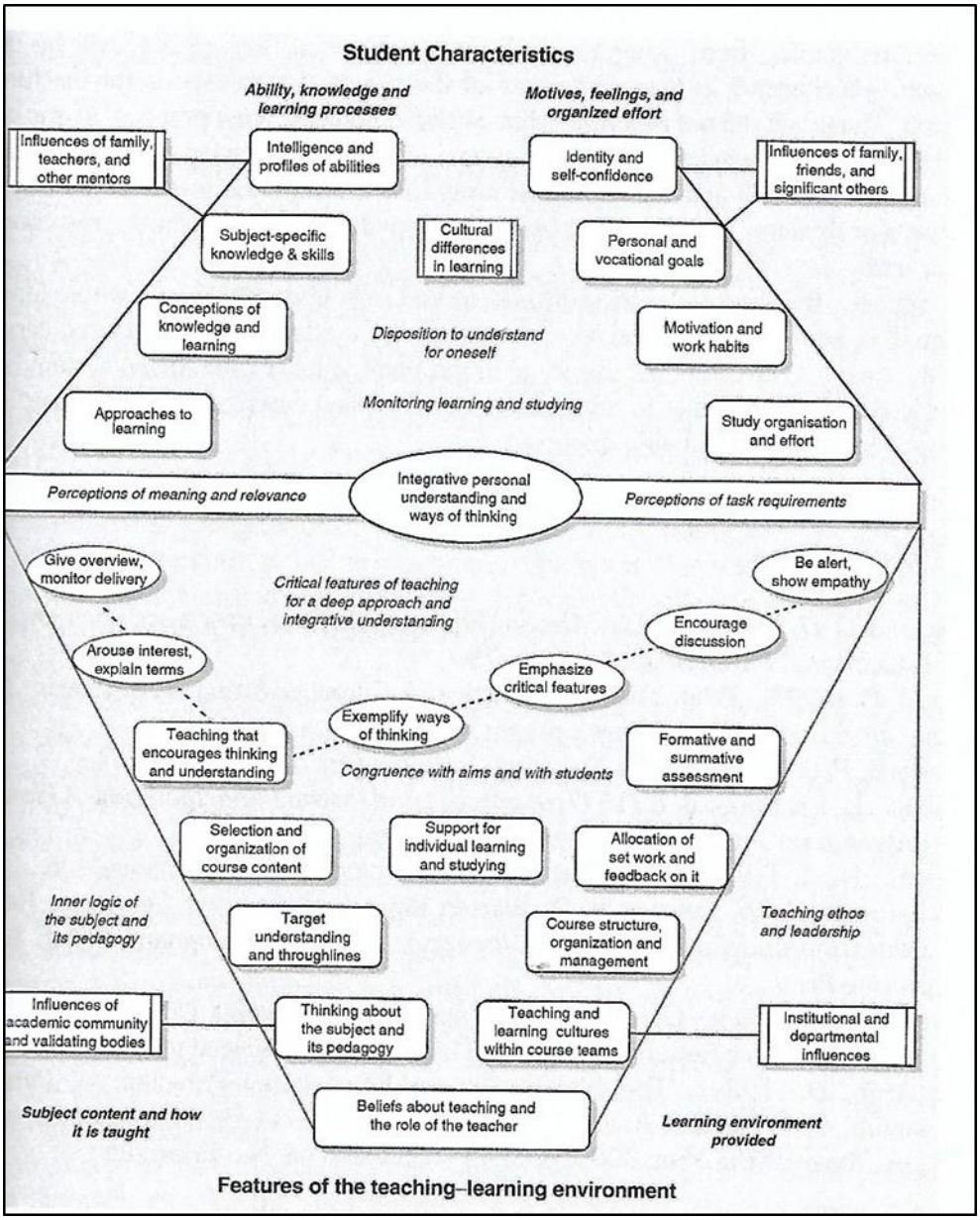

Figure 3.1: The 2009 Heuristic Model (Entwistle, 2009:115).

3.4 How student characteristics influence learning

All students' characteristics are influenced or affected by, amongst others, family, facilitators and other mentors and have an impact on the students' willingness to learn. Other characteristics such as conceptions of knowledge and learning and motivation are

more directly linked to experiences of facilitation and to the learning environment, for example, at a university. It is impossible to keep these characteristics in mind when facilitating and even planning a course, but it could be used to advise an individual student. It is, however, impossible to plan for individual students, and planning will have to focus on groups of students that, in general terms adhere to a specific profile of characteristics. Experience will guide the educational planner, but it is important to develop an outlook to understand the need for alertness in students to monitor the learning process themselves. These characteristics will most probably have a strong effect in terms of students adopting a deep approach to learning, but it is vital that the learning environment consistently supports these forms of learning and understanding (Entwistle, 2009:116). Later in the thesis, the unique influences on students on the JSCSP will be addressed as one should keep in mind that Entwistle's research focused on university students in the United Kingdom.

In 2018 Entwistle elaborated on this aspect and also analysed the role of different personalities in the learning process. He found that the way that the students studied also depended on personality characteristics. According to Entwistle, the big five personality traits is described as a series of dichotomies: extraversion/introversion; neuroticism/stability; conscientiousness/spontaneity; openness to experience/cautiousness; and agreeableness/antagonism. Most of these dichotomies affect learning but not in a direct way. For example, introverts tend to be more successful academically in university studies. But that is partly because they are less interested in social activities and consequently less distracted from studying. Other aspects, like the need for achievement and fear of failure are more directly related to achievement, but measures of actual study activity capture the same tendencies more effectively (Entwistle, 2018:361). I have not utilised this in my study as research in this field entails expertise in educational psychology. However, if the need arises, the SANWC can engage the Military Psychological Institute to request assistance in designing questionnaires to be completed during the pre-course phase and to be used as part of the facilitation plans for the residential phase.

The next step in the model is the interface between student characteristics and the facilitation-learning environment. On the left-hand side of the diagram, one can observe that the cognitive elements directly affect students' perceptions of the meaning and

relevance within the facilitation process. On the other hand, motives and organised effort are closely linked to their perceptions of task requirements. These two approaches, left and right, should be managed to promote deep learning and thus achieve the ultimate aim of university education, namely the students' ability to achieve integrative personal understanding and ways of thinking. The different learning activities, such as preparing for and studying the course material, relating it to previous knowledge and practising new skills, will differ across subject areas and among students. But each phase should be encouraged and supported through the facilitation process by letting them work on assignments that lead to the combining of ideas into integrative personal understanding (Entwistle, 2009:118).

3.5 Student's experience of the facilitation process

The learning process starts when the student decides to enrol for a specific academic programme as they subconsciously start envisioning what to expect of the coming learning experience. Research amongst students in Australian universities pointed to three guidelines for facilitation, the steps in the process when the learning development starts in earnest (Entwistle, 2009:79). The first aspect to take into consideration is the importance of conveying enthusiasm for the subject and in the process creating and maintaining the student's interest. It is also important to recognise the student's perspective by combining humane qualities with academic rigour. The facilitator is, after all, also a mentor and the facilitator's role one of acting as a channel between knowledge and understanding.

The learning material must be facilitated at the right level in accessible language. This will, for example, determine if a tutorial or a seminar discussion should be used with regard to a specific topic. There must also be constant referencing to the student's everyday experience and possible involvement in the future workplace. The facilitator must also use his professional experience to goad concrete examples (Entwistle, 2009:79).

The third aspect is to create a learning ethos by focusing on facilitation for learning and leave enough room for discussion on the phenomena. At the same time, the facilitator must manage students' discomfort with the process, especially when dealing with threshold concepts, as discussed in Chapter 2, through acceptance of the reality that

learning can be difficult. Talking to students about their emerging comprehension is vital, which demonstrates the importance of group discussions (Entwistle, 2009:79-80).

According to Entwistle (2009:80-81), the facilitator is embedded with the authority that comes from expert knowledge and experience and students generally accept it as such, but they are not be ready to accept being made to feel inferior through authoritarian or patronising approaches. A simple aspect such as humour is an important factor in grabbing students' interests, while pictures and video material illustrating real-life applications and the use of case studies all contribute to deep learning, but they must be supplemented with giving the students enough time to discuss issues, ask questions and to reflect on learning.

Entwistle's discussion on students' approaches to learning is done in a generalised manner, depicting what the facilitator can generically expect from a student group. However, these approaches were also influenced by the students' experience of the facilitation process. Entwistle and Ramsden (2009:82) conducted extensive research with regard to this, based on interviews with a large number of university students in the United Kingdom.

The first facilitation methodology is the traditional lecture where clarity and logic in presentations must be combined with learning material on the appropriate level, but at a rate that gives students enough time to comprehend new ideas. This must be augmented with explanations of the meaning of concepts, including links between ideas and prior knowledge. Students must also be aware of the fact that the facilitator has empathy with the fact that they will struggle initially to understand certain concepts (Entwistle, 2009:82).

Small group tutorials are used extensively in the United Kingdom to supplement traditional lectures and the main function is to encourage students to recognise the contested nature of academic knowledge. In Entwistle's study, students' perceptions on discussion classes indicated, however, that they expected clear focus guidelines from the tutor and enough time for preparation. They also deem it important that students must be guided in their thinking through a process of gradual complexity of concepts, but at the same time facilitation must be done in an informal group atmosphere and with mutual respect (Entwistle, 2009:83).

Students believe that their studying is directly affected by their experiences of facilitation and set work, with assessment procedures having the strongest influence. In preparation for facilitation, the facilitator must keep in mind that assessment can interfere with deep approaches to learning as it influences the approaches students will adopt and the ability to reach a satisfying level of personal understanding (Entwistle, 2009:85-86).

3.6 The choice of facilitation methods

I will now engage with some current facilitation methods and their potential for helping students in the quest towards deep learning.

As seen in Chapter 2, Entwistle explained that the combination of STM and LTM enables the student to link together ideas and relate new to old knowledge in the solving of problems. This leads to the development of strategies of grouping separate bits of information together, a technique which is crucial in building up an understanding of complex ideas. Involvements lead to concepts and sets of concepts are brought together to create higher-level ideas or theories. However, in order to do this, we often have to put ideas on paper or computer to be able to think about several elements at the same time. That is the main disadvantage of focusing mainly on lectures in which students are overwhelmed with masses of information. The restricted size of STM makes it impossible to deal with more than limited sets of ideas over a short period. Therefore, students need a good deal of help with techniques of handling complex scenarios in their own studies utilising a wide range of the above-named process (Entwistle, 2009:14).

No one doubts that the lecture method allows a lot of information to be presented in a short time. However, the question is not what is presented, but what is learnt. Direct instruction can, however, be useful in helping students put their new learning in context, for telling stories, or for modelling a particular thought process. When little time is available, learning is easier when the facilitator carefully structures new information. It is, however, important that new information should be related to what the students already know, student performance should be monitored, and corrective feedback provided to them (Killen, 2000:3). What should be kept in mind is the research findings of Ohlsson (2011:1), which stated that apart from the ability of the human mind to retain knowledge and apply it in future situations, it can also develop creative insight, adapt cognitive skills by learning from errors, and convert from one belief to another. In other words, students must be guided to constantly question the truthfulness of so-called factual information.

Recently, a modification of the lecture format, called interactive lecture and direct facilitation, has been shown to be effective. In this method, the teacher provides information and direction, but the students have periodic opportunities during the lesson to give feedback on what they have learnt. This feedback can be through sharing with a partner, giving hand signals, or using electronic clickers, all of which give the teacher important information on how student learning is progressing (Sousa, 2016:212-213).

Adding visual material substantially increases the chances of retention. This is because the brain's visual memory system has an enormous capacity for storage and remarkable availability for recall. Verbal and visual processing allow students to become more involved in the learning process, and retention increases. This occurs because working memory has both verbal and visual components. Each select, organise, and process its respective information before sending it to the frontal lobe for integration and interpretation. In essence, the student creates both a verbally based model and a visually based model of the new learning. These models are then integrated in the prefrontal cortex and connected to information already stored in the student's memory. Such sensory-rich integration helps the student find sense and meaning in the new learning, significantly increasing the chances that it will be remembered (Sousa, 2016:213).

The above-named two methods can be supplemented by using the students' ideas in the latter phases of a lecture. At the same time the information must be organised and presented in ways that makes it easy to understand. Questioning is still an appropriate method to monitor student progress in the learning process and nothing triggers the interest of students more than enthusiasm on the side of the facilitator (Killen, 2000:12-15). Crawford (2020:1-2) discovered that using students to design questions for possible future assessments as part of the facilitation process is an effective way of getting them to read their textbooks before the appropriate lecture, generating critical thinking and helping the facilitator identify possible problem learning areas.

A great deal of research shows that getting immediately involved in new learning – that is, practising it – enhances the memory of that learning. Very often, practice involves kinaesthetic and tactile activities, thereby obtaining more sensory input. Learning by doing also encourages problem-based learning, whereby students get a real-world problem to solve that requires using their new information and skills (Sousa, 2016:213). Killen (2000:129, 132) defines problem-solving as a process of applying existing

knowledge to new or unfamiliar circumstances and in the process gaining new knowledge. But it is important to distinguish between the facilitation of problem-solving, the facilitation of how to solve problems, and using facilitation as a strategy to solve problems. Crawford's approach, as discussed previously, also contributes to developing problem-solving abilities (Crawford, 2020:1-2).

The above approach can contribute to deep learning as it helps students to gain a deep understanding of subject matter, rather than remembering bits of it, it is a good opportunity to apply existing knowledge to a new situation, and it encourages them to take more responsibility for their own learning. It is the one approach that really help students to understand what they are studying and the real world. The problem-based approach has the added advantage of boosting student motivation when compared to lecture-based instruction because students see how the learning can be used to directly address meaningful problems. This is one major reason why video games are so popular with students. They present a challenge, offer immediate feedback, gradually increase the level of difficulty, and are intensely multimodal (Sousa, 2016:213-214). This relates to the concept of scaffolding.

Ertmer and Glazewski reiterated that what is important in problem-based learning is the use of scaffolding, in other words facilitating from the simple to complex phenomena. Deep learning is promoted when the facilitator guides students through the complexity of an assignment (structuring) and helps students focus on the most relevant aspects, also called problematising (Ertmer & Glazewski, 2019:1).

We have known for a long time that the best way to learn something well is to prepare to teach it. In other words, whoever explains, learns. This is one of the major components of cooperative learning groups and helps to explain the effectiveness of this instructional technique (Sousa,2016:214). Discussions and small-group work are variations of this approach to facilitation and contributes to exchanging ideas and the active participation of students in the learning process (Killen, 2000:74). Crawford's method of linking facilitation and assessment, as discussed, also produced good results in the quest towards deep learning (Crawford, 2020:1-2).

The so-called Oxford tutorial is a traditional method of facilitation in which the student meets his academic tutor once a week, having to prepare a part of the study material for

an informal discussion. It has the advantage that the student must prepare for the session, but it is very labour intensive from a facilitation point of view. Yet, this university has obtained good results over centuries through this method and if manpower is available it can supplement other facilitation methods to advance deep learning (Palfreyman, 2002:1, 7).

Similar to problem-solving as a method of facilitation is the use of research to deepen the understanding of students. Research is a systematic process of collecting information, interpreting it and reaching conclusions. It is a very efficient way of getting students to engage in an in-depth study of content. It also contributes to making students adopt a more critical approach to learning material and it demonstrates to them that they can discover new knowledge by themselves (Killen, 2000:170, 172).

No one facilitation method exists that is best for all students all the time to promote deep learning. Sometimes, lecturing is the appropriate method when a lot of information needs to be given in a short period of time. But neither lectures nor any other method, for that matter, should be used almost all the time. Successful facilitators use a variety of methods, keeping in mind that students are more likely to retain and achieve whenever they are actively engaged in the learning process (Sousa, 2016:14).

3.7 Subject content and how it is taught

The subject content and how it is taught is the next aspect to consider. Up till now the academic argument was based on the phenomenology assumption that there is a generic communality in the process of promoting deep learning, but there are also fundamental differences between the academic disciplines.

One way of examining the inner logic of a subject discipline is to have a discussion amongst lecturers about specific threshold concepts and how they facilitated its learning. Three characteristics are identified:

- The first characteristic is that the programme is distinctive in relation to the profession, such as the JSCSP having been designed for education and training of senior officers in the armed forces.
- It is prevalent within the curriculum of the JSCSP, so that there are certain continuities that are like a golden thread in the programme.

- Signature pedagogies have become vital to the pedagogy in general of an entire profession as elements of education, training and development, and socialisation in that profession, such as military education. Entwistle calls this, ways of thinking and practising (WTPs). (Entwistle, 2009:94)

The external influences in this area comes from the facilitation body (education and training service provider such as the SANWC and in future its academic partner the Military Academy as the Faculty of Military Science of Stellenbosch University).

The phases of thinking about how to plan facilitation are bound together by the inner logic of the subject discipline and its pedagogy. The planning and facilitation process will follow the logical path from bottom to top in the diagram. (See Figure 3.1) The foundation of this process is the fundamental beliefs about facilitation and the role of the facilitator. These will impact on the target understandings, set the form of any through lines offered to students, and influence the selection and organisation of course content. Only then can decisions be made on the best way to conduct the facilitation. At this stage, the list of activities in Figure 3.1 provides an idea of the process where facilitation is synchronised with the learning phases as discussed. But there is more involved than just identifying the steps in the process. As had been indicated earlier, good facilitation also involves the need for academic rigour in facilitating at an appropriate level for the students, conveying feelings, arousing interest, and creating a supportive learning ethos (Entwistle, 2009:118-120).

The above process is unique with regard to the JSCSP as the facilitation of the academic subjects is focused on thinking like a practitioner of Operational Art, the theory on campaign planning, which culminates in the application of problem-solving models such as the CPP. Security Studies is focused on the current global and regional security situation, providing the general framework within which military problems will be solved (Williams, 2008:2). Operational Art and OOTW are based on current SANDF doctrine. Military History focuses on the evolution of war and warfare and how the past influences the present in military affairs. However, it is still part of History and some of the concepts in the general discipline are also applicable (Jessup, 1979:14-27). Law of Armed Conflict or International Humanitarian Law provides the legal framework within which military commanders must solve problems (Baylis, Wirtz & Gray, 2018:104). These five disciplines, with their distinctive concepts, educate the student on the programme within

a specific framework and provide the foundation for the main discipline, Operational Art with its own distinctive concepts (Vego, 2000:2). The application of the WTPs of these disciplines will be evaluated in a later chapter so as to combine it with the results of fieldwork.

3.8 Curriculum design and the link to the facilitation process

The current approach in curriculum design is to change curriculums in ways that would make the concept of understanding the central activity in the guidelines for the application of education and training. To achieve this, the main goals of a course must have a specific focus on the broad aims for the whole learning activity. These goals must also be constructed so that they are easy to remember and clear as to how new topics relate to them, based on the articulated beliefs and values of the specific subject matter (Entwistle, 2009:104).

Specific topics must be selected that will provoke thoughts and encourage active discussion and when designing assignments, it must develop understanding through assessment. The assessment criteria used in this process must be closely related to the course goals. Provision must be made for feedback to improve student understanding and students must be encouraged to do self-evaluation of their approach to the learning process. Within topics, assignments must be identified that will encourage students to think critically and to use evidence to reach their own conclusions. But it must relate to the overall goals of the course (Entwistle, 2009:104).

The above guidelines demonstrate to educational designers how to create conditions for learning that have a consistent focus on understanding. But Entwistle (2009:105) advocates that these should be supplemented with expository facilitation. In this, the facilitator provides initial instruction and skill training, but then encourages students to become independent in their learning within what is called a powerful learning environment. At Harvard University, this was done by using a system where the emphasis was on open problems to arouse interest and provoke discussion. A scaffolding system is used in which facilitator support is gradually withdrawn, while still ensuring that students begin to use strategies independently.

At the same time, students are encouraged to monitor the effectiveness of their own learning, studying by themselves and adjusting the learning processes where needed to

achieve their goals. In the process, they will become metacognitive in their approaches to learning. Facilitators must regularly create a culture within which students feel more than ready to explain their approach to the learning process to each other. At the same time, they must be introduced into specific learning strategies (Entwistle, 2009:106). This relates to Leaf's argument about the recognition of patterns, which is the recall of existing descriptive systems in the brain in order to facilitate the re-conceptualisation of knowledge (Leaf, 2018:226).

What must now be considered is a deeper analysis of the steps involved in the planning and facilitating of an academic course, but with a continuing concern about what will encourage an integrative personal understanding of the academic content of a subject discipline.

3.9 Planning a course

Generally speaking, planning consists of two stages, namely the aspects relating to the planning of the course and then considering ways of ensuring that the facilitation process promotes high-quality learning.

The first stage is to determine, based on the curriculum, what topics are to be included and in what sequence and how should it be facilitated, such as lectures, independent study, the internet or through book lists. This is based on beliefs about facilitation and the role of the facilitator. Who should be responsible for what topic and how can provision be made for collaborative working or discussion in groups (Entwistle, 2009:121)?

The next step is to determine what the facilitating approach should be where a student-focused approach places more emphasis on the conceptual development and understanding of students and a teacher-focused approach leads to surface learning. There is also a difference between a holistic (responding to the whole picture) and a serialist (step-by-step progression and clear logical developments) approach, but both can contribute towards deep learning (Entwistle, 2009:121).

It is important that facilitators make time during the planning of a course to discuss the work with other colleagues and to compare observations in order to ensure that an approach to deep learning is adopted (Entwistle, 2009:121).

In the next step, thinking must take place about the subject and its pedagogy. What is the nature of the discipline and how must it be facilitated? Talking to students is a good starting point in terms of their approach to studying to determine if the facilitator's approach is teacher or student focused. Performance in assessments is less important than learning that produces a sustained and substantial influence on the way people think, act and feel. The focus in a deep learning approach should be to get the students to realise that knowledge is a collection of models of the world, invented by individuals, rather than indisputable facts. That is how critical thinking is promoted (Entwistle, 2009:121-122).

3.10 Target understanding and through lines

Target understanding refers to what facilitators expect students to learn. Sometimes students must reach conceptions that are closely similar to that of the facilitator, but in most disciplines independent interpretations are strived for. Therefore, a common framework of intended learning outcomes must be in place, but there must not be a 'tick the box' approach in student learning and assessment (Entwistle, 2009:122).

Students must be encouraged to develop an understanding based on multiple interconnections within a topic and they must constantly be reminded about the main purpose of the course. This will indicate course requirements and the facilitation and learning approaches that reflect those aims in the form of a cluster of concepts and also indicate threshold concepts. During the selection and organisation of course content, the first trap that must be avoided is too much volume and detail. What matters is the applicability of concepts (Entwistle, 2009:123).

What is the role of different facilitation methodologies? The focus should be on the students being able to study more and more on their own. The facilitator should focus on key aspects to save the students' time. The tempo of the learning process should be such that students get the chance to reach a thorough understanding of the subject (Entwistle, 2009:124). Entwistle uses the term 'through lines' which is not present in the Oxford Dictionary. He refers to broad questions that can provide a thread of thinking for a module in the curriculum (Entwistle, 2009:124).

3.11 Facilitation that encourages thinking and understanding

The central question is, what facilitation approach will encourage thinking and understanding, which are key components of deep learning? The following features of facilitation provide a range of ideas that are focused on encouraging students to use a deep approach in constructing their own understanding, based on academically accepted concepts and theories that satisfy the conventions of the specific subject discipline.

The first step is to provide an overview and the structure of the discipline. The students must be made able to see the logic of the way that knowledge has been organised, making it easier to follow the reasoning involved. A good way to monitor the effect on the students is to let them draw concept maps to illustrate their understanding of the subjects (Schwendimann, 2015:1) and to use small-group discussions and to provide feedback to the facilitator (Entwistle, 2009:125-127).

The next step is to arouse interest, explain terms and encourage understanding. Initially the organisation and presentation of the study material will arouse and maintain the interest and attention of the students. However, the feelings aroused in the students must also be considered. According to Entwistle (2009:128) this could be the most powerful influence on learning, based on perceptions of the facilitator. The facilitator's attitude towards the learning material will rub off on the students. An approach based on passion for the learning process and contents of the subject discipline as well as involvement with students' learning problems will stimulate interest and create an intrinsic motivation to understand the learning material. This is especially true if knowledge is operationalised by linking the learning process with the real world.

Technical aspects of facilitation are still important in the sense that learning material must be explained thoroughly by providing a simplified explanation, adding detail and gradually focusing on the complexity of the problem. This must be supplemented by exercises in which students build their own constructions of the knowledge based on understanding the underlying principles of the subject discipline. It is impossible to achieve this with the traditional lecture as students only passively 'absorb facts'. Entwistle's solution to this problem is the use of occasional five-minute short-answer or multiple-choice concept tests, followed by small-group discussions where the students discuss their answers. What is important is that face-value 'mistakes' in answers should be approached as possible variations in interpretation (Entwistle, 2009:130).

A valuable method is to ask students at the end of a facilitation session, to write down on a notice board the most important point made in the learning session. Again, the issue of threshold concepts come to the fore, as it might occur that the students are confronted by this. The facilitator must then ensure that the concepts are thoroughly understood before the learning process continues (Entwistle, 2009:130-131).

The next step, according to Entwistle (2009:131), is the development of exemplifying ways of thinking and practising. Good facilitators of learning try to create a natural critical learning environment. Students must be given assignments that develop critical thinking where they have to reason from evidence, examine the quality of their reasoning, using a variety of intellectual standards, make improvements in their arguments while thinking, and ask insightful questions about the ideas of other students. It again comes back to the concept of small-group discussions, but under guidance, so that there is a critical discourse and not just conformation of thinking.

The essence of Marton's Variety Theory, as discussed in Chapter 2 is to use examples, illustrations or personal anecdotes to allow students to look at a topic from a variety of complementary perspectives (Entwistle, 2009:132). In this regard, see also Ohlsson's arguments as engaged with earlier in this chapter. As was discussed under students' approach to learning, the art lies in recognising critical features of a phenomenon and to distinguish them from other incidental aspects. This does not come naturally to all students and the facilitation process must be planned so that they are guided in the process. This can be done by the students writing down their interpretations and comparing a few of them in class under the guidance of the facilitator. However, Marton emphasised the importance of students not being exercised in ways of solving problems but being encouraged to identify the critical features for themselves and developing their own solutions. Concept mapping, as discussed earlier, can be used successfully to identify the structure of an author's argument (Entwistle, 2009:133).

This whole above-mentioned process points to the use of dialogic concept maps and tutorial facilitation. Dialogic concept mapping can be used to instruct the students to provide their own maps, to explain how they developed it and to reflect on their understanding of the maps in discussions with other students. This interaction of individual reflection and group discussions can even be done by using intranet message boards or 'blogs' leading to meta-learning. At the same time, when using tutorials, the

facilitator must be well prepared to stimulate ideas. Also, it is important to focus on to the extent to which the student understands the situation, rather than looking for 'correct answers.' This use of group dynamics, where ideas are shared and discussion takes place, has lasting value for students after graduating as this is how they will apply it in the workplace in the solution of problems (Entwistle, 2009:133-134).

How can this process be monitored? In the traditional lecture, it is easy to assess if the majority becomes sleepy or if very few questions are asked during or at the end of the learning session. Detailed evaluation questionnaires provide the opportunity to monitor the effectiveness of group work. At the same time, it is vital to identify the so-called 'big ideas' of a discipline through constant research and, when students recognise it in class, to elaborate on it during discussions (Entwistle, 2009:136).

It is easier for students to develop comprehension of the main concepts of a discipline when they are involved in solving problems during class activities (Ganyaupfu, 2013:33). What works well, according to Entwistle, is to give them short research assignments based on problems in the real world so that they get the feeling that they are part of the scientific process of a journey of discovery in understanding the real world. However, it is vital to demonstrate appreciation for their efforts and to assist them if the learning process becomes difficult (Entwistle, 2009:135-137).

3.12 The role of technology and blended learning

Apart from careful planning and meticulous application of the quest for deep learning, one should also take into consideration the impact of technology in the information age. It has been pointed out earlier that a dependence on the internet, computers and cell phones and other handheld devices has certain negative consequences for thinking abilities and thus for the leaning process, as discussed in Chapter 2, (Leaf, 2018:20), but it can also be used to enhance the educational process (Kelley, Chapman-Orr, Calkins & Lemke, 2019:1).

Entwistle (2009:137-139) points to the enormous impact of technology. It has changed the ways that universities are administered, courses organised, and materials provided to the students. It has also enabled e-learning, contacts between students and the lecturers through e-mails and blogs. Lectures can, for example, now be provided as podcasts, enabling students to catch up what they have missed or re-study lectures that they found

difficult. Technology has also helped with the problem of staff handling large classes and the demands made on assessment as a result. Technology provided learning materials to students via systems such as the intranet.

The danger is that these systems could be used as a convenient way of providing knowledge and no more than that. The nature of student understanding warns against this – drawing attention to the importance of students engaging with topics and interacting with ideas. E-learning programs must be scrutinised to ensure that they are designed to create this effect. As explained with the use of 'clickers', information technology has the capability to promote student understanding, but it must be incorporated in the planning for facilitation. Certain computer programs such as interactive models have been used in areas such as medicine and science facilitation alongside traditional facilitation methods but adopting such programmes for educational purposes is time-consuming and expensive (Entwistle, 2009:138). However, good results in terms of retrieval of information, the first step in deep learning, have been obtained with computer models such as *PeerWise* which enables students to create their own multiple-choice questions and discuss it with their peers. This has proved to be valuable in the process of retrieving information already learnt (Kelley, Chapman-Orr, Calkins & Lemke, 2019:1).

Entwistle (2009:138) propagates 'blended learning' in which e-learning and traditional facilitation methods combine; this is especially suited to distance and part-time students, but it is no short-cut to success as e-learning is a training aid and no more.

In the traditional lecture, the use of PowerPoint slides can support student understanding provided they are well designed. However, putting too much information on a slide will negate the main purpose of providing a support framework for an explanation. Too many slides in a lecture amounts to an overload of information and background designs and too many images or logos distracts attention from the main message. Slide shows are by nature linear, making it difficult to create the sense of interconnection between ideas – the essence of understanding. Thus, the slide-show must be specifically designed to promote this to overcome the sense of linearity. Slides are sometimes available as handouts but students later struggle to follow the argument when referring back to it. Thus, it must be supplemented with supplementary material put on the web to remind the student what the argument was all about (Entwistle, 2009:139).

The golden rule is, as in traditional approaches to facilitation, that the use of new technology must help students to understand and encourage the tenets for thinking and practising in a specific subject discipline. Technology cannot replace the personal touch of the facilitator, explanations tailored specifically for a certain group, enthusiasm for the subject, or empathy with students when they struggle with work that is difficult to understand (Entwistle, 2009:139).

The last aspect with regard to the facilitation process is support for individual learning and studying. According to Entwistle (2009:161) students face two distinct set of skills that they have to develop: those required to master the knowledge and understanding within a specific subject discipline and those that are involved in carrying out the work of learning – study skills.

According to Entwistle (2009:161-162), students will on average have been given some study skills training during the school years, but university education demands different skills, for example taking notes during lectures, writing essays, participation in group discussions, problem-solving and preparing for a variety of types of assessments. Some universities provide bridging training in this regard, but on average students will expect their facilitators to help them. Entwistle and his team at Edinburgh University developed questionnaires to assist students by demonstrating to them to what extent they focus on rote, deep and strategic learning. Making students aware of their approaches to learning is also a facet of meta-learning, the art of understanding one's own approach to the learning process. This can be supplemented by letting students compare study methods during tutorials. The ideal is that students will strive towards capabilities such as intention to succeed, ability, exertion, planning, study discipline, alertness to application, and transfer to the workplace.

3.13 Promoting deep learning through assessment

Assessment is part of the learning process and the approach leading to deep learning is one of learning-centeredness. It enhances learning as the main activity in the assessment process (Johnson, 2013:27).

While conducting interviews with students on learning approaches, Entwistle discovered that students act strategically in writing essays or preparing for examinations, keeping in mind the specific types of questions expected and the kind of answer the assessor expects.

Thus, their perceptions of assessment affected their approach to learning, implying that it is vital that assessment instruments be designed to promote deep learning. The reality of the situation is also that, as seen with the issue of threshold concepts, students only learn to understand the ways of thinking within an academic discipline and the conventions for interpreting evidence and developing arguments gradually. Thus, the perceived nature of upcoming assessments affects the direction that learning takes towards understanding or reproduction. At the same time, the effectiveness of feedback determines how much the learning strategy can be improved in future (Entwistle, 2009:144).

In terms of the assessment process, the next step is the allocation of set work and feedback on it. From the perspective of deep learning, the main function of assessments is to develop ways of thinking. There will be a difference between the subject disciplines. The common quest is, however, that assessment must focus on certain aspects (Entwistle, 2009:152).

In assessment design, the question must be asked about what the critical features of a topic or concept are and how they can be used to evoke learning processes that will help build integrative personal understanding of the learning material. In areas where skills and problem-solving are involved and repetition is needed, varying the critical features will make its effects stronger (Entwistle, 2009:152).

Completed assignments must be judged according to predetermined criteria which should focus on the student's own understanding of a topic. For example, in essays the quality can be judged in terms of how much material was used (breadth), how well ideas were integrated with other work (depth), the logical arrangement of ideas (structure), and how well the conclusions answer the research questions (explanation). To complete the learning cycle, the feedback must reinforce the student's ability to think for him/herself. Thus, it must not just focus on inadequacies, but also provide for opportunity to give encouraging comments and suggestions about how to improve future work. Large classes provide a problem to adhere to the above-mentioned criteria and forces the assessor to give feedback to the whole class or use of an intranet. Self- or peer-assessment can also help. The important aspect, however, is to use the feedback as an opportunity to inquire as to what a concept really means to a student, to suggest ideas that might be developed

further, where additional evidence can be found, and, most importantly, what alternative interpretations there could be (Entwistle, 2009:153-154).

Types of assessment will also impact on the learning process. The purpose of assessment, from a facilitation view, is that it must maintain the standards needed to certify the level of performance reached, but at the same time also contribute to the learning process. The first need is addressed mainly by means of summative and the second through formative assessment, although summative assessments can also contribute to the learning process (Entwistle, 2009:157).

Essay assignments lend themselves the best to promoting deep learning, but their problem is that it is difficult to maintain consistency in the marking process. There is a tendency to increasingly the use of multiple-choice questions which are marked easily and have the advantage of being possibly being computerised. However, research indicates that this method promotes rote rather than deep learning. Consequently, a combination of multiple-choice and short essay questions have become fashionable to address above-named problems and promote deep learning (Entwistle, 2009:157-158).

The crux of the matter is that facilitators/assessors must be prepared to spend more time and effort to promote deep learning as a combination of assessment types that contribute the most to promoting deep learning.

Essays, case studies, peer assessment, projects, and student presentations promote deep learning, but examinations in the traditional three-hour essay, if revision is allowed, can contribute substantially to deep learning. Questions can be designed to reward and encourage personal understanding. Open-book exams promote a deep approach as the anxiety to memorise large amounts of information is removed (Entwistle, 2009:159-160).

The value of using checklists is that each indicator is accessible and can serve as a means of checking. It is a list of behaviours that is observable to the student and to others. Checklists should be used, not as a means of scoring with a point count, but as a way for students to do some self-reflection, for a teacher/facilitator to offer some observations as feedback, and as an opportunity for students to do some peer observations (Bellanca, 2015:L1633).

A term that is important in the assessment process is dispositions. A disposition is a habit, preparation, state of readiness, or tendency to act in a specified way. When we use the term dispositions, we are referring to thinking dispositions, that is, tendencies to have particular patterns of intellectual behaviour that should be promoted in the assessment process (Bellanca, 2015:L1354).

Skilful thinkers therefore have both thinking abilities and thinking dispositions. Critical thinkers who seek balanced reasons in an argument, for example, have both the ability and the disposition to do so. Dispositions that should be developed through the facilitation and assessment processes are persistence (sticking to an assignment until it is finished), managing impulsivity (thinking before making a decision or acting), listening with understanding during discussions, and flexible thinking (especially the ability to grasp that there is more than one way to solve a problem). Thinking about thinking (metacognition or self-reflection) must also be developed (Bellanca, 2015:L1355).

Deep learners usually strive for accuracy and precision in order to discover the real meaning of phenomena and look for evidence to claim and consider alternative explanations. An important intellectual disposition is to apply past knowledge to novel situations, comparing phenomena and identifying similarities and differences. Students must be encouraged to think and communicate with clarity and precision and use correct terminology (Bellanca, 2015:L1356).

All the above-named can be collectively grouped under creativity, the ability to conceive problem solutions differently, combined with the ability to figure things out, especially in problem-solving. This can only be done through taking responsible risks, the willingness to try something different, and if it does not work, to learn from the experience. This should be augmented with humour and have the attitude that it is not a crime to make a mistake. Students must be encouraged to think interdependently, come to the realisation that workplace problems will be solved collectively, and thus inculcate the ability to be a team player and remain open to continuous learning through the willingness to always learn from situations and even making it a lifelong habit. Rubrics are good assessment instruments to reflect the above dispositions (Bellanca, 2015:L1489-1500).

Portfolios are the ultimate assessment instrument that can develop the above-named dispositions in the learning process. Portfolios offer a different option for assessing growth. As students become familiar with the dispositions, they are able to identify which of the habits were most helpful as they were learning. For example, if they worked on a project, they might identify which of the habits they used in the planning stage, which in the process of developing the project, which in the evaluation of their final product, and, finally, which in their reflection of the learning process as a whole. This process reinforces this inner self-learning process. As students begin to consciously think of those questions, they can also begin to document that thinking which is specifically tied to phases of their work process. The most significant value of the portfolio is its representation of growth over time (Bellanca, 2015:L1653-1654).

Course designers have to take the above-mentioned characteristics into account when deciding what combination of assessment methods will be used. However, promoting a deep learning approach implies that the different set of principles be applied to the assessment process rather than for traditional rote-approach assessment. The most important principles of traditional assessment are fairness, validity, reliability, practicability, transparency, relevance, flexibility, sufficiency, authenticity, legitimacy, development (Nel, 2011:67).

Three of these principles are applicable in the promotion of deep learning. Flexibility implies that the assessment must be appropriate to the range of knowledge, skills and understanding encompassed by the competency standards and to the range of delivery modes, standards of delivery, and needs of the education process. It should also accommodate the focus of the student as variations and creativity should be taken into account. Authenticity means the assessment must be based on evidence that is directly linked to or created by the student. It also refers to real-world problems, skills and performances. Thirdly, developmental implies that the assessment must be designed and used in ways that enable students to develop new skills, knowledge and understanding (Nel, 2011:64-77).

Entwistle (2009:160) identified assessment principles that are specifically designed to promote deep learning such as alignment. In alignment, the aims of the education process are rarely unidimensional, therefore a range of assessment methods will be required to cover differing skills and ways of thinking. It is also important to look for

complementarity between them in their possible effects on approaches to learning and if the methods are adapted to the specific needs of the subject discipline. Additionally, he identified inclusivity, which is the process of taking into account the different kinds of educational and cultural experiences among the students, as well as forms of disability that may affect some of them (Entwistle, 2009:160).

Feedforward means that assignments and assessment tasks are built into a recursive cycle to allow comments on completed work to be used in later work. This should be supplemented with cumulation which means that instead of a few major pieces of assignments, students are given shorter pieces that can either be on paper or sent electronically, with feedback that leads towards a more demanding assignment. This relates to the use of the scaffolding principle in facilitation, mentioned earlier in this chapter (Entwistle, 2009:160).

Assignments and assessments must be strategically planned across a whole course to follow the type and level of knowledge and skills that are expected to be developed, the principle of progression. Another principle that promotes deep learning is that students and assessors must be equally clear about what the assignments and assessments require and what criteria are being used to determine grades and feedback must lead to improvements of performance in future assessments (Entwistle, 2009:160).

Assignments take substantial time and effort and students will balance different assignments in terms of importance. Assessors also need to weigh tasks and grading procedures against time and cost. It is important to note that different assessment methods do not just affect students' approaches to learning, it also has an impact on the distribution of effort among different assignments, the principle of economy (Entwistle, 2009:161). Entwistle's new assessment principles are, however, not the only way to promote deep learning through assessment.

3.14 Utilising Bloom's redesigned taxonomy to improve deep learning

Both Krathwohl (2002:212) and Sousa (2016:385) propagate a re-evaluation of Bloom's taxonomy of learning in its new format as the basis for the design of facilitation and assessment practices that promotes deep learning.

Bloom saw the original taxonomy as more than a measurement instrument. He believed that it could serve as a common language about learning goals to facilitate. As a means of communication across persons, subject matter and grade levels. It had to serve as the basis for determining the details for a particular course and its curriculum and serve as a means for determining the congruence of educational objectives, activities and assessment in a unit, course or curriculum (Krathwohl, 2002:213).

In the original, taxonomy of the cognitive domains of learning were on the different levels, knowledge, comprehension, application, analysis, synthesis and evaluation. In all the time that I served at the SANWC, these cascading categories as ordered from simple to complex and concrete to abstract were used as the foundation for the design of facilitation and assessment. Personally, I always felt that synthesis and evaluation should be switched around, as in the new design. Krathwohl (2002:215) explains how the re-naming and re-categorising of the taxonomy makes it more relevant in the quest towards deep learning. The new levels are, remember – retrieving relevant knowledge from LTM, understand, apply, analyse, evaluate and create – bringing the elements together.

It is important to remember that Bloom's model describes the cognitive processing of information that poses no immediate danger to the student. It is not intended to describe emotional thinking, which often occurs without cognitive input, but it should be noted that Bloom and his colleagues also developed a five-level taxonomy of the affective domain, setting up a hierarchy of emotional connections to learning (Sousa, 2016:384).

To what extent does the revision of Bloom's taxonomy address the major areas mentioned earlier that are included in most of the current models describing the dimensions of thinking which Sousa deems to be vital in the deep learning process? The six levels of the revised taxonomy cover all the skills included under these processes (Sousa, 2016:384).

The new taxonomy fits into the framework of constructivism, which aims at improving the learning process. Teachers asking open-ended questions and continually encouraging students to analyse, evaluate, and create fall in this category (Sousa, 2016:384).

Curriculum changes to accommodate the taxonomy have the implication that they can get slower learners to do higher-order thinking successfully and often. One way to accomplish this is to review the curriculum and remove the topics of least importance in

order to gain the time needed for practice at the higher levels. This is known as strategic abandonment. An effective method for doing this pruning is to list all the concepts in a curriculum in order of most to least important. Delete the least important bottom 20 to 25 percent, and use the time gained by this sorting and paring to move all students up the taxonomy. Finally, take advantage of the power of positive transfer by integrating these concepts with previously taught material and connecting them to appropriate concepts in other curriculum areas (Sousa, 2016:384).

3.15 The role of quality assurance in promoting deep learning

Quality assurance in the education and training environment can be defined as a mechanism that encourages service providers and help them to improve the quality of their education, training and development by means of evaluation (Nel, 2010:ix).

Entwistle quality assured his facilitation at universities by using different sets of questionnaires to determine student strategies towards the learning process and their reaction to the teaching/facilitation process. The initial models were derived from educational psychology, then leaned over to the ideas of Marton and the Gothenburg group and in consultation with John Biggs and Paul Ramsden. At Edinburgh University, he worked with Hilary Tait and Velda McCune leading to the development of the Approaches and Study Strategies Inventory for Students (ASSIST) (Entwistle, 2009:169).

This included sections on conceptions of learning and preferences for different types of teaching/facilitation to demonstrate the links these have with approaches to learning. Sophisticated conceptions of learning are directly linked to a deep approach and students demonstrating these prefer student-focused facilitation. Students with less sophisticated conceptions and a surface approach feel comfortable with a teacher-focused approach, which is unlikely to support high-quality learning. However, the questionnaires move away from the traditional approach of measuring only student satisfaction with the education process. It focuses also on how it could be improved (Entwistle, 2009:169-170).

The problem with this approach is that it only entails the academic staff evaluating their own facilitation practices, which is not a bad thing in itself. However, since the introduction of the National Qualifications Framework (NQF) in South Africa, education

and training quality assurance entails more than just teacher/facilitator self-evaluation. The following figure illustrates the process in South African institutions.

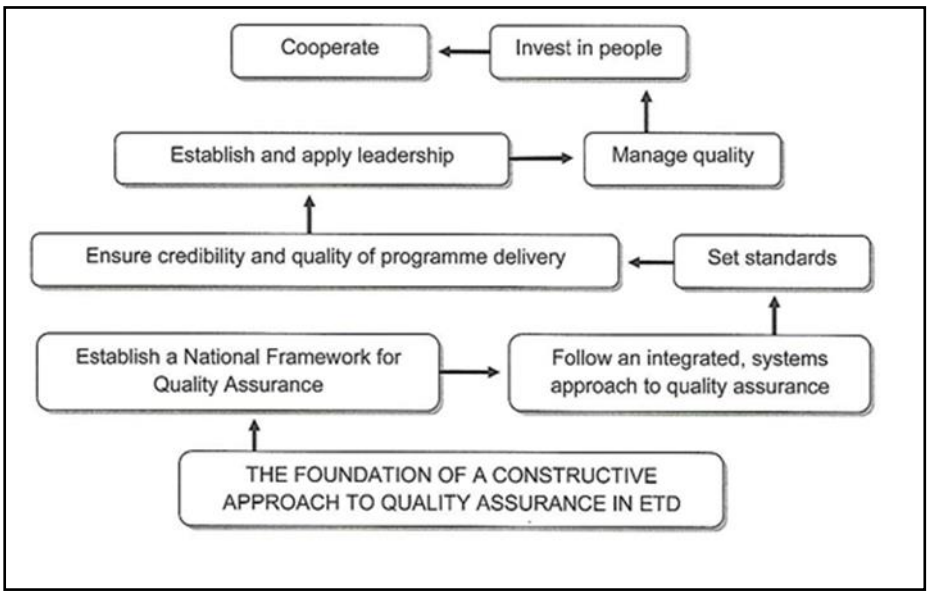

Figure 3.2: The process of education quality assurance at South African service providers (Nel, 2010:vii).

The foundation consists of a value system into which all role players must buy as it is designed to protect the interest of the student. The following guidelines apply in the design of such a system (Nel, 2010:2-5).

There must be consensus as to what quality education and training is. This will form the foundation for a constructive quality culture that depends on embedded beliefs, values and knowledge in organisations that are focused on improving the education process. There must also be continuous performance in applying the embedded beliefs, values and knowledge in organisations. It must also embed the principle of lifelong learning in the educational culture of a service provider in which the approach is that education is not the exclusive domain of young people (Nel, 2010:103). This is especially true in an organisation such as the SANDF where officers are part of the education process till near the end of their careers.

Quality assurance must ensure that the education and training process is designed to create skills that are in line with the needs of the industry. In this case, as discussed in Chapter 1, the competence to deploy in military missions and to be appropriately prepared

to participate in the Security and Defence Study Programme as presented at the South African National Defence College.

Stakeholders such as the government place pressure on educational institutions to be accountable for providing a high quality of education. In such a scenario, quality assurance must ensure that students receive education that is relevant to a changing world, take into account the context in which learning must take place, and equip students correctly for the work environment (Maree & Fraser, 2008:161). Therefore, in principle, education and training providers are responsible for establishing procedures for quality assurance. The focus here is on the provider's own internal monitoring system and evaluation programmes (Nel, 2010:2-5).

The next step in the process was the establishment of a national framework for quality assurance (NQF). This was done in South Africa after 1994 and with the migration of the JSCSP qualification to a postgraduate dispensation the guidelines of the CHE for accreditation purposes are applicable as well as that of SASSETA for those students not qualifying to enrol on the postgraduate diploma. This will be used to evaluate the level of quality assurance at the SANWC as applied during the case study of 2018.

Linking the quality assurance system with corporate strategy is one way to ensure that there is an integrated, systems approach to quality assurance. Also, by using the guidelines by the CHE and SASSETA, it is ensured that the quality of programme delivery can be guaranteed. Organisational leadership is vital in this process in order to manage quality. For that to succeed, there must be an investment in people and cooperation (Nel, 2010:1). Entwistle (2009:181) also emphasises the importance of the further education of teachers/university lecturers in order to promote deep learning as part of his heuristic model. Quality assurance must thus ensure that university facilitators can see for themselves how their teaching/facilitation is affecting their students' learning, and, if needed, encourage them to modify their approaches accordingly.

3.16 Conclusion

For the SANWC as an education and training service provider, the crux of the matter is to discover to what extent this learning institution promotes deep learning in each of the education processes, namely facilitation, assessment and quality assurance and does the curriculum design support this? To my mind, looking holistically at the theory of deep

learning it can be classified as functional if, according to Neuman (2014:83), the institution uses the idea of a system with a set of mutually interdependent relations. If all the components of the education process, as stated above do not contribute in an appropriate manner, the end result will be students who do not adopt a deep approach to their studies.

As stated in Chapter 1, my approach will be to apply an existing theory in order to analyse specific settings placed in a macro-level historical context. The idea is to demonstrate connections among micro-level events and between the micro-level situations and larger social forces with the purpose of reconstructing the theory and informing social action as explained by Neuman (2014:83). In other words, to what extent do the different components of the education process on the JSCSP, as discussed in this chapter, promote a deep learning approach and how can it be improved?

Entwistle's heuristic model, ideas of other authors such as Sousa and Bellanca and Bloom's revised taxonomy provide a firm theoretical foundation to determine which social factors in micro-level situations interact with the macro-level consisting of larger social forces such as the needs guidelines of the DOD, as outlined in Chapter 1, and its interaction with the academic world. In other words, to what extent was the SANWC as an education and training institution and its primary qualification, the JSCSP in 2018, ready to make the transformation towards a postgraduate diploma in Defence Studies. Also, to what extent did it prepare the graduates for operational deployment and for the last educational step in their military careers, the Security and Defence Study Programme at the South African National Defence College?

But, before the evaluation of the extent of deep learning on the JSCSP can commence the manner in which the research will be conducted must be discussed. That is the topic of the next chapter.

CHAPTER 4
RESEARCH DESIGN AND RESEARCH METHODOLOGY FRAMEWORK

4.1 Introduction

The next step in the research process is to return to Mouton's Three World framework. The social problem in World 1 was explained in Chapter 1, as well as the theories that could contribute to the alleviation of the research problem in World 2 (Chapters 2 and 3) and the model for evaluation in the case study (Chapter 3). Now the decision has to be made as to what approach in World 3 – the realm of metascience - will be followed in order to measure the truthfulness of the research process in World 2 to propose answers to the research problem and questions (Mouton, 2001:138-139).

World 3 (metascience) is where World 2 (science) is an object of critical inquiry and reflection. The aim is to evaluate what scientists do contribute to the improvement of science. This chapter will thus focus on the research design, paradigm and methodology to enable the above-mentioned.

According to Cohen (2018:3), researchers in educational sciences must not make the mistake of thinking that research is a simple process, such as baking a cake. It is complex and it also differs from the natural sciences as it is not done in a laboratory environment but is rather an art as part of an iterative and often-negotiated process in which there are typically trade-offs between what one would like to do and what is actually possible. In this chapter, the aim is also to provide conceptual clarity to key scientific concepts such as truth, objectivity and validity or truthfulness within a blueprint of how the research will be conducted. Therefore, the design of the research project, paradigms of the research approach and the proposed methodology will be evaluated. It differs somewhat from the explanation as provided in Figure 4.1 but still adheres to the concept that Mouton described.

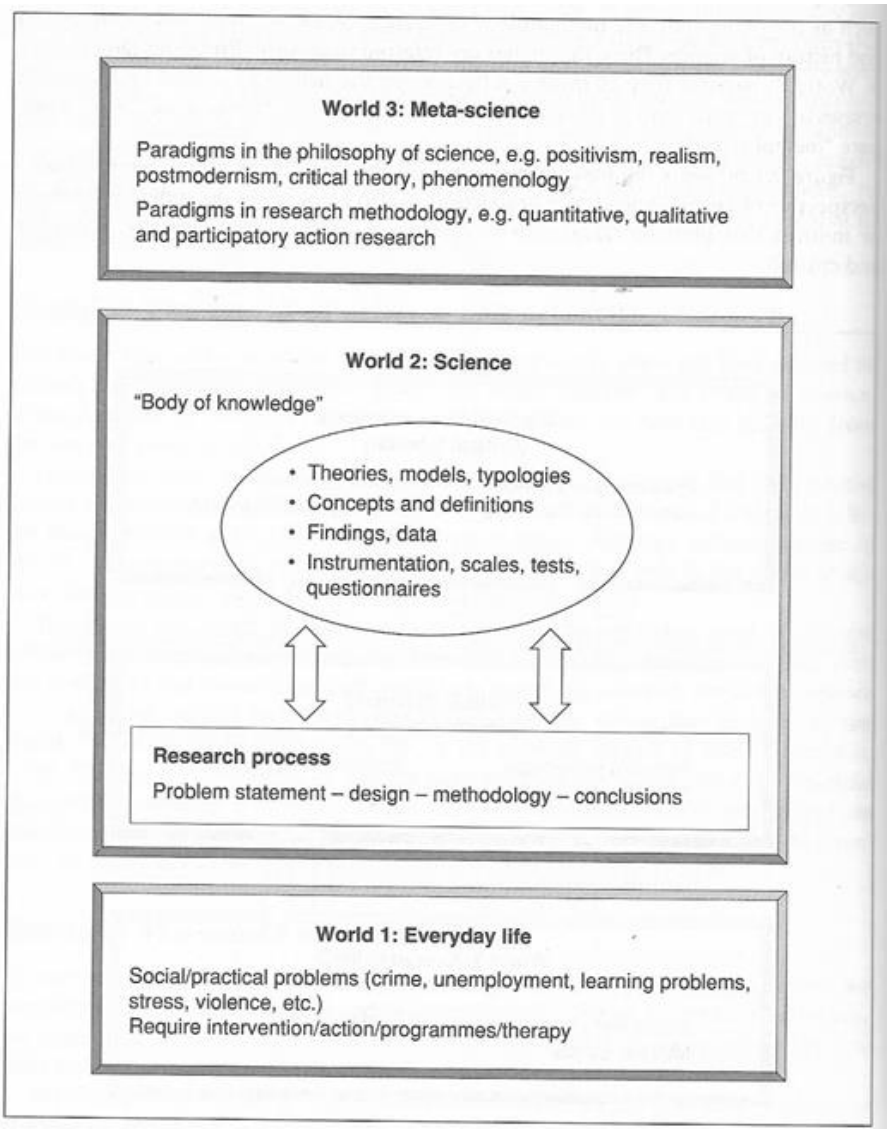

Figure 4.1: The relationship between metascience, science and everyday life knowledge with the focus on the research problem (Mouton, 2001:140)

Research is a systematic, controlled, empirical and critical process of investigation of propositions about the presumed relations between natural phenomena. It has three characteristics that distinguish it from the most common means of problem-solving namely, experience. Experience deals with events occurring in a haphazard manner, while research is systematic and controlled, basing its operations on a combination of deductive and inductive reasoning. Here the researcher, for example, is involved in a back and forth process of induction (from observation to hypothesis, from the specific to the general) and deduction (from hypothesis to implications). Hypotheses or theories, if used, are tested rigorously and, if necessary, revised (Cohen, 2018:4).

4.2 Research design

The research design is derived from the research question. It is a plan of how data will be systematically collected and analysed in order to propose an answer to the research question. It is important to determine what data must be collected to achieve this quest, but also how it will be collected, analysed and interpreted (Bertram & Christiansen, 2014:40). A research design's function is to ensure that the evidence that the researcher obtains enables the researcher to 'answer the initial question as unambiguously as possible' and to indicate the kind of evidence required to answer the research questions. This must not be confused with data, which is neutral, while evidence is the correctly identified data that enables the researcher to find answers to the research questions (Cohen, 2018:175).

The research questions, as explained in Chapter 1, entails the following:

a. To what extent does deep learning take place in the education of senior officers on the JSCSP at the SANWC with specific reference to the subjects in warfare studies?

b. Why does the learning process take place in its present manner?

c. What can be done to improve the level of deep learning in the programme?

The research design must thus be structured by the research approach which is determined by what will be investigated to find possible answers to the above-named questions. According to the theory on research design three approaches can be followed. Quantitative methods are based on numerical data with the aim of predicting and controlling the outcomes of actions and to generalise findings. Methods used will, for example, be surveys or experimental designs. Qualitative methods present interpretive data where the aim is to understand, describe the behaviour of people, their attitudes and relationship between their actions. Methods that will be used include, for example, participant observation, interviews and textual analysis. The approaches can also be combined, in the mixed-method approach as a third approach (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:14).

The research design is also dependent on the object of the study, in this case, the education in the academic subjects during the presentation of the JSCSP at the SANWC. This forces

the issue towards an approach that values people and their experiences, in this case, of a learning event (Dillow, 2009:1343). Dillow (2009:1343) elaborates:

> …it seeks to examine how they perceive, experience, and understand their world and the society that they move in. It values the meanings that they make, and it understands that the meaning making is situated, contextualised and organic. In other words, it focuses on subjective rather than objective aspects of social life and interpretation of meaning rather than analysis of structures.

This synchronises with Entwistle's heuristic model (Chapter 3) with the emphasis on the student's experience of the learning process and the impact of the education institution on them.

4.3 Research approach

The research approach in this thesis was consequently based on qualitative methods. The choice was based on the assumptions prevalent in this research approach. Human beings construct associations as they engage with the phenomenon they are interpreting. Qualitative researchers tend to use open-ended questions so that the participants can share their views. Humans engage with their world and make sense of it based on their historical and social perspectives – we are all born into a world of meaning given to us by our culture. Thus, qualitative researchers strive to comprehend the background of the participants through visiting this context and gathering information personally. They also interpret what they discover, an understanding shaped by the researcher's own involvements and background. The basic generation of meaning is always social, arising in and out of interaction with a human community. The process of qualitative research is largely inductive; the inquirer generates meaning from the data collected in the field (Creswell & Creswell, 2017:8-9).

The motivation for this approach was based on the literature study that indicated a preference for qualitative methods as it uses theories as a lens for the inquiry – in this case the application of deep learning. Relating to the research problem, qualitative research design has the advantage that its approach is one of exploring and understanding the meaning that individuals or groups ascribe to a social or human problem, in this case the extent that deep learning is utilised on the JSCSP. Also, as a form of inquiry it honours an inductive reasoning style, individual meaning and the importance of reporting the

complexity of the situation, and, at the same time makes provision for a deductive approach in theory utilisation (Creswell & Creswell, 2017:4-5).

Existing structures are also questioned in order to improve them even though it is accepted that a degree of subjectivism is present in the research (Cohen, 2018:29). The process will also be one of applying the theories in an evaluation of the use of warfare studies in the JSCSP and the teaching and learning practices currently in place in order to determine what changes need to be implemented in the process of transformation to a postgraduate dispensation.

Researchers conducting educational studies have used a variety of methods to try to make sense of the complex sets of interactions found in facilitation and learning in higher education. In developing research instruments, they have tried to use techniques that make their measurements as trustworthy as possible, and they have used multivariate techniques of analysis to explore patterns of relationships. But it is important to recognise that any findings coming from such quantitative research are in danger of limiting the researcher's understanding of the experiences of the participants. Therefore, what is needed is the rigorous analysis of qualitative data (Entwistle, 2018:21).

According to Entwistle, within the area of research into student learning as a whole, the combination of findings from inventory surveys with those from, for example rigorous qualitative analyses of interviews have ensured that the conclusions were soundly based on multiple methods and complementary research paradigms. This approach sometimes produced ideas from related disciplines that suggested generative analogies, while informal discussions at academic conferences offered alternative perspectives to challenge his previous thinking. Capitalising on these events enriched his ideas. He had co-workers, who helped substantially in shaping the development of his line of research, as most of the studies involved small teams of researchers working collaboratively, sharing and discussing their own experience and research perspectives (Entwistle, 2018:23).

Entwistle used a mixed method of quantitative and qualitative data analysis, but there was a practical reason for my choosing only the qualitative data collection and analysis method in the research design. There were only a limited number of students who were prepared to participate in the research process and according to Cohen (2018:204)

sampling in the qualitative method can be less representative than in the quantitative method.

Within the qualitative approach the focus is on trustworthiness and not validity as the aim is not to generalise the research results such as in the quantitative approach. It was determined that if the findings of the research were related to the phenomena being studied, then the factors that could influence deep learning and the extent to which it contributed to solving work-based problems as it manifests in the CPP. The findings of the research will be made available to the Research and Development Section of the SANWC to determine if it correlate with their observations of the learning process as part of the confirmability of the research results in contrast to validity in the positivist research tradition (Rule & John, 2011:107).

Furthermore, it is important to reiterate the characteristics of qualitative research as it formed the framework within which the research was conducted. For a long time, qualitative writers had to debate the characteristics of qualitative research and convince faculties and audiences of their acceptability, as we live in a positivist-oriented world. Thus, suggestions about the design section of a research project as proposed were focused on the following:

Natural setting: Qualitative researchers tend to collect data in the field at the site where participants experience the problem under study. Researchers do not bring individuals into a laboratory, nor do they typically send out instruments for individuals to complete. This up-close information is gathered by talking directly to people and seeing them behave and act within their context; is a major characteristic of qualitative research (Creswell & Creswell, 2017:181).

The researcher is the key instrument: Qualitative researchers collect data themselves through examining documents, observing behaviour, or interviewing participants. They may use an instrument for recording data, but the researchers are the ones who actually gather the information and interpret it. They do not tend to use or rely on questionnaires or instruments developed by other researchers (Creswell & Creswell, 2017:181).

Merriam and Tisdell (2015:18-19) identified the following five competencies for qualitative researchers:

- A questioning stance regarding their work and life context. Qualitative research is a means of answering questions, so one must first look with a questioning eye to what is happening in their lives. Why are things structured in the way they are? Thus, in Chapter 1, the context of contemporary military staff programmes and my personal involvement were discussed.

- A high tolerance for ambiguity. The design of a qualitative study is flexible, relevant variables are not known ahead of time and findings are inductively derived in the data analysis process. Thus, one must be content with the ebb and flow of a qualitative investigation and have confidence in the process.

- Being a careful observer. Conducting observations is a systematic process, not a casual occurrence, as is asking good questions. Interviewing is often the primary data collection strategy in qualitative studies. Getting good data in an interview is dependent on asking well-chosen, open-ended questions that can be followed up with probes and requests for more detail.

- Thinking inductively. Data analysis requires the ability to think inductively, moving from specific raw data to intangible categories and concepts.

- Comfort with writing. Since findings are presented in words not numbers, as in quantitative research, a report of a qualitative study requires more writing. The final product is typically longer than a quantitative research paper.

Creswell and Creswell emphasised the use of multiple sources of data. Qualitative researchers typically gather multiple forms of data, such as interviews, observations, documents, and audio-visual information rather than relying on a single data source. These are all open-ended forms of data in which the participants share their ideas freely and are not constrained by predetermined scales or instruments. Then the researchers review all the data, make sense of it, and organise it into codes and themes that cut across all the data sources (Creswell & Creswell, 2017:181).

Qualitative researchers employ both inductive and deductive data analysis, though they typically work inductively, building patterns, categories, and themes from the bottom up

by organising the data into increasingly more abstract units of information. This inductive process illustrates working back and forth between the themes and the database until the researchers have established a comprehensive set of themes. Then deduction is used to look back at the data from the themes to determine if more evidence can support each theme or whether they need to gather additional information. Thus, while the process begins inductively, deductive thinking also plays an important role as the analysis moves forward. I changed this around by analysing the theory of deep learning and Entwistle's heuristic model in Chapters 2 and 3 respectively before embarking on the process of data collection, analysis and interpretation, but in the latter the theory was used as a yardstick to answer the research questions (Creswell & Creswell, 2017:181-182).

In the entire qualitative research process, the researchers keep a focus on learning the meaning that the participants hold about the problem or issue, not the meaning that the researchers bring to the research or that writers express in the literature (Creswell & Creswell, 2017:181-182). For example, the majority of soldiers and especially senior officers adhered to a realist world view. This was based on the book of Hans Morgenthau, *Politics among nations: The struggle for power and peace.* According to this philosophy, the desire for power is vested in the flawed nature of humanity, therefore states and other international actors are continuously involved in a struggle to increase their capabilities which often lead to war (Williams, 2008:17).

The research process for qualitative researchers is emergent. This means that the initial plan for research cannot be securely prescribed, and some or all phases of the process may change or shift after the researcher enters the field and begins to collect data. For example, the questions may change, the forms of data collection may shift, and the individuals studied and sites visited may be modified. These shifts signal that the researchers are delving deeper and deeper into the topic or phenomenon under study. The key idea behind qualitative research is to learn about the problem or issue from participants and to address the research to obtain that information (Creswell & Creswell, 2017:181).

Reflexivity also plays a role in the research process. In qualitative research, inquirers reflect on how their role in the study and their personal backgrounds, cultures, and experiences hold potential for shaping their interpretations, such as the themes they advance and the meaning they ascribe to the data. This aspect of the methods is about

how the background of the researchers may shape the direction of the study (Creswell & Creswell, 2017:181).

Qualitative researchers try to develop a complex picture of the problem or issue under study by providing a holistic account of events during the learning process. This involves reporting multiple perspectives, identifying the many factors involved in situations, and generally outlining the larger picture that emerges. This larger picture is not necessarily a linear model of cause and effect but rather a model of multiple factors interacting in different ways. This picture, qualitative researchers say, mirrors real life and the ways that events operate in the real world. A visual model of many facets of a process or central spectacle aids in establishing this holistic picture (Creswell & Creswell, 2017:181-182).

The extent to which the JSCSP adhered to the prerequisites of a postgraduate diploma thus not only depended on the content of the programme, but also how the Junior Staff courses and pre-course study during 2017 in, for example, language training and computer sciences prepared them for the residential phase. As already stated, it was also determined by the extent to which the programme prepared the student for the workplace, specifically operational deployment and the ability to participate in the Security and Defence Study Programme at the South African National Defence College. Thus, the content of the programme and how it fitted into the pathway of learning of officers in the SANDF was discussed in Chapter 1.

The practical implementation of the above guidelines kept the following in mind. Qualitative methods employ different styles to scholarly inquiry than quantitative research. Although the processes are similar, qualitative procedures rely on text and image data, have unique steps in data analysis, and draw on diverse designs. What is important is the intent of qualitative research, mentioning specific designs, carefully reflecting on the role the researcher plays in the study, drawing from an ever-expanding list of types of data sources, using specific protocols for recording data, analysing the information through multiple steps of analysis, and indicating approaches for documenting the methodological integrity or accuracy of the data collected (Creswell & Creswell, 2017:79).

There is no one best way to plan and conduct research, just as there is no one single ‘truth’ to be discovered. Life is not that easy, unidimensional or openly understood, just as there

are no simple contrasts in educational research (e.g. quantitative or qualitative, objective or subjective). Rather, we live in a pluralistic world with many aims and kinds of research, many realities and lived experiences to catch, many outcomes, theories and explanations, many discoveries to be made, and many considerations and often contradictions or sensitivities to be addressed in the planning and conduct of the research according to Cohen (2018:3).

Establishing a study's research methods is not just a technical exercise concerned with understanding the world, it is also being informed by how we view the world, what we take understanding to be, what the purposes of understanding is and what is considered valuable. The process can be viewed in the following manner. Our analysis takes an important notion that ontological assumptions (assumptions about the nature of reality and the nature of things) lead to epistemological assumptions (ways of researching and inquiring into the nature of reality and the nature of things); these in turn give rise to methodological attention which in turn develops into issues of instrumentation and data collection. Added to ontology and epistemology is axiology (the ideals and opinions that we believe in) (Cohen, 2018:3).

Research is also empirical. The scientist turns to experience for validation. Subjective personal belief must have a reality check against objective empirical facts and tests. And research is self-correcting. Not only does the scientific method have built-in mechanisms to protect scientists from error as far as is humanly possible, but also their procedures and results are open to public scrutiny by fellow professionals. Incorrect results in time will be found and either revised or discarded (Cohen, 2018:4-5). This understanding of the world in which the study is conducted will be the next point of discussion.

4.4 Research paradigm

Supplementary to the research design, the paradigm of research will have an impact on the research process. In the social sciences, paradigms are referred to as research traditions or world views. By following a specific paradigm, researchers adopt a specific way of studying phenomena relevant to their field (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:19-20; Mouton, 1996:15).

It stands to reason that the paradigm chosen will be also be determined by the object of study, flowing from the research problem and the research questions.

Positivism is based on systematic observation, measuring and drawing conclusions in order to test a particular hypothesis. The goal of research in this paradigm is to describe, control and predict how the natural and social world works (Bertram & Christiansen, 2014:23). The problem with this paradigm is its mechanistic and reductionist view of nature which, by definition, regards life in measurable terms rather than inner experience, and excludes notions of choice, freedom, individuality and moral responsibility, regarding the universe as a living organism rather than as a machine (Cohen, 2018:14). In Chapter 1, it was explained that the learning process in staff programmes cannot be exactly measured as it is a unique type of learning experience, different from normal university studies and also different in terms of the different types of staff colleges in the world.

The problems studied by post-positivists reflect the need to identify and assess the causes that influence outcomes, such as those found in experiments. It is also reductionistic in that the intent is to reduce the ideas to a small, distinct set to test, such as the variables that comprise hypotheses and research questions (Creswell & Creswell, 2017:6). Although cause and effect played a role in the study, experimentation and the use of hypotheses to my mind, did not provide the answers to the research questions as will be explained later.

According to the critical paradigm, reality is shaped by social, political, cultural, economic and other dynamics. The aim of research in the critical tradition is to make judgements based on identifying power relations and positioning. They do not just want to describe and understand but want to change society to become more just (Bertram & Christiansen, 2014:27, 29). The critical paradigm was not suited for this thesis, in which I strove to understand the learning process during the JSCSP and tried to improve it according to the tenets of deep learning.

According to the postmodern paradigm, the rationality, scientific methods, and certainties of the modern world no longer hold sway. Explanations for the way things are in the world, are accordingly nothing but myths or grand narratives (Merriam & Tisdell, 2015:10-11). I accept the reality that there are different interpretations of social reality, but to my mind this approach goes too far in terms of relativism and was too unstructured to answer the research questions.

The most appropriate paradigm within which to do this research was that of interpretivism, although, as I will explain, it was supplemented with social constructivism. Both approaches linked up with the research approach, as explained earlier, in which humans construct meaning out of their experiences and the people being studied must be able to share their personal experiences with the researcher. In this process, the personal background of the participants must be comprehended, and the researcher must acknowledge his own involvement in the process. The generation of meaning is thus social, with its origins in the interaction with a human community.

Starting in the late 19th century, the word 'science' initially referred mainly to the natural and physical sciences while the social sciences referred to psychology, sociology and education only started off in the late 19th century. Until the 1950s, the positivist approach to research was also prevalent in educational sciences but then this approach to research was increasingly challenged (Bertram & Christiansen, 2014:25). In the paradigm of interpretivism, its proponents believe people are different from substances and cannot be studied in the same way as objects in natural science. The reason for this is that human beings change constantly and are permanently being influenced by the learning environment (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:27-28). This is a valid argument as the subjects of research in the social sciences are people, as individuals or groups and not elements of the natural world which found in the positivist tradition (Bertram & Christiansen, 2014:25).

People, in general, behave in more complex ways than objects in natural science such as plants, animals and atoms. People's responses in a specific situation depend mainly on their past experiences and circumstances. Therefore, the context in which people's behaviour is studied is critically important (Bertram & Christiansen, 2014:25). Several intellectual traditions have influenced interpretivism. The first is hermeneutics which focuses on conducting a close, detailed reading of text to gain a deep understanding of its meaning. It is, however, important to understand that in the process of interpreting human actions each reader experiences the text being read subjectively (Neuman, 2014:103).

Put in another way, it is believed that knowledge is not permanent but something that must be understood within its historical and social context. Also, the knowledge produced by the researcher will always be clouded by his values. Furthermore, researchers should examine processes by which people actively construct and change existing conditions or

reflective knowledge. In order to be able to achieve this, people must try and make sense of the world in which they live – phenomenology – and in which researchers try to interpret and gain an understanding of human actions (Neuman, 2014:109). The purpose of social research is to understand the meaning that informs human behaviour, that there is not a single reality or truth about the social world, but a set of realities and truths that are historical, local, specific and not generalisable. There are thus several possible interpretations of social events (Bertram & Christiansen, 2014:26).

Another intellectual tradition that influences interpretivism is social interactionism. This sees reality as highly symbolic and constructed. The argument is that humans have the ability to read meaning into one another's actions as they share a meaning system such as language. This enables us to interpret signs or actions and give meaning to them (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:28)

Thus, interpretivism can also be related to the constructivist world view. 'Social constructivists believe that individuals seek understanding of the world in which they live and work. Individuals develop subjective meanings of their experiences – meanings directed toward certain objects or things. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas. The goal of the research is to rely as much as possible on the participants' views of the situation being studied. The questions become broad and general so that the participants can construct the meaning of a situation, typically forged in discussions or interactions with other persons' (Creswell & Creswell, 2017:7-8).

Therefore, understanding of the learning process during the JSCSP must be supplemented with improvement in educational practice. According to Entwistle (2000:9), research on the process of deep learning must focus on knowledge transformation that aims at findings that provoke reflection on practice. This implies suggesting useful changes to improve the existing situation with regard to the teaching of students.

Researchers recognise that their own backgrounds shape their interpretation, and they position themselves in the research to acknowledge how their interpretation flows from their personal, cultural, and historical experiences. The researcher's intent is to make sense of (or interpret) the meanings others have about the world (Creswell & Creswell,

2017:8). In this tradition, researchers do not 'find' knowledge, they construct it (Merriam & Tisdell, 2015:9).

Within the epistemological position of interpretivism the argument is that common sense guides people's daily lives, in contrast to the positivist tradition that regards scientific knowledge as the only valid form of knowledge. Thus, interpretivists belief that if you want to understand human behaviour, you need to comprehend what people regard as common sense. This is regarded as a vital source of information in the process of understanding people. They also challenge the idea of objective knowledge and truth. They see facts as unsolidified and embedded in the meaning system. Facts are not objective and neutral, they depend on the context and people's interpretation of information, therefore they are not interested in generalising the results of their research. Consequently, the research methodologies used are sensitive to a specific context and cannot be generalised beyond that being studied (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:29).

Ontologically speaking, it was realised that, in this study, the current reality was based on the existing approaches to the education of senior officers that should be changed if the need for it arose. This was in line with the approach that claims that the research methodologies used by interpretivism are sensitive to the specific meanings that people ascribe to their own experiences and interactions with other people. Interpretivists believe that, depending on the circumstances, culture and experiences people may not experience reality in the same way (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:29). The findings thus relate mainly to the use of academic studies in a specific staff programme (the JSCSP) and are not necessarily be applicable in other higher education study environments.

Some researchers go even further and identify a metatheoretical dimension. In the place of abstract statistics that have served as evidence and objective formal language to define relationships between variables, this research is characterised by detailed description and direct quotes from participants. It also focuses on the meanings and values of the people being studied as the researcher tries to understand the people directly involved in the phenomenon and their experience of social reality. The writing style is more informal. There is no effort to replicate research results in different studies and researchers instead use criteria such as credibility, transferability, dependability and confirmability when

evaluating knowledge claims. Other researchers do not have to agree with the researcher's claims, but only to concede that it is plausible and defensible. The function of theories is to help the researcher understand the experiences and lived realities of others (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:30). Conceiving of social structure as external to ourselves helps us include its self-evident effects on our daily lives into our understanding of the social behaviour going on about us (Cohen, 2018:24).

Du Plooy-Cilliers, et al. claimed that interpretivists would rather use and inductive approach in analysing information and formulating a theory than testing an existing theory (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:30). To my mind this is only partially true. A deductive approach such as in theory testing can also be done within the interpretivist paradigm. I did not use the theoretical framework as described in Chapter 2 as a hypothesis but rather focused on the research goal – the extent of deep learning on the JSCSP. Inductive reasoning played a role as the findings of the research process were used to supplement the existing theories. According to Creswell and Creswell (2017:4-5) this is a viable option so I used the theory of deep learning to soundboard the level of academic education on the JSCSP to determine the level of readiness of the programme in terms of its accreditation on a postgraduate level. This fell within the ambit of using theory as a hermeneutic interpretation and explanation (Cohen, 2018:77).

One should, however, consider the advantages and disadvantages of the interpretivism paradigm. Critics argue that it is undeniable that our understanding of the actions of our fellow human beings necessarily requires knowledge of their intentions; this cannot be considered the purpose of a social science. The argument is further that research traditions moving away from positivism have gone too far in abandoning scientific procedures of verification and in giving up hope of discovering useful generalisations about behaviour (Cohen, 2018:23).

The criticism is directed at the overriding concern of phenomenologists and ethnomethodology with the meanings of circumstances and the ways in which these meanings are conveyed by the actors involved. What is overlooked about such negotiated meanings is that the very process whereby one interprets and defines a situation is itself a product of the circumstances in which one is placed. One important factor in such circumstances that must be considered is the power of others to impose their own definitions of situations upon participants. The danger of interactionist and interpretive

approaches is their relative neglect of the power of external – that is, structural – forces to shape behaviour and events (Cohen, 2018:24). This criticism is valid, but there was a solution. The approach would not only be to comprehend how the students on the JSCSP experienced the learning process, but also to evaluate how the SANDF, in general, and the SANWC, in particular, shaped the learning environment. This was in line with the theoretical model of Entwistle as discussed in Chapter 3.

In terms of the methodological dimension of the interpretivist paradigm, the aim is to gain an in-depth understanding of multiple realities, based on the reality that social reality is in constant flux and dependent on how people experience reality. Therefore, there is a link to the qualitative approach in the research design (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:30).

To summarise, this thesis falls into the ambit of the paradigmatic traditions of phenomenology and hermeneutics with their focus on understanding human behaviour, in contrast to the research traditions of positivism and post-positivism, which are based on the principles of causality and universal laws, yet are not subjective to the extent that post-modernism and critical theory adheres to (Niglas, 2001:3).

If the research design must answer the question of what evidence or data that I as the researcher must collect to be able to answer the research questions, it is also good to choose the appropriate methodology. Case studies are often used by researchers in the interpretivist paradigm (Bertram & Christiansen, 2014:40).

4.5 Conceptions of social reality

Seen from the perspective of World 3, the concepts to clarify within the philosophy of science, ethics and methodology entail four aspects.

First, research is the pursuit of valid knowledge (the epistemological dimension). The purpose of all research is to get results that are as close as possible to the truth (Mouton, 1996:viii; Bertram & Christiansen, 2014:22). Epistemology also deals with the nature of knowledge and the different ways of knowing and its limits (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:23). These concern the very bases of knowledge, its nature and forms, how it can be acquired and how it is communicated to other human beings (Cohen, 2018:5).

Secondly, research is a social practice (the sociological dimension). The implication of this is that social scientists belong to various organisations or groups and institutions that constrain and enable their behaviour (Mouton, 1996:ix). This had been addressed in Chapter 1, but during the analysis and interpretation of the data, where applicable, reference was made to the organisation of the SANWC and the impact of this on the learning process.

Thirdly, research relates to the social world as the object of inquiry (the ontological dimension). Social research strives to generate knowledge about the social world. All research is aimed at improved understanding by describing, explaining and evaluating phenomena in the social world. This is influenced by different interpretations of what knowledge is and this affects the manner in which it is studied (Mouton, 1996:ix). The main question is, What is reality and what is truth? (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014:23). Another question is whether events in real life are external to an individual or the product of novel individual human conscience. Is reality of an objective nature or individual cognition? Is it there in the world to be discovered or it formed in the individual's mind? (Cohen, 2018:5). These three aspects explain why the research approach is qualitative and within the paradigm of interpretivism.

Lastly, research is also a methodological and systematic inquiry (the methodological dimension). In research a variety of methods and techniques are used in pursuit of truth and knowledge. The ideal is the use of objective methods and procedures to ensure validity or truthfulness (Mouton, 1996:ix). Where one subscribes to a view that treats the social world like the natural world – as if it were an external and objective reality – then scientific investigation will be directed at analysing the relationships and regularities between selected issues in that world. It will be concerned with identifying and defining elements and discovering ways in which their relationships can be articulated. Hence, methodological issues, which are of fundamental importance, are consequently the concepts themselves, their measurement and the identification of underlying themes in a search for universal laws which explain and govern that which is being observed. An approach characterised by procedures and methods designed to discover general laws may be referred to as nomothetic. Here is not the place to debate whether social life is 'law-like' (that is, can be explained by universal laws) in the same way as that mooted in the natural sciences or whether social life is different from the natural sciences such that

'law-like' accounts are simply a search for the impossible and untenable. However, if one favours the alternative view of social reality which stresses the importance of the subjective experience of individuals in the creation of the social world, then the search for understanding focuses upon different issues and approaches them in different ways. The principal concern is with an understanding of the way in which individuals and social groups create, modify and interpret the world in which they find themselves (Cohen, 2018:6).

In this study, the concepts of epistemological inquiry and the ontological dimension were investigated jointly within the identified research paradigm or tradition. The methodological implications of social reality will henceforth be dealt with under research methodology.

4.6 Research Methodology

What is research methodology? Simply put, methodology is concerned with how to find out about a phenomenon, the approach to be used, the principles which support it and the justification for using the kind of research approach, the type of study to be conducted, and how the research is undertaken. Methods concern instrumentation, that is, how data are collected and analysed whilst methodology justifies the methods used (Cohen, 2018:25).

Within the above paradigm, the research methodology of this study involved examining a case study with a specific problem in which the researcher was involved. The approach of the research methods was to understand the extent to which deep learning was utilised in the war studies subjects in the JSCSP to solve a practical problem (Merriam & Tisdell, 2015:48-49) and then to transform the learning process in the said subjects to align with the prerequisites of a postgraduate qualification. The assumption was that adherence to a deep learning approach would increase the credibility of the qualification on a postgraduate level. The crux was thus to determine to what extent deep learning was taking place in the warfare subjects and if it could be improved in order to better prepare the student to use the CPP, IMPP or British Estimate Process to find solutions to military problems as explained in Chapter 1.

The reason for using a case study fitted into the nature of the research problem in different ways. The research could generate an understanding of an insight into a particular

instance and its relation to its broader context, namely the path for learning of officers in the SANDF.

Evaluating the learning process on the JSCSP was a good example of using a case study to explore a general problem within a limited and focused setting, in this case, why some students struggled to apply deep learning. It was also used to generate theoretical insights through grounded theory or in developing and testing existing theory with reference to the case. The focus was on using a theory, but also adding to the theory. A case study can shed light on other similar cases, for example the influence of the Junior Staff Duties course which preceded the JSCSP or staff programmes in other countries and to what extent the student was being prepared for the Security and Defence Study Programme (Rule & John, 2011:7).

The learning process during the JSCSP was also an example of a descriptive type of case study, understanding the nature of the case study of something that had not been investigated before and an explanatory case study that attempted to explain what happened in a particular case and why it happened. The case study was used as an approach to the evaluation of the JSCSP to determine some aspects of its suitability, such as the preparation of the student to solve work-based problems when they were operationally deployed and the extent to which the student was being prepared to participate in the Security and Defence Study Programme (Rule & John, 2011:12).

In the 1960s and 1970s, textbooks on research methods focused on variations of experimental designs and statistical methods. Some of these texts included a final chapter titled ‘Case Studies’ wherein it was acknowledged that there existed the occasional historical or in-depth descriptive study of a phenomenon. By the 1980s, researchers such as Stake (1988), Yin (1984) and Merriam (1988) were writing about case study research as a methodology (Merriam & Tisdell, 2015:37).

Qualitative case studies share with other forms of qualitative research the search for meaning and understanding, where the researcher is the primary instrument of data collection and analysis, there is an inductive investigative strategy, and the end-product is richly descriptive. A case study is an in-depth description and analysis of a bounded system. Part of the confusion surrounding case studies is that the process of conducting a case study is conflated with both the unit of study (the case) and the product of this type

of investigation. It can be defined in terms of the research process, as an empirical inquiry that investigates a contemporary phenomenon (the 'case') within its real-life context, especially when the boundaries between phenomenon and context may not be clearly evident. Case study is a design particularly suited to situations in which it is impossible to separate the phenomenon's variables from their context. Another approach focuses on trying to pinpoint the unit of study – the case – seeing it as an end product of field-oriented research rather than a strategy or method (Merriam & Tisdell, 2015:37).

Each of these approaches reveals something about case studies and contributes to a general understanding of the nature of this kind of research. However, Merriam and Tisdell concluded that the single most defining characteristic of case study research lies in delimiting the object of study: the case. Furthermore, case study is less of a methodological choice than a choice of what is to be studied. The 'what' is a bounded system, a single entity, a unit around which there are boundaries. The case, then, could be a single person who is a case example of some phenomenon, a programme, a group, an institution, a community, or a specific policy. For it to be a case study, one programme or one particular classroom of learners (a bounded system), or one particular older student selected on the basis of typicality, uniqueness, success and so forth, would be the unit of analysis. If the phenomenon is not intrinsically bounded, it is not a case. One technique for assessing the boundedness of the topic is to ask how finite the data collection would be; that is, whether there is a limit to the number of people involved who could be interviewed or a finite time for observations. If there is no end, actually or theoretically, to the number of people who can be interviewed or to observations that can be conducted, then the phenomenon is not bounded enough to qualify as a case (Merriam & Tisdell, 2015:38). It is clear that the JSCSP adhered to the above-named boundaries and is thus a case study that could be evaluated.

Other types of qualitative research – such as ethnography, phenomenology, narrative, and so on – are defined by the focus of the study, not the unit of analysis. And in fact, since it is the unit of analysis – a bounded system – that defines the case, other types of studies can be combined with the case study. Ethnographic case studies are quite common, for example, wherein the culture of a particular social group is studied in depth. In addition, one could build grounded theory within a case study, or present a person's 'story', hence combining narrative with case study. The definition of a qualitative case study as 'an in-

depth description and analysis of a bounded system' is consistent with other definitions. Case study research is a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed in-depth data collection involving multiple sources of information (e.g. observations, interviews, audio-visual material, and documents and reports) and reports a case description and case-based themes (Merriam & Tisdell, 2015:39).

Finally, case studies can be historical as in the history of an organisation or programme, or biographical wherein the researcher conducts extensive interviews with one person for the purpose of collecting a first-person narrative or comparative. Comparative case studies, also called multi-case or multisite case studies, involve collecting and analysing data from several cases and can be distinguished from the single case study that may have subunits or sub-cases embedded within it (such as students in an educational institution). By looking at a range of similar and contrasting cases, one can understand a single case, grounding it by specifying how and where and, if possible, why it carries on as it does. This can strengthen the precision, the trustworthiness and the stability of the findings (Merriam & Tisdell, 2015:39-40).

Although this study focused on the teaching of the academic subjects on the JSCSP and it could be argued that it is a process that is studied, the fact that this process was linked to the rest of the programme and the extent of deep learning and how it advanced problem-based learning and critical thinking makes it a typical case study of a specific programme within a specific education institution, the SANWC.

How is the case study presented? Rule and John (2011:8-9) distinguish between a chronological and a thematic arrangement, although the latter may include chronological elements. This is the case in this thesis, as the data collection and analysis start with the evaluation of the extent to which the curriculum promotes a deep learning approach (Chapter 5). This is followed by the evaluation of the processes of facilitation and assessment (Chapter 6) and includes the extent to which the educational quality assurance system and process promoted deep learning.

4.7 Research methods

I adhered to the following guidelines in terms of the research methods (Starman, 2013:41). In this section, the procedures for data collection are explained and later some

of the data is displayed as appendices to the thesis to allow reanalysis. I acknowledge possible bias from my side and have documented my fieldwork analysis. In the data analysis, there is a clear distinction between assertions and evidence and the difference between primary and secondary evidence is clear from the reference method. A research diary was kept in order to track what was done during different stages of the study and methods were devised to check on the quality of the data, by ensuring that I received the original documentation studied from the SANWC. Since 1997 I have visited several staff colleges all over the world and I later also refer to these experiences.

There were 120 students on the JSCSP of 2018. In the initial planning, I envisioned letting them all complete open-ended questionnaires on their experience of the learning experience according to Entwistle's Approaches and Study Skills Inventory (ASSIST) model. With time I realised that this was not practical, as it was difficult to find a time when they would all be available, and it was also important that it should be after completion of the programme for their reflection on the process to be valid. The only suitable time was during the last week, when all assessment and programme results were finalised. Still a representative sample would have sufficed, based on Entwistle's questionnaire.

In practice, I underestimated the psychological attrition the programme had on the students. In the end, only 21 volunteers were prepared to complete open-ended questionnaires on their experience of the learning process. In line with the qualitative approach to research, I then changed the answers to the questions to a simple yes or no, as my purpose became to identify tendencies in the approach to the learning process, in contrast to Entwistle's use of a mixed method and the use of the SPSS statistical computer model to determine results. It should be kept in mind that he also had access to thousands of university students over several years, as well as teams of researchers that assisted him, making a mixed method a viable option (Entwistle, 2018:23). As will be explained, a multitude of documents were generated by the process of presenting the JSCSP and I thus used the questionnaires and group interviews as supplementary data to this.

Data were also found from interviews in syndicate format (two of eight syndicates), determining the extent of the influence of factors that could have a negative influence on the learning process that was unique to the program, as well as the learning experience. Tendencies were determined, as this is a qualitative study rather than a statistical analysis.

It also represents a good example of Cohen's statement about what you plan for versus reality earlier in this chapter. A total of 19 students participated in two syndicates in the interviews. For the sake of trustworthiness, I emailed the transcribed text to them. In the end, only one person per syndicate wrote back and declared their satisfaction with my interpretation.

An example of qualitative data that was used in this thesis were the themes identified from student journal entries (VanDerZanden, Haynes, & Marcketti, 2019:34) such as found in the portfolios of evidence compiled by each student on the JSCSP. A very important part of the documentary study consisted of the evaluation of the student's collective experience of the learning process as reflected in the debriefing sessions after each subject and module on the programme. The latter added even more value, as it was conducted in syndicate group format where an exchange of ideas could take place. Again, the reality had changed. The above-mentioned situation existed when I retired in 2014. Since then, the system of reflection in the portfolios ended and the files are now only a compilation of documents on the learning process. This had two implications, on the one hand, little meta-learning took place and on the other, I was denied vital information on how the students experienced the learning process.

Interviews were conducted with the Chief Instructor and the two members of the directing staff, one involved with the chosen two syndicates and one member from the Research and Development Section. The reason for starting with this process was because the ethical clearance could only be obtained late in 2018 and the completion of the questionnaires and interviews had to be done in middle of November when all assessments were finalised and just before the students departed from the SANWC. During the programme they were too busy to be expected to complete questionnaires and participate in interviews. It is also only at the end of the process that they had a holistic view of the learning activities in order to help with the reflection of the learning process.

The next step was a documentary study of the curriculum design to determine if it provided guidelines in terms of the structure of the facilitation, assessment and quality assurance processes for a deep learning approach. This could not be determined exactly, as the writing of the curriculum occurred in 2001 and reference to deep learning would only be implied if it was compared to the ministerial guidelines discussed earlier. The purpose statement, learning outcomes and assessment criteria and activities were studied.

Under guidance of my supervisor, I developed an instrument with which to measure the extent to which the curriculum of the JSCSP adhered to the tenets of deep learning. (See Appendix) This instrument was piloted in the process of communication with my supervisor by exchanging ideas on its format and implementation in the evaluation of the curriculum of the JSCSP as promulgated in 2001.

Qualitative data also were found amongst the approaches to facilitation, assessment and quality assurance activities as part of the education process. The facilitation and assessment of the warfare subjects was based on the framework of lectures, group discussions, workbooks and open-book assessment where the student was expected to apply theories to case studies. The week programme described in detail what would happen, where and by whom for every 40-minute period and well as what activities would take place after hours. This alone was a good source of data as it could already be determined to what extent deep learning took place if one compared the number of lectures with group work activities.

The theory of the warfare subjects was followed by a Military History staff ride. I facilitated this process and assessed a sample of eight of the academic essays. After gaining ethical clearance, I again examined the essays, took notes and continued with a reflective diary which further supplemented the collection and analysis process, based on purposeful sampling (one essay per syndicate was assessed if the staff ride promoted an approach towards deep learning). The research methods included observation and analysis of student discussions after hours that was done on the staff ride. An assessment rubric was used to determine the level of deep learning, by determining the student's ability to measure the application of the theory of operational art by a historic figure. This will be discussed in Chapter 6.

The contribution of the warfare subjects to the ability of the student to conduct the CPP is the ultimate test of the truthfulness of deep learning. After all, the client's need is that the student's ability to plan military campaigns and major operations must be developed and a foundation be laid for comprehending the military strategic level. This is difficult to measure and I used questionnaires and interviews to determine if the students were of the opinion that the study of academic subjects laid the right foundation for critical thinking and creative problem-solving. I also used the questionnaires and interviews to

determine the contribution of the language and computer training done in 2017 to the learning process.

The main focus in the data analysis and interpretation was thus to use a deductive theory-verification model to determine the extent to which deep learning was applied in the said subjects in the JSCSP. However, as the research progressed it became necessary to add to the existing theory or modify it through a process of inductive reasoning. Thus, a dialogical model was used, utilising research as a recursive process with a constant backwards-and-forwards motion between theory and the practice of research as well as between the different stages of the research process (Rule & John, 2011:100).

4.8 Analysis and writing-up

The analysis of the data was done according the Entwistle's heuristic model of the learning process as discussed in Chapter 3, starting with an analysis of to which extent the curriculum adhered to the tenets of deep learning. This is encompassed in Chapter 5.

In Chapter 6, the analysis of the learning process itself (facilitation, assessment and quality assurance) was conducted. The first aspect to consider was my personal position as an insider, still being involved in the programme, but also as an outsider, as the research was done on a part-time basis. The notes in my research diary provided me with special insight into the events influencing the students before the programme started and during its course. That is why a questionnaire on the students' background was used to determine barriers to learning that existed when the students began participating in the residential phase of the programme. Aspects that influenced this were school background, other military courses, with specific reference to the Junior Staff course, and the pre-course programme conducted the year before the start of the residential phase, in this case in 2017. This programme was designed to prepare the students for the residential phase of the JSCSP.

The next part of the analysis was to determine how the planning of the programme and its implementation adhered to the tenets of deep learning. A documentary study was supplemented by a questionnaire on how the students experienced the learning process, and by interviews with two groups of students and key role players such as the Chief Instructor. I also had telephone conversations with two lecturers from the Military Academy who were involved as guest lecturers on the JSCSP of 2018.

Documents used included the official SANWC report on the programme and the course schematic, the planning document of the Chief Instructor. The student study committee wrote a feedback report on the programme and the academic files of the two applicable terms of learning on the programme (including facilitation and assessment plans) were studied.

The analysis was consequently conducted according to the two main criteria in Entwistle's model, namely student characteristics and features of the teaching-learning environment, which would determine if the students could develop an integrative personal understanding and ways of thinking about the learning process on the JSCSP. This was done, with specific reference to the identified subjects that were analysed.

4.9 Sampling

Factors such as expense, time and accessibility usually prevent researchers from getting information about a whole group of students being studied. Information must therefore be gained from a smaller group in a way that the data is still representative of the whole group (Cohen, 2018:202). Purposeful and random sampling was used to ensure a reliable representation of the student population. Cohen's guideline of a minimum of 30 participants for qualitative research (Cohen, 2018:203) out of a population of 120 deemed to represent a reliable sample, was initially considered but due to practical problems such as the willingness of students to participate only 21 students completed the questionnaires and two syndicates (from a total of eight) of 12 people each participated in the group interviews. At the same time, I ensured that the sample was representative of race, age and gender. At the end of the programme, students were not very enthusiastic about participating in the research process.

The 20 Portfolios of Evidence (POE) were chosen purposeful and randomly. Out of the 120 portfolios, I located the eight of which I marked the academic essays on the staff ride to ensure that every topic of this study was covered. I then randomly chose another 12 from the rest, bringing the total to 20. However, the Covid-19 pandemic intervened. I was forced to use only one POE and my research notes on the eight academic essays of the staff ride that I had assessed in 2018.

However, as already indicated, no reflection of learning took place and the documents inside the portfolios were used to determine the nature of the implementation of the

curriculum. This was a huge disappointment, as I had bargained on individual student reflection to provide an accurate picture of how the students experienced the learning process with specific reference to each subject that was evaluated.

4.10 Trustworthiness

Researchers need to explain the steps they have taken in their studies to check for the accuracy and credibility of their findings. Qualitative truthfulness implies that the researcher checks for the accuracy of the findings by employing certain procedures, whereas qualitative reliability indicates that the researcher's approach is consistent across different researchers and among different projects (Creswell & Creswell, 2017:199).

The following guidelines on how to achieve trustworthiness were followed as recommended by Creswell and Creswell (2017:199-202):

Defining qualitative trustworthiness. This is one of the strengths of qualitative research and is grounded on determining if the results are accurate from the point of view of the researcher, the participant, or the readers of an account.

Determining strategies to ensure accuracy. The researcher should identify and debate one or more strategies available to check the accuracy of the findings. Multiple approaches are recommended, which should enhance the researcher's ability to assess the accuracy of findings as well as convince readers of that correctness.

Triangulation. The strategies include triangulation of different data sources by examining evidence from the sources and using it to build a coherent justification for themes. If themes are established based on the convergence of several sources of data or perspectives from participants, then this process can be claimed to be adding to the legitimacy of the study. Documentary studies were supplemented by an interview with the Chief Instructor in 2019 and telephone interviews and email communication with the facilitators of the different subjects under discussion.

Member checking. This was used to determine the accuracy of the qualitative findings by taking the final report or specific descriptions or themes back to participants and determining whether these participants felt that they were accurate. Measures such as providing the respondents of interviews with the transcribed text to test accuracy were used, although the response in this regard was disappointing, as already mentioned.

Use a rich, thick description of the findings. This description may transport readers to the setting and give the discussion an element of shared experiences. When qualitative researchers provide detailed descriptions of the setting, for example, or offer many perspectives about a theme, these results become more realistic and richer. This had been explained in Chapter 1 where this JSCSP fits into the pathway of learning for officers.

Clarify the bias the researcher brings to the study. This creates an open and honest narrative that resonates well with readers. Reflexivity has already been mentioned as a core characteristic of qualitative research. Good qualitative research contains comments by the researcher about how his interpretation of the findings is shaped by his background. See Chapter 1 in this regard where I explained my involvement with the SANWC from 2002 till the present. I not only facilitated the study of Military History and the staff ride, I also had periodic contact with the students, especially during the last week when I conducted the group interviews and supervised the completion of the questionnaires. This provided me with unique insight into the extent and nature of the learning process.

Discuss different perspectives. Because real life is composed of different perspectives that do not always merge, discussing contrary information adds to the credibility of an account. This also relates to dialectic reasoning where two opposing points of view leads to a new perspective.

Spending a long time in the field. In doing so, the researcher develops an in-depth understanding of the phenomenon under study and can convey detail about the site and the people that lends credibility to the narrative account. The more experience that a researcher has with participants in their settings, the more accurate or valid will be the findings. As explained in Chapter 1, I served as the section head of Research and Development at the SANWC from 2005 till 2014 and was utilised as a guest lecturer from 2015 till 2019. As the project leader for the redesign of the curriculum, I developed a unique insight into the nature of the JSCSP.

Use peer debriefing to enhance the accuracy of the account. This process involves locating a person who reviews and asks questions about the qualitative study so that the account will resound with people other than the researcher. This strategy - involving an interpretation beyond the researcher and invested in another person - adds validity to an

account. The Research and Development Section of the SANWC agreed to evaluate the final research report for trustworthiness as they will be responsible for the propagation and implementations of the research findings.

Use an external auditor to review the entire project. As distinct from a peer de-briefer, this auditor is not familiar with the researcher or the project and can provide an objective assessment of the project throughout the process of research or at the conclusion of the study. This strategy was not utilised as the security classification of the study would make it difficult to find somebody outside the SANDF to fulfil this role, while members of the organisation are all somehow familiar with the staff programme.

This concludes the guidelines.

Qualitative generalisation is a term used in a limited way in qualitative research, since the intent of this form of inquiry is not to generalise findings to individuals, sites, or places outside of those under study. The value of qualitative research lies in the particular description and themes developed in the context of a specific site. Particularity rather than generalisability is the trademark of good qualitative research. However, there are a few discussions in the qualitative literature about generalisability, especially as applied to case study research in which the inquirer studies several cases. This case study is about the teaching of academic subjects on the JSCSP, but when findings in the literature about staff programmes in other countries were found to be relevant it was used to compare with the South African example as discussed in Chapter 1. For example, there were complaints about students at the United States Army War College that did not prepare properly for seminar discussion sessions and in my own experience, students on the JSCSP transgressed in the same manner. Here it is just named syndicate group discussions (SRDs).

Merriam and Tisdell (2015:240) approached the issue of trustworthiness from another angle. The following criteria were identified that indicates a high level of scientific inquiry. First, the research must be a worthy topic. Next it should be conducted with rigour and there must be sincerity, in other words transparency of methods. Credibility is important in that the research resonates with a variety of audiences and makes a significant contribution to new knowledge. It should also attend to ethical considerations and finally, the study must have meaningful coherence in that literature, research,

questions, findings, and interpretations have coherence with each other. Instead of validity, what should be strived for is a quality that points more to identifying critical elements and wringing plausible interpretations from them, something one can pursue without becoming obsessed with finding the right or ultimate answer, or the correct version. Therefore, the focus must be on understanding phenomena.

4.11 Research ethics

The Director of Military Intelligence, with delegated authority from the Chief of the SANDF, has formally given permission for the study to be conducted. As a semi-insider (I only facilitated and assessed in Military History and the staff ride), information was only used for research purposes for which ethical clearance had to be obtained.

In a letter to the Research Ethics Committee of the Faculty of Educational Sciences of the University of Pretoria on 12 November 2018, I explained the circumstances. The flow of the education, training and development process on the JSCSP was as follows. During 2017 pre-course training was done in subjects such as language proficiency and computer skills. During 2018 academic tuition was conducted in Security Studies, Military History, Operational Art, the Law of Armed Conflict and Military Operations other than War (peacekeeping) with the aim of preparing the student intellectually for operational deployment. This was followed by a Military History staff ride in which the group visited a historic war theatre and had to evaluate a historic figure in terms of his ability to apply the theory of Operational Art. The assessment was conducted by means of a rubric which integrated elements of all of the four named academic subjects. The last component of preparation for operational deployment was the use of a problem-solving model called the CPP in which the student had to design a military plan to solve a problem in a provided scenario. This process was conducted over the period 5 to 15 November 2018. This was the ultimate test of the proficiency of the student in terms of military problem-solving and determined if he were found competent in terms of the programme.

I requested that the ethical clearance for the study be fast-tracked as the programme ended on 24 November 2018 and the component of the research that could not be done in 2019 and 2020 was the conducting of interviews with the students and the completion of questionnaires on their experiences of the learning process on the programme. On the said date, they returned to their units across the country and it would have been impossible to have them together at one site after that. If I was not allowed to collect data from this

group from 16 to 24 November 2018, the fieldwork would stand still for as whole year until November 2019, as their experience of the learning process was vital in designing a collection and analysis strategy for other data during 2019.

This was explained as a unique opportunity to gather data about the students on their reflections on the extent of deep learning that had taken place over the previous two years. It could only have happened over the period 16 to 24 November 2018, a time when they were finished with all their assessments and the Commandant had recommended that I utilise this time period for the research.

I had already obtained permission from the DOD on 22 November 2017 to conduct the research at the SANWC as it would have been a waste of time conducting the literature study without this permission. On 15 November 2018, the Ethics Committee approved the application and the fieldwork could commence the next day (Ebersohn, 2018).

A last word on piloting. As explained, it would not have been possible to gain permission from the ethic committee before the study commenced. Therefore, within the flexible approach within the interpretivism paradigm, I regard the research on problems of student learning on the programme from 2005 till 2016 as proof that this study was viable in terms of the research problem.

4.12 Conclusion

In this chapter, it was explained that the research problem and questions lent themselves to a research design, approach and paradigm that focused on how humans experienced the learning process at a specific educational institution and on a specific programme, the JSCSP as presented at the SANWC. Also, it showed what can be done to improve the learning process. Specific reference was made to the programme of 2018, the last instance before the programme transformed to a postgraduate dispensation in 2019.

This thesis utilised a qualitative approach to the study within the paradigms of interpretivism and social constructionism as based on the methodology of a specific case study. In the next chapter, the curriculum will be evaluated within the framework of the research questions.

CHAPTER 5
DEEP LEARNING AND THE CURRICULUM OF THE JOINT SENIOR COMMAND AND STAFF PROGRAMME

5.1 Introduction

As in any education and training programme, the curriculum is the foundation on which all other teaching activities are built. According to Entwistle's 2009 heuristic model it is the cornerstone of the learning environment in which the learning programme will find fruition. From this is derived the learning environment and the approach to the subject content and how it is taught (Entwistle, 2009:115).

As explained in Chapter 1, during the time frame of 1998 to 2001, the project team named 'Profusion' researched and developed the new joint curriculum in which the Army, Air Force, Navy and Medical and Health Services started a new chapter in staff course education and training in South Africa at the newly established South African National War College (SANWC). At that stage, I was the Resident Military Historian at the South African Army College and was co-opted by the project team to develop the Military History component of the new joint staff programme that would start in 2002.

As it became known, Curriculum 2001 (SANDF, 2001) was used until 2018 with minor adaptions when it was partially replaced in 2919 by a curriculum developed by the Faculty of Military Science at Stellenbosch University (Military Academy). A study of this original curriculum relates directly to the second research question as explained in Chapter 1, namely to what extent was the SANWC in 2018 ready to incorporate a postgraduate programme as part of the staff programme. In other words, what could be learnt from the experience of the past 16 years with regard to the education process that could be useful in the new academic dispensation.

In this chapter, I focus on the evaluation of the 'intended curriculum.' The 'enacted curriculum' will be evaluated in Chapter 6 as part of the facilitation and assessment processes. Kelly (2009:6) referred to the 'planned/intended' or official curriculum, while he saw the 'received' or 'enacted' curriculum as that which was actually facilitated and assessed during the learning process. This view is shared by Wyse, Hayward and Pandya (2015:294). They also referred to the 'learned curriculum' as that portion of the planned curriculum that the students actually retained after the learning experience. There is also

a 'hidden' curriculum relating to the values and attitudes due to the teaching culture at the educational service provider (Olivier, 2019:L251). All these curriculum orientations will be related in Chapter 6 to the extent which deep learning was embedded in the intended curriculum and how it manifested in the facilitation and assessment processes.

5.2 Curriculum theory

What is a curriculum and what are its functions in the educational process? Wyse, Hayward and Pandya (2015:29) see a curriculum as a complicated concept, conceived differently at different times by alternative scholars working in a wide spectrum of countries, regions and educational institutions with a variety of demands. This includes universities, government institutions such as schools and private corporations and in the case of this study the JSCSP of the SANDF. In terms of conceptualisation, it is a course of study, a syllabus, with educational objectives, learning outcomes, guidelines for facilitation and assessment and a description of the educational ideal that it strives towards.

However, one cannot understand a curriculum without contextualising its existence, as this will determine its nature and role in the educational process. This can only be understood by taking into account the framework within which it was developed *(*Wyse, Hayward & Pandya, 2015:33), in the case of this study, the framework being the education and training of senior officers in the SANDF regarding the planning and conduct of military campaigns. According to Pinar (2012:6), a curriculum is a mirror image of the political power structures within a country or region. As such it could be assumed that after 1994, the curriculum would be evaluated with regard its efficiency in providing the SANDF, with a learning basis that fitted into the contemporary world order. Curriculum designers are involved in a process of re-contextualising – describing how different elements of disciplinary knowledge are incorporated into curricula for students. Three processes are identified in this quest, namely how is knowledge selected, how it is sequenced and how it is spaced in time (Young, 2014:199).

A curriculum is interdisciplinary and should prescribe how the learning process should be conducted. It should also provide guidelines for the facilitation and assessment of specific academic subjects, based on the current state of understanding in a particular field of study. Subjects are arranged according to a specified timetable that is convivial for teaching and learning purposes. In a curriculum, the textbooks and other teaching and learning material to be used can also be prescribed (Kelly, 2009:4).

According to Kelly (2009:4-5), if a curriculum is to be practically effective it should offer more than just a statement about the knowledge that the student must acquire or a descriptive list of the subjects to be presented. There should also be a justification of the content and, importantly, the effect that the learning process should have on the students. It must also indicate how the gaps between the planned or official and the actual curriculum are closed.

The key question in a curriculum is what knowledge is most worthwhile? This is determined through academic knowledge that links the planned curriculum with the enacted or received one and how it demonstrates to students that scholarship communicates with them and enable them to express themselves. Curriculum theory is thus a complicated conversation between teachers/facilitators and students over past knowledge and its meaning for the present and its potential meaning for the future. Through academic study we articulate our experiences of the world to understand what is at stake in what we communicate in academic institutions (Pinar, 2012:2).

In the view of Young (2014:194), curriculum theory has a critical and a normative role to play. In the critical role it should analyse the assumptions, strengths and weaknesses of an existing curriculum and the ways that the concepts of a curriculum are used. The normative role relates to rules of the guiding design and practice and the moral values (what are we educating for). In this regard, Kelly (2009:15) identified three models that developed from Tyler's guidelines for curriculum development in 1947:

- Curriculum models where the content is central and where the organisation of learning knowledge is a matter of only effective delivery of the content and the evaluation of the curriculum on the degree of attainment by the students.
- Models where the purposes are central, and the content is structured mainly to achieve the purposes of the curriculum.
- Models where the emphasis is on the organisation of the educational experiences, the process model. The starting point in curriculum planning is the developmental process which the curriculum is designed to promote, which will determine the selection of content and procedures (methods of facilitation and assessment). The evaluation of the curriculum is focused on the suitability of the content and procedures selected and what development had taken place.

In Chapter 1, I explained that the ministerial guidelines of the South African Minister of Defence in 2000 and repeated in the 2014 *Defence Review* as to the future of staff programme education that envisioned future senior officers who were critical thinkers and had the ability to creatively find solutions to problems. The assumption was therefore made that deep learning would contribute towards this ideal. Henceforth, the guidelines for curriculum development that promote deep learning will be discussed.

5.3 The nature of Curriculum 2001 – an overview

As described in Chapter 1, the intention of the DOD by 2000 was that the staff programme should be accredited with the CHE, however, the dilemma was that most of the senior officers to enrol on the programme did not possess a pre-graduate degree. As an interim measure, the programme was then accredited as a diploma under the supervision of SASSETA. Upon completion, the successful candidates qualified for enrolment for a postgraduate diploma in Security Studies, presented by the University of the Witwatersrand. But this was contrary to the guidelines as spelled out in the successive *Defence Reviews* in 2014 specifically in Chapter 11, as discussed in Chapter 1, which explicitly stated that the staff programme should be on postgraduate level (Jacobs, 2014:2).

Consequently, in 2001 the curriculum itself formed a framework of reference and its different subjects were converted into unit standards, sometimes with a different emphasis on learning outcomes. The curriculum was still the final authority, but in an ambiguous manner, as facilitation and assessment were done according to the framework of the unit standards, a process in which I was personally involved. To understand the extent of deep learning on the programme and the level of readiness to migrate to a postgraduate academic dispensation, the curriculum must be analysed and that will happen in this chapter (Jacobs, 2014:2).

Following the transformation to a new political dispensation in 1994, the SANDF followed government guidelines in terms of curriculum design and based the curriculum on outcome-based education (OBE) (SANDF, 2001:1). In Chapter 1, it was explained that globally most military institutions adapted this model. The critical outcomes of OBE seemed to fit into the needs of the SANDF with the emphasis on aspects such as critical and creative thinking, group work and the collecting, organising and critical evaluation

of information (Olivier, 1998:17), exactly the direction in which military education was developing, as explained in Chapter 1. It also coincided with the tenets of deep learning.

Severe criticism of OBE and an academic debate continued until 2010, which saw the demise of OBE from the government's point of view. A prominent educationalist, Jonathan Jansen warned that OBE would fail but this was ignored, to the detriment of education in South Africa (Mbeki, 2011:107). Also, in 2010, the Minister of Basic Education announced that OBE would be replaced by a new national curriculum, called the Curriculum and Assessment Policy Statements (CAPS). In 2013 a South African Research Association was launched where members of different schools of thought gathered to start the redesigning process (Pinar, 2013:470-473).

In judging the value of Curriculum 2001 for a new academic dispensation on the JSCSP, this has to be considered but this thesis must determine if the correlation between OBE and deep learning implies that the curriculum of 2001 of the JSCSP can still contribute to the improvement of the curriculum of 2018 of the JSCSP. The postgraduate diploma component was developed by the Military Academy and implemented in 2019 (Faculty of Military Science Stellenbosch University, 2018).

Another factor that must be kept in mind is that the Profusion team benchmarked other curricula on a wide international scale by visiting staff colleges in several countries in Africa, the USA, Britain, France and India. Thus, the curriculum was aligned with international tendencies in thinking about the education and training for senior staff programmes. For example, I used the curriculum of the USA Army General and Command Staff College at Fort Leavenworth, Kansas, as the basis of development of the Military History component of the curriculum, with adaptations to South African circumstances. The reason for doing so was that this USA programme was on the same level of education as the JSCSP, notably, the operational level of war, where the emphasis was on educating and training senior officers in the planning and conducting of military campaigns.

The analysis of the curriculum of the JSCSP will in the first place be done according to the above-mentioned theoretical descriptions on curriculum design. As explained in Chapter 3, I also developed an instrument for the analysis and eventual evaluation of the curriculum in terms of its promotion of deep learning, which will also be used. The

instrument consists of theoretical statements by authors such as Entwistle and Bellanca from which derived questions in terms of the extent of promotion of deep learning were derived. These can be found in Appendix A of the curriculum. However, before the body of the curriculum can be analysed, it must first be determined if the preamble of the JSCSP of 2001 provided the correct basis for the promotion of deep learning.

5.4 The preamble of the JSCSP curriculum 2001

The preamble of curriculum 2001 was encompassed in the aim of the programme which formed the foundation of the learning programme and was formulated as follows:

> To prepare selected officers for senior appointments at the operational level of war by developing their command, staff and analytical skills, and by broadening their professional understanding of single service, joint and combined operations, the management of defence and the wider aspects of conflict. (SANDF, 2001:2)

During the progress of presenting the programme, it was realised that the last-named aspect could only be achieved by adding 'to prepare officers for senior appointments at the operational level with a distinct knowledge overlap into the military strategic level of war' (SANDF, 2018:1), the reason being that the Security and Defence Study Programme presented at the South African National Defence College, focused on the national strategic level. Thus, a knowledge gap existed between the two programmes and the facilitation and assessment on the JSCSP had to be adopted accordingly, by including the military strategic level of war (SANDF, 2018:1).

When considering the preamble, there can be no doubt as to what is to be achieved with regard to the implementation of the curriculum, the education and training of senior officers in the planning and conducting of military campaigns. In Chapter 2, it was explained that deep learning's main purpose is to prepare the student for the future workplace. The advantage of the JSCSP is that it is clearly states in the preamble what is to be achieved through the learning process, if the overarching goals are clearly defined. But is it enough to warrant an effective preamble?

The forms of understanding crucial to the curriculum were developed – this was implied through the focus on command, staff and analytical skills and by broadening their professional understanding of single service, joint and combined operations, the management of defence and the wider aspects of conflict (SANDF, 2001:2).

The next issues are whether it is easy to keep the overarching outcomes in mind and how the different subject relates to the outcomes. It is easy to keep the overarching outcomes in mind as they all relate to the planning and conduct of military campaigns but in the preamble, it is not explained how the different subjects relate to the overarching outcomes (SANDF, 2001:2).

As far as the preamble is concerned, one can ask if it is a spiral curriculum, where understanding is linked to previous understanding. Following the preamble, a clear trajectory is created that the entry requirements for students include that they have successfully completed the Junior Staff course and are capable of using the computer software packages being used by the SANDF (SANDF, 2001:2).

Very important questions that should be addressed in the preamble are if practical training and theoretical education are blended and whether real-life professional skills are emphasised. In curriculum 2001, this is implied by combining military/doctrinal subjects with academic subjects but neither this nor real-life professional skills are mentioned in the preamble (SANDF, 2001:2-3).

Still relating to the preamble, the question arises as to whether the curriculum gives access to knowledge of the world through the ability to envisage alternatives or whether it is only bent on outcomes, competencies and specified assessments. Knowledge of the world with the ability to identify alternatives is not addressed in the preamble (SANDF, 2001:2) and this guideline to the development of critical thinking would have gone a long way towards promoting deep learning in the preamble. After all, a preamble must lay a firm foundation for the rest of the curriculum and should indicate a specific approach to deep learning.

In addition to the analysis instrument, it has already been stated that if a curriculum is to be practically effective it should offer more than just a statement about the knowledge that the student must acquire or a descriptive list of the subjects to be presented. There should also be a justification of the content, and importantly, the effect that the learning process should have on the students. It must also indicate how the gaps between the planned or official and the actual curriculum are to be closed (Kelly, 2009:4 - 5). In the preamble of JSCSP curriculum 2001, there is no justification for the content, although the effect that should be reached is mentioned. There is also no mention of how the gaps between the planned and actual curriculum are to be closed (SANDF, 2001:2).

As explained in Chapter 1, the graduate of the JSCSP must be able to plan and manage military campaigns on the operational level of war. At the same time, it must be done within a framework of knowledge within the wider background of conflict. The preamble and what were added to it clearly state what must be achieved. Command, staff work, and analytical skills demand the ability to think critically and devise original and imaginative solutions to problems – the essence of deep learning. Knowledge, understanding and the ability to apply professional skills in single service, joint and combined operations provide specific guidelines as to the type of theoretical knowledge that will be needed to plan and conduct military campaigns (SANDF, 2001:1).

The future workplace and its demands present the key to this process. That is why Entwistle asked:

> Globally, educators ask the question, what value do students get out of university studies early in the 21st century – a mass of theoretical knowledge, with little value afterwards in the workplace – or an experience that leads to self-development, critical thinking and the ability to apply the learning experience in the workplace and everyday life? (Entwistle, 2009:1-2)

Thus, the preamble to the curriculum provides a heading that is only partially appropriate to the curriculum as it only states what the curriculum must achieve in terms of the future workplace, but not how it should be achieved through deep learning. It will also not promote deep learning if the preamble only partially promotes deep learning, but the structure does also not support this approach.

5.5 The structure of the curriculum of the JSCSP

The broad structure of the curriculum of the JSCSP was designed according to modules, subdivided by subjects consisting of elements (SANDF, 2001:2-3). Scaffolding provides a good basis for the promotion of deep learning. The first step in deep learning relates to a prerequisite to promote deep learning where the overarching goals should be defined, with a particular focus on broad aims for the whole programme that are related to developing forms of understanding crucial to the subject area (Entwistle, 2009:104).

The overarching goals of the programme are embedded in the five modules namely, Core Military Studies – providing the theoretical background as to how to conduct war; Advanced Military studies – with specialist subjects such as International Law and the

regulation of International Disputes; Defence Management Studies – focused on training in the day-to-day management of the SANDF; Strategic Studies – providing theory for the wider aspects of conflict and the Single Service module – also within the ambit of training for the management of each service, Army, Air Force, Navy and Military Medical Health Service, respectively. This is underscored by the comment that the golden thread in the education and training process is the ability to plan and conduct military campaigns (SANDF, 2001:2). The overarching goals are thus clearly defined, as well as the broad aims of the programme and the framework within which the understanding of the subject areas will be developed, by means of the modules divided into subjects and subdivided into elements.

The structure of the curriculum represented a mixture of military or doctrinal and academic subjects. Examples of the first are Operational Art and the subjects in the Corporate Management module that relate to the day-to-day management of the SANDF, such as Financial and Logistics Management. Military History can be seen as a subject with mainly an academic content. As stated in Chapter 1, the focus of the study will be on the subjects with a strong academic component that falls more within the ambit of education, rather than training. The following subjects and why they form part of the sample for research is analysed:

- Operational Art in Joint and Combined Operations – theoretical basis for the planning of military campaigns. This is based on doctrine but with a strong academic component based on examples from Military History.
- Military History – forming the basis on which all the other subjects depend to understand the nature of war and warfare. This is an academic subject.
- Operations other than War – theoretical basis for the planning and conducting of Peacekeeping Operations. This is based on doctrine but with an academic component using examples from Military History.
- International Law and the Regulation of International Disputes – the legal framework within which military operations must be planned and conducted. This is an academic subject, but it is supplemented by a practical exercise and assessment based on group presentations.
- National Security (as part of Security Studies) – the framework within which the process of wider defence planning is conducted. This is an academic subject.

- Geopolitics (as part of Security Studies) – the theoretical framework for understanding international, regional and local circumstances that would influence the process of wider defence planning. This is an academic subject.

A word of explanation about the subjects in the module Strategic Studies. Until 2016 the programme consisted of pre-course education and training for which the students enrolled at different universities and the residential phase at the SANWC, which covered the largest part of the curriculum. The former was called the Strategic Military Management Programme (SMMP) and consisted of Management Studies and some of the subjects which are listed under the module of Strategic Studies in the curriculum. These latter combined subjects were then presented under the subject or sub-module of Security Studies, which is confusing as it is difficult to determine the difference between security and strategic studies.

In preparation for the transformation to a postgraduate dispensation, the SMMP, including Security Studies, was not presented during 2017 for the group destined to participate in the residential part of the programme in 2018. At the start of the residential phase of the programme in 2018, however, SASSETA pointed out that the implication was that the students would not have enough credits for the qualification. Therefore, the programme was adopted to include Security Studies during the residential phase. I personally observed this and confirmed it in a telephone conversation with Lt Col Kurt Krause from the Research and Development Section on 7 July 2020.

I made the decision, as part of purposeful sampling, not to analyse the whole Strategic Studies module which included the subject National Security and presented in 2018 as the subject or sub-module of Security Studies. The focus will be only on the subjects National Security and Geopolitics as far as the analysis of the curriculum is concerned, as this is deemed to be sufficient to determine the extent of deep learning. Geopolitics provides the factors that influence the process spelled out in National Security followed in wider defence planning.

Table 2: The Structure of JSCSP 2001 (SANDF, 2001:2-3): Subjects to be analysed are underlined

Module	Subjects	Elements
Module 1: Core military studies	1. Operational Art in Joint & Combined Operations 2. Military History 3. Leadership & Command 4. Policy & Doctrine 5. Campaign Planning 6. National Security (Facilitated as part of the module Strategic Studies during 2018 under the sub-module Security Studies)	This will be analysed in the subjects under evaluation, underlined in the previous column. 1. Operational Art in Joint & Combined Operations • The Art of War • Operational Concepts • Campaigning 2. Military History • General Military History • South African Military History 3. National Security • National Security guidance • Security as a pre-condition for stability • National Power • National Military Strategy
Module 2: Advanced military studies	1. Operations other than War 2. International Law and the Regulation of International Disputes	1. Operations other than War • Peace Support Operations • Non-combatant Evacuation Operations • Community Safeguarding 2. International Law and the Regulation of International Disputes • Prohibition of Force under the Charter of International Disputes

		• International Law & the Regulations of International Disputes
Module 3: Defence management studies	1. Civil military relations 2. Technology 3. Department of Defence Strategic management 4. Human Resource management 5. Financial Resource management 6. Military Integrated Environmental management 7. Logistic management	Not analysed
Module 4: Strategic studies	1. International Security 2. Economic Perspectives 3. Geopolitics 4. Global Conflict 5. Regional Security 6. World Health Issues	3. Geopolitics • Concepts - The state - The nation - Cohesion of a state - National interests • Elements of a study - Physical elements - Population - Economy - Military aspects
Module 5: Single service terms – Army, Air Force, Navy & Military Health Services	1. Management studies of the four respective services 2. Power relationships of land, air and naval power & military health issues 3. The role Reserve Forces in the different services	Not analysed

With the above explanation in mind, it is appropriate to ask again if the curriculum was designed to promote deep learning in terms of whether the overarching goals are set out in a manner to make it easy to keep in mind the goals of the programme and how the different topics relate to them (Entwistle, 2009:104). As explained in the structure, the subjects provide a theoretical foundation (academic subjects) and practical training (military subjects) that are easy to link to the overarching goals of the programme, the planning and conducting of military campaigns.

At this stage the question has to be asked. 'When considering the structure of curriculum 2001, are the overarching goals easy to keep in mind?' Apart from the confusion between modules and terms, it is spelled out in the structure of the curriculum how the modules, terms and elements that relate to the goals. For example, the different subjects relate to the goals in that the subjects are specialist building blocks contributing to the overarching goals of the programme. Military History, as a case in point, provides the academic framework for Operational Art and OOTW, an academic subject and two military subjects with strong academic components (SANDF, 2001:4-7).

In analysing the curriculum structure, the ideas of Young (2014), as explained earlier, were considered, the reason being that the instrument only partially addresses Young's three questions as far as the structure of the curriculum is concerned. With regard to the first question about how knowledge is selected, it was explained in the preamble that the knowledge that the student must acquire was carefully chosen in consultation with other staff colleges globally. But it is not explained what was used from what institution. However, with regard to question two, about how the learning process is sequenced, a serious weakness in the structure of the curriculum is that the flow of the educational programme is not discussed. This has serious implications. During the interview with the Chief Instructor in 2019,[1] I explained to him my frustration that Operational Art is presented before Military History, which forms the intellectual foundation for Operational Art. His answer was that they simply followed the presentation of the subjects as they were listed in the curriculum, in this case Operational Art being listed before Military History, in a mechanical way and not per ideas of deep learning. The consequence of this was a lost opportunity to develop critical thinking as per deep learning with Military History as a foundation, the student could approach Operational Art with a proper intellectual substance

[1] Author interview with Chief Instructor, Col C. Mahao, on 22 November 2019

to question some of the tenets in this subject.

Young's third question about how knowledge is spaced in time is only partially addressed in the structure. In Appendix A of the curriculum, the allocation of instructional time per subject is listed, but on page two of the document and in Appendix B the flow of the educational process is explained as existing in three terms, Joint Foundational Term, Single Service Term and Joint Advance Term without spelling out in detail how this is related to the modules, subjects and elements (SANDF, 2001:2, Appendices A and B). This must be very confusing to the directing staff who must implement the curriculum, as it does not explain how the modules, subjects and elements fit into the three terms. This makes it also difficult for the students to envision how the elements of the structure of the curriculum forms a logical picture of learning, especially as related to the clear understanding of the overarching goals of the programme, the first tenet of deep learning in terms of curriculum design.

In order to promote deep learning, topics for facilitation in a curriculum should be designed to be open-ended so as to promote critical thinking and encourage active discussions. The approach should be that there are alternative solutions to problems and not a dogmatic approach that uses historical examples to justify official doctrine, such as in a case of a military educational programme. Assignments must be designed that develop the understanding of the phenomena. It must be set at different levels to increase in complexity and be linked to previous understandings (Entwistle, 2009:104). This relates more to the individual subjects, but the structure of the curriculum is designed to increase levels of complexity by moving from theoretical to practical subjects in the sequence of education and training. For example, Operational Art and Military History provide the theoretical framework for later subjects that focus on the CPP. Also, Security Studies provides an academic framework for the deeper understanding of OOTW – Peacekeeping Operations (SANDF, 2001:4 - 7).

In terms of deep learning, assessment criteria must be specified that are related to the goals for understanding. This must be augmented with frequent opportunities to provide students with feedback in order to increase their levels of understanding (Entwistle, 2009:104). This relates to the individual subjects and is relevant to the structure of the curriculum. However, there is no mention of assessment criteria in the 2001 JSCSP curriculum (SANDF, 2001). In the analysis of the structure of the curriculum, it can be concluded that the framework

for knowledge in the workplace is provided, that scaffolding learning is addressed, but with regard to the other tenets of a curriculum structure, the curriculum of 2001 has serious shortcomings. Too much is left to the interpretation of facilitators and assessors, whereas the curriculum structure should have provided clear guidelines.

Deep learning is also about creating opportunities for students to discuss course material among themselves and to evaluate it in terms of relevance to the learning process and the overarching aims of the programme (Entwistle, 2009:104). This is only partially encompassed in the structure of the programme where it is explained that group work will be used extensively during the learning process. Also, are topics open- or closed-ended? Do they encourage critical thinking and active discussions? In the different subjects, the topics are just listed and there is no specific mention of critical thinking and active discussions (SANDF, 2001). This lays the foundation for a learning process that is teacher-centred and not facilitation of active learning involving the student.

Bellanca (2015:L293) has claimed that curricula inspired by the concept of deeper learning should integrate learning across the cognitive, interpersonal and intrapersonal domains in ways most appropriate for the learning goals. What is also needed is an instructional programme that includes research-based teaching methods. The structure of the curriculum is focused on the cognitive domain of learning, but emphasis is placed on group work, that will in itself promote interpersonal and intrapersonal development. Research-based teaching methods are not inherent in the structure, but in different subjects (SANDF, 2001). This will also leave too much for the interpretation of the facilitator and assessor as the structure should provide clear guidelines to promote research-based teaching methods.

According to Bellanca (2015:L3766), the curriculum is especially about what the student should learn and not just how they should learn. The test lies in the following, did the curriculum lay the foundation for the programme to deliver graduates that who can think critically and creatively to provide original solutions, solve problems and bring about positive change? (Bellanca, 2015:L3766). The structure of curriculum 2001 is designed to enable the graduate to understand the nature of the use of military power in the current international system, with specific reference to the planning and conduct of military campaigns. In the preamble, it is mentioned that the students' analytical skills must be developed but the structure of the curriculum does not indicate how this is to be achieved (SANDF, 2001).

There has to be a combination of technical training and education in the human sciences for the graduate to understand systems as well as the people that are part of it. Thus, the focus must be on skills, character and metacognition (Bellanca, 2015:L3870). It is clear from the curriculum structure that there is a mixture of academic subjects focused on education, and military subjects focused on training but there is no mention of metacognition (SANDF, 2001).

To achieve deep learning, the curriculum must make provision for versatility and a broad basis of knowledge which must be achieved by developing capacity on more than one domain of learning. This can lead to the development of professional skills in a real-life context (Bellanca, 2015:L3911). The structure of the curriculum provides a framework for the development of professional skills in real-life context as the focus in this study is the curriculum which provides the appropriate structure for a learning process that would enhance the ability to plan and conduct military campaigns in Africa. However, the structure does not indicate how learning will take place in, for example, the affective domain of learning (SANDF, 2001). One can argue that the use of a staff ride in Military History implies visits to military cemeteries that demonstrates the emotional dimension in military campaigns. This will be explained in the analysis of Military History. But there is no reference to this aspect in the rest of the curriculum.

Does Curriculum 2001 specify how self-awareness and self-directedness – the ability to directs one's own learning and development – should be managed in the learning process? (Bellanca, 2015:L3911). This is not visible in the structure (SANDF, 2001).

In 2000, the USA Department of Education developed a curriculum design called the Universal Design for Learning (UDL) in which the focus was on how the learning process should aid students with learning disabilities, including cognitive deficiencies which should promote the process of directing the students' own learning and promote deep learning. It was based on three principles:

- Multiple means of presentation – students are allowed to use a variety of methods to present information
- Multiple means of action and expression – providing students with alternative ways to act skilfully and demonstrate what they know
- Multiple means of engagement – in this process the facilitator taps into the student's

> interests by offering choices on content and learning tools and also motivating students by offering adjustable levels of challenge in the learning process (U.S. Department of Education, 2010:1)

According to Moore (May 2020:1), UDL offers the best pathway to deep learning and most educational institutions in the USA try to follow these guidelines for the demands of the 21st century. However, these aspects are not visible in the structure of the JSCSP curriculum of 2001, unless the reference to OBE as the approach to learning implies this. The detail of how this should be achieved is not structurally part of the curriculum (SANDF, 2001).

According to Young (2014:195), the curriculum must provide access to knowledge of the world with the ability to envisage alternatives and that cannot be achieved if it is only driven by outcomes, competencies and specified assessments. The structure of the curriculum provides a framework for understanding the real world in which the graduate must eventually function as a commander or staff officer on the operational level of war (SANDF, 2001).

It is thus clear that the structure of the curriculum adheres to very few of the tenets for the design of curriculums that promote deep learning. The question is if the structure and contents of the different subjects and their respective elements support an approach towards deep learning? This aspect will be discussed next.

5.6 Operational Art in Joint and Combined Operations

This subject is a mixture of doctrinal aspects and academic elements. The content is official SANDF doctrine but not the prescribed textbook itself, *JWP 101 - Operational Art*, written by a member of the Research and Development Branch in 2006 (Olivier, 2006). It is based on operational concepts that had been developed from Military History and provides a theoretical framework for the approach to the planning and execution of military campaigns.

The overarching goals are defined as the development of the ability of the student to apply the theory of Operational Art in military operations and understand the application of force at the operational level of war. This relates to the aim of the programme, education and training in military campaign planning. It also makes it easy to keep the outcomes in mind

as all are focused on the operational level of war (SANDF, 2001:4-5).

How then do the different subjects relate to the overarching outcomes to promote deep learning in the curriculum? There is a direct link between this subject and the outcomes as this is the theoretical basis relating to the aim of the programme. The emphasis is on analysing and evaluating theoretical concepts and applying them in practice. This relates to Olivier's argument that Bloom's taxonomy does not have to be used in a specific sequence to promote deep learning as the brain does not always think in a linear pattern, but it develops critical thinking (Olivier, 2019:L1361). But this is not specifically indicated in the curriculum (SANDF, 2001:4-5).

A further aspect of deep learning that needs to be probed is whether the topics are open- or closed-ended? Do these topics encourage critical thinking and active discussions? There is an emphasis on syndicate group discussions that should promote critical thinking and active discussions if correctly facilitated (SANDF, 2001:4).

In this subject, it is not specified that assignments must be set of different levels of difficulty to enhance complexity but the identification of elementary theoretical concepts followed by more complex ones provide a basis for assessment instruments to be designed in such a manner, but this is not specified in the curriculum (SANDF, 2001:4-5).

The next question is if the curriculum depicts a spiral nature where understanding is linked to previous understanding. The concepts are arranged according to the first three steps in Bloom's taxonomy, knowledge, comprehension and application (SANDF, 2001:4-5). It provides a framework for scaffolding learning, one of the key aspects of deep learning.

To promote deep learning, assessment criteria should be related to the goals for understanding. This is not specified. Is feedback to students to increase understanding factored in? This is not mentioned. Is self-directed learning expected? This is not specifically mentioned (SANDF, 2001:4-5).

The next question is if self-directed learning is used to promote deep learning. Case studies, group discussions and the use of a symposium, however, provide a framework for self-directed learning. The development of the student's ability to apply theoretical concepts in case studies and a strong case for active participation in group discussions should enable the student to provide an independent input in group discussions which promotes deep

learning (SANDF, 2001:4-5).

The use of Military History case studies to demonstrate theory is an example of integrated learning while lectures, supplemented by syndicate group discussions, is evidence of learning across cognitive and inter/intrapersonal domains. As the emphasis is on the application of theoretical concepts it speaks directly the learning outcomes (SANDF, 2001:4).

Are research-based teaching methods foregrounded? The impression in the curriculum, is that the case studies will be provided and not based on student research as to which case studies to utilise. The use of case studies, however, implies some research (SANDF, 2001:4).

Are what students must learn foregrounded in a clear way? This is clearly stated as knowledge and application of theoretical concepts (SANDF, 2001:4).

Are students expected to think critically and creatively to provide original solutions, solve problems and bring about positive change? The use of case studies should provide a framework for critical thinking, but no mention is made of using creative thoughts to solve problems (SANDF, 2001:4).

Are practical training and theoretical education blended? The use of lectures to provide the theoretical background, combined with group discussions will blend theoretical education with practical training during a symposium (SANDF, 2001:4).

Is there a focus on skills, character and metacognition? The use of skills and character will only come into play later in the programme during the CPP, but this subject will provide the theoretical foundation for this. The lack of focus on metacognition is detrimental to deep learning as students are not expected to reflect on how they studied (SANDF, 2001:4-5).

Is more than one domain of learning foregrounded? The use of case studies in warfare will promote all domains of learning: cognitive or application of theory; affective or the reality of death and destruction; and psychometric or the use of skills to conduct war. However, this is implied and is not specifically spelled out in the curriculum (SANDF, 2001:4).

Are real-life professional skills emphasised? The focus is on the planning and conducting

of military campaigns, but there is no evidence of the promotion of the ability to direct one's own learning and development during the learning process (SANDF, 2001:4).

Are multiple methods of presenting information permitted? The means of presentation are prescribed. Can students present what they know in various ways? Student presentations are prescribed (SANDF, 2001:4-5).

Can engagement with the curriculum happen in multiple ways such as panel discussions, group presentation or brain storming? Engagement with the curriculum can happen in multiple ways, but it is not specified that the students can make the choice as to which manner it will be conducted (SANDF, 2001:4-5).

There are no choices in the curriculum and all learning material is compulsory. All outcomes are prescribed, and all must adhere to it thus there exist no adjustable challenges in the curriculum (SANDF, 2001:4-5).

Does the curriculum give access to knowledge of the world with the ability to envisage alternatives or is it only bent on outcomes, competencies and specified assessments? It is not specified in this subject that the ability to envisage alternatives will be developed but it is implied, as the study of the application of theoretical concepts in historical case studies will lay a foundation for the ability to develop options in the planning of military campaigns (SANDF, 2001:4).

The analysis of this subject clearly demonstrates the main weakness of the structure of the curriculum as far as deep learning is concerned, that is, the development of a critical mindset to the solutions of possible problems in the workplace where the graduate of the programme must apply his mind. Knowledge of the world is not enough. The ability to find solutions is needed.

5.7 Military History (SANDF, 2001:6-8)

The subject was divided into two elements. General and South African Military History. The element outcome for general Military History was that the student should have the knowledge to effectively utilise military history to contribute to the formulation of doctrine for future war (SANDF, 2001:6).

How are the overarching goals/outcomes for Military History defined? The subject

outcomes relate to the ability to execute allocated tasks at the operational level of war by developing an understanding of the nature of war and warfare in history thus using case studies to study the planning and conduct of military campaigns in history (SANDF, 2001:6).

What forms of understanding crucial to the curriculum are developed in this subject is an understanding of a specific level of war – the operational – relating to the aim of the programme to develop commanders and staff officers on this level (SANDF, 2001:6).

It is easy to keep the overarching outcomes in mind as the case studies focus on the study of military campaigns in history. The subject also contributes to the goals of the programme as the different elements create an understanding of the nature of war and warfare (SANDF, 2001:6-8).

It is all very well to study history, but the question is whether the topics are open-ended and encourage critical thinking and active discussions. In reply, the topics are open-ended and encourage a critical analysis of commanders in the past in the conduct of war by means of syndicate group discussions. This relates to Bloom's fourth level in the revised taxonomy of learning and leads to the ability to create own plans – the development of creativity (Krathwohl, 2002:215).

The next question relates to scaffolding learning and asks if assignments are set on different levels of difficulty to enhance the eventual ability to solve complex problems. The curriculum provides the leeway for assignments to be developed on different levels of difficulty, but this activity it is not prescribed (SANDF, 2001:6-8). From personal experience I know that Bloom's original taxonomy was used during facilitation and assessment, but it is not specified in the curriculum.

In terms of Military History, the question can also be asked if it represents a spiral curriculum where understanding is linked to previous understanding and if the criteria relates to the goals for understanding. Assessment criteria relate to the understanding of the planning and conduct of military campaigns (SANDF, 2001:6-8). This in turn, relates to the second level in Bloom's original taxonomy – understanding (Krathwohl, 2002:214) – but it should be explicitly mentioned in the curriculum with examples.

The next issue is whether feedback to students to increase understanding is factored in the

curriculum. From my own experience I know that target dates for feedback on assignments is prescribed by management, but it is not prescribed in the curriculum (SANDF, 2001:6-8).

Is there a focus on self-directed learning expected from the students? Students are expected to analyse different historical campaigns, but self-directed learning is not prescribed as the method to achieve it. Self-directed learning is, in itself not explained in the curriculum, but the stipulation that historic campaigns must be used in the facilitation of Operational Art and Military History provides such a framework and leads to integrated learning between the two subjects (SANDF, 2001:4-8).

Is there evidence of integrated learning across cognitive and inter/intrapersonal domains? This is promoted by the strong emphasis on group work – syndicate group discussions. It also speaks to the learning outcomes in that brain storming and exchanging of ideas is central in syndicate group discussions (SANDF, 2001:6-8).

An important aspect of deep learning is the use of research-based teaching methods. From personal experience, I know that the students conduct several research assignments in the different subjects, also including a Commandant's Research paper, but this is not mentioned in the curriculum (SANDF, 2001).

It is clear that what students must learn as the learning objectives are specified in Military History (SANDF, 2001:6-8). The question however, is if it will lead to students being expected to think critically and creatively to provide original solutions, solve problems and bring about positive change? This is the crux of the study of academic subjects, that is educational. In Chapter 1, it was explained that all studies are focused on developing the ability of the student to solve military problems in the conduct of campaigns. The specification that a staff ride implies this ability as a staff ride is an activity where the actions of military commanders in history are evaluated in terms of their contribution to the art of war (Robertson, 1987:1). This relates to the highest level in Bloom's original taxonomy of learning (Krathwohl, 2002:214).

The curriculum is a good example of the blending of practical training and theoretical education. The military subjects are focused on practical training and the staff ride also promotes this as the historic war theatre is visited and classroom theory is used to evaluate the decisions and actions of commanders in history (Robertson, 1987:1).

Learning is not complete if students do not reflect on the learning process. Thus, although there is a focus on the development of skills and character, metacognition as a strategy for facilitation is not mentioned in the curriculum with regard to Military History (SANDF, 2001:6-8).

Is more than one domain of learning foregrounded? The staff ride is focused on the evaluation of historical commanders, the cognitive domain. But visits to cemeteries point to the reality of death and destruction in war, the affective domain (SANDF, 2001:6).

A further question is whether real-life professional skills are emphasised? The answer to this is that the art of command is demonstrated in the analysis of campaigns and in this regard, the curriculum thus promotes an approach to deep learning in Military History (SANDF, 2001:6). The above-mentioned can be achieved through the correct guidance by the facilitator but is there is no evidence in the curriculum of the promotion of the ability to direct one's own learning and development during the learning process.

As part of the UDL approach to facilitation of learning multiple methods of presenting information should be permitted. This is allowed in the curriculum, such as presentations and role-play, but the choice of what must be used by the students is not mentioned. The students also can not present what they know in various ways as the format of presentations are prescribed. There is, however, the possibility of engagement with the curriculum that can happen in multiple ways, such as group work, lectures and writing assignments, but students cannot make choices in the curriculum (SANDF, 2001:6-8).

In order to promote scaffolding learning adjustable challenges must exist in the curriculum. Bloom's original taxonomy of learning is prescribed for facilitation and assessment, but not specified as such in the curriculum (SANDF, 2001:6-8).

The last question in terms of Military History is if the curriculum provides access to knowledge of the world with the ability to envisage alternatives and not be focused only on outcomes, competencies and specified assessments. Although critical thinking is mentioned as a learning goal in the subject, the ability to envisage alternatives is not specifically mentioned. It is, however, implied by the stipulation that a staff ride must be used (SANDF, 2001:6-8).

It is clear that only the end state in what should be achieved was explained in the curriculum

although the use of a Military History staff ride was mentioned, as well as the use of the traditional central lecture and syndicate group discussions. The extent to which the curriculum promotes deep learning in Military History is more indirect and it depends on the facilitation and assessment processes to determine the extent of deep learning in the subject.

5.8 Operations other than War (SANDF, 2001:27-29)

The subject OOTW is part of the module Advanced Military Studies. The outcome of this module was that the student had to demonstrate sound professional military judgement and task execution as a commander or staff officer on the military strategic and operational levels of war (SANDF, 2001:17). OOTW is official SANDF doctrine and being supplemented by International Law which leaned more towards to the academic world.

This subject was based on the official SANDF doctrine for Peacekeeping Operations. It represented most of the deployments that the organisation was involved in during the new era after the advent of democracy and participation in security operations in Africa. The prescribed teaching methodology was the use of lectures to convey the theory, syndicate group discussions and practical exercises (SANDF, 2001:27). This also relates directly to the graduate's future operational deployment and thus contributes to education for the workplace, a cornerstone of deep learning.

In terms of how the overarching goals or outcomes are defined, the emphasis is on the understanding of the theory of peacekeeping and an analysis of the SANDF's possible involvement in such operations in Africa (SANDF, 2001:27).

The forms of understanding crucial to the curriculum that are developed relates to the special nature of Peacekeeping Operations (SANDF, 2001:27-28). It also makes it easy to keep the outcome of the curriculum in mind as it relates directly to the SANDF's current deployments. The subject and its component elements relate to the overarching outcomes of educating and training of senior officers for operational command with specific reference to current deployments.

Are the topics open- or closed-ended? Do these topics encourage critical thinking and active discussions? The topics are provided. The topics encourage critical thinking and active discussions as the focus is on the comprehension of concepts and to demonstrate the ability

to plan such operations (SANDF, 2001:28). The student must also determine to correct military response in such operations according to analysis and evaluation, in Bloom's original taxonomy (Krathwohl, 2002:214).

Are assignments set on different levels of difficulty to enhance complexity? There is no evidence of scaffolding learning prescribed for this subject, although the components of the different elements lend themselves to a facilitation design based on scaffolding learning (SANDF, 2001:27-28).

The curriculum is spiral in nature as understanding is linked to previous understanding. The theory of Peacekeeping Operations works on the building block principle, where understanding of peacekeeping in general is needed before a study of, for example evacuation operations can be conducted (SANDF, 2001:28-29).

No assessment criteria are specified other than that case studies will be used and there is no mention of feedback to students (SANDF, 2001:27-29). This will not promote deep learning.

The student must eventually demonstrate the ability to plan and conduct peacekeeping operations which can only be achieved if an element of self-directed learning is present. The student must analyse the circumstances and demonstrate the ability to determine to correct military response to current operational situations. This, in itself, will promote self-directed learning. Integrated learning is promoted as case studies from Military History is used to demonstrate the tenets of Peacekeeping Operations (SANDF, 2001:27-29).

The subject focuses on the cognitive domain (theory) and psychometric domain of learning (military skills) with emphasis on group learning, which is evidence of integrated learning across cognitive and inter/intrapersonal domains. It also speaks to the learning outcomes as the student must demonstrate an understanding of the theory and the ability to plan and conduct Peacekeeping Operations (SANDF, 2001:27-29).

The students must use case studies to understand and apply the theory in practical situations. The use of exercises is specifically mentioned which both promote research-based teaching methods (SANDF, 2001:27-29).

Are what students must learn foregrounded in a clear way? The students must learn how to

plan and conduct peacekeeping operations in Africa, which is clearly stated in the curriculum (SANDF, 2001:27-29).

Are students expected to think critically and creatively to provide original solutions, solve problems and bring about positive change? Students are expected to analyse case studies and provide original solutions in a practical exercise which is the best possible preparation for the workplace (SANDF, 2001:27-29).

Are practical training and theoretical education blended? The emphasis on a practical exercise in which the students will participate augments this aspect of deep learning. It also relates directly to the workplace (SANDF, 2001:27).

There is a focus on skills and character; metacognition as a facilitation strategy is not mentioned (SANDF, 2001:27-29). This is detrimental to the process of deep learning where students must reflect on how they learnt for their development in the quest for lifelong learning.

Is there evidence of the promotion of the ability to direct one's own learning and development during the learning process? This is not specifically mentioned although the use of case studies and an exercise will promote this part of deep learning (SANDF, 2001:27).

Are multiple methods of presenting information permitted and can students present what they know in various ways? There is no room for this in the curriculum and everything is prescribed. Various ways of presentation also exist, but the choice of which one is prescribed (SANDF, 2001:27-29).

Can engagement with the curriculum happen in multiple ways such as panel discussions, group presentation or brain storming? The possibility of multiple ways is mentioned but the choice is prescribed and there are no choices in the curriculum for the student as all students must study all learning material and submit all assignments. There is also no mention of adjustable challenges in the curriculum (SANDF, 2001:27-29). Thus, regarding these aspects, deep learning is not promoted.

Does the curriculum give access to knowledge of the world with the ability to envisage alternatives or is it only bent on outcomes, competencies and specified assessments? The

emphasis on the application of theory in case studies and an exercise will compel the student to develop unique solutions to the problem of using military power in peacekeeping operations (SANDF, 2001:27-29).

5.9 International law and the regulation of international disputes (SANDF, 2001:30- 31)

This is a very specialised subject and the tuition had to be done by outside experts. The subject outcome was that the student had to be able to distinguish between the different international laws, rules and conventions to ensure compliance in the execution of operations. The teaching methodology was identified as pre-reading of prescribed learning material by the students, the use of lectures by subject experts, the use of syndicate group discussions and incorporation of the theory of international law in practical exercises (SANDF, 2001:30).

The overarching goals were identified as the ability to determine which international laws and conventions were applicable in a specific operation and apply it during the planning phase of a military operation (SANDF, 2001:30).

The forms of understanding crucial to the curriculum that were developed include a comprehension of the content and rules of application of different international laws pertaining to armed conflict, its prevention and the rules regarding the conduct of war (SANDF, 2001:30-31). The outcomes are thus easy to keep in mind as the student must be able to identify and apply the appropriate laws in planning military operations.

How do the different elements relate to the overarching outcomes? The learning plans all relate to international law in terms of the conduct of war. The topics are also open-ended, as the student must decide which is appropriate during a practical exercise (SANDF, 2001:30).

Are assignments set on different levels of difficulty to enhance complex solutions? It is not clear from the curriculum that the assignments are set on different levels of complexity, but the prescribed system of pre-reading by the students, supplemented by lectures and a practical exercise provides a framework for the facilitator to arrange it in such a manner (SANDF, 2001:30-31).

Is it a spiral curriculum where understanding is linked to previous understanding? The

different laws relate to one another and the sequence of learning seems to be logical in terms of understanding the learning content and thus promote deep learning (SANDF, 2001:30 - 31).

Assessment criteria are not mentioned and there is no provision in the curriculum for feedback to the students. The pre-reading by the students and the eventual application of laws during an exercise can contribute to self-directed learning, but there is no specific mention of self-directed learning (SANDF, 2001:30-31). Regarding these two aspects, deep learning is not promoted.

What evidence exist of integrated learning and what evidence exist of integrated learning across cognitive and inter/intrapersonal domains? The students are to study a multitude of different laws and regulations and apply it in an exercise. Lectures and practical application relate to the cognitive domain, while group discussions and a practical exercise addresses inter/intrapersonal domains (SANDF, 2001:30-31). The application of laws is not only an individual choice, but group work pertains to the reality of operational deployment where a commander works with staff officers as a way of relating to the learning outcomes which is conducive to deep learning.

Are research-based teaching methods foregrounded? Pre-reading is in itself part of the research process and the use of case studies is a further step in the research process. There can be no doubt as to what the students must learn, laws of armed conflict, and how to utilise it in the planning of military operations. The use of a practical exercise in which theory must be applied will also place the students in a situation where they will have to think critically to devise original solutions. In this way theoretical education is combined with research and a practical exercise (SANDF, 2001:30-31).

Is there a focus on skills, character and metacognition? Skills and character will be developed through the above-mentioned process, but the lack of prescribing metacognition implies that students will not reflect on the learning process in this subject (SANDF, 2001:30-31).

Is more than one domain of learning foregrounded? Cognitive (theory) and psychometric (military planning) are combined and the use of a practical exercise will develop professional skills. However, there is no evidence that the curriculum promotes the ability to direct one's own learning and development during the learning process (SANDF,

2001:30-31).

Multiple methods of presenting information by the students exist but the choice is prescribed in assignments. Various methods of presentation also exist, but the format is prescribed. Also, it is not specifically mentioned that engagement with the curriculum can happen in multiple ways. The students can make no choices in the curriculum as all assignments are prescribed (SANDF, 2001:30-31). There is thus no promotion of UDL in the learning process.

Adjustable challenges exist in the curriculum as the students must first master the theory of the laws of war and then apply it during a practical exercise. This also relates directly to the workplace (SANDF, 2001:30-31). Thus, deep learning is promoted.

Does the curriculum give access to knowledge of the world with the ability to envisage alternatives or is it only bent on outcomes, competencies and specified assessments? The use of a practical exercise in which theory must be applied gives access to knowledge of the world with the ability to envisage alternatives as students will not all develop the same solutions to problems (SANDF, 2001:30).

5.10 Security Studies – National Security (SANDF, 2001:57-60)

The module Strategic Studies entailed mainly academic studies. The module outcome was identified as that the student had to be able to analyse strategic issues and international trends in order to understand the international system when applying knowledge when undertaking employment responsibilities. The subject national security was also incorporated into this sub-module during 2018. This combined module and subject was presented as a subject in 2018 and relates to the adjustment of the curriculum to incorporate an overlap with the military strategic level of war, where the role of military power is evaluated within wider policy aspects of national security.

Regarding National Security, the overall learning objectives relate to four elements: National Strategic Guidance, Security as a pre-condition for stability, National Power and National Military Strategy. As far as Strategic Studies was concerned, the quest was that the student would be able to analyse strategic issues and international trends in order to apply the optimal use of military power during operational deployment (SANDF, 2001:28).

The overarching goals or outcomes of the subject were defined as the ability to understand how military power should be used within the wider framework of international and national security. What forms of understanding crucial to the curriculum were developed? The forms of understanding developed is the framework within which security issues related to the world at large and the role of military power within this (SANDF, 2001:57-58). The goals of the subject are clear as well as what the student must understand, thus promoting deep learning.

Because a subject and a module are combined, it is not easy to keep the overarching goals in mind. Therefore it is difficult to determine how the different subjects and elements relate to the overarching outcomes. It seems as if it was done by a distinction between international, regional and national security issues (SANDF, 2001:57-58).

Are the topics open- or closed-ended? Do these topics encourage critical thinking and active discussions? Topics are open-ended and students must just understand international security issues. The use of syndicate group discussions provides the framework for critical thinking and active discussions (SANDF, 2001:57-58).

Are assignments set on different levels of difficulty to enhance complexity? National security is first addressed, then its different components such as national power and military power. This represents different levels of difficulty to enhance complexity. Thus, it also provides a spiral curriculum where understanding is linked to previous understanding (SANDF, 2001:57).

No provision is made for assessment criteria or feedback to the students (SANDF, 2001:57-58). This is detrimental to the process of deep learning. As stated earlier, in the assessment matrix the criteria for assessment and dates when students must submit assignments and receive feedback is stipulated. This is, however, dependent on the willingness of the Chief Instructor to enforce this, while it should be embedded in the curriculum.

There is a lot of emphasis on lecturing by external experts. It is, however, being balanced towards self-directed learning by using group work (SANDF, 2001:57).

Learning should be integrated as the role of military power within wider security issues are addressed and in this process the use of case studies from Military History is central. However, there is a lack of evidence in terms of integrated learning as the subject and its

elements are mainly focused on the cognitive domain of learning (SANDF, 2001:57-58). This latter aspect is, nevertheless, a good example of how the learning relates to the learning objectives as what is expected of the student is to understand key national security issues for the RSA and apply this on the operational level of war, that is planning and conducting military campaigns. This promotes deep learning, as it focuses on the application of theoretical knowledge in the workplace. What students must learn is in this foregrounded in a clear way.

Deep learning would be enhanced if the above-mentioned aspects of the learning process was enhanced with research-based facilitation of learning. There is an indication that research will be used as a teaching method in this subject as the facilitation methodology entails lectures by outside experts from institutions such as the South African Institute of Security Studies, supplemented by syndicate group discussions and the use of the Korean War, 1950–1953, as a case study on which the theories will be applied (SANDF, 2001:58). This should lead students to think critically and creatively and enable them to provide original solutions, solve problems and bring about positive change. This also implies a blend of theoretical education and practical training.

Is there a focus on skills, character and metacognition? Skills are practised in the sense of realising how military power fits into the broader spectrum of national power, character would develop in this process, character might be developed as the subject will lead to better understanding of the world, but there is no mention of metacognition (SANDF, 2001:57- 58). This detracts somewhat from the subject in its promotion of deep learning as there is no reflection on the part of the students as to how they approached the learning process.

Are real-life professional skills emphasised? Even though the focus is only on the cognitive domain of learning the subject should eventually enable the student eventually in the workplace to correctly apply military power within the broader spectrum of national security (SANDF, 2001:57).

Is there evidence of the promotion of the ability to direct one's own learning and development during the learning process? The is no evidence of self -directed learning as an outcome for this subject although it does not prohibit the facilitator of the subject to use it (SANDF, 2001:57).

Does this subject promote UDL? Multiple methods of offering information by the students exist but the choice is prescribed in assignments. Various ways of presentation also exist, but the format is prescribed. Also, it is not specifically mentioned that assignation within the curriculum can happen in multiple ways. The students can make no choices in the curriculum as all assignments are prescribed (SANDF, 2001:57-58). There is thus no promotion of UDL in the learning process.

Can engagement with the curriculum happen in multiple ways such as panel discussions, group presentation or brain storming? Engagement can happen in multiple ways, but the students cannot make the choice of which one. All learning material and activities are also compulsory, and the students cannot make any choices in the curriculum, (SANDF, 2001:57 - 58) which does not promote deep learning.

Do adjustable challenges exist in the curriculum? There is an adjustable challenge in this subject – the evaluation of South Africa in promoting regional security in Southern Africa, based on the lessons learnt from the Korean War, 1950–1953, case study (SANDF, 2001:57 -58).

Does the curriculum give access to knowledge of the world with the ability to envisage alternatives or is it only bent on outcomes, competencies and specified assessments? The use of theory as presented by outside experts, combined with syndicate group discussions and a case study should provide the students with knowledge of the world in which they will have to apply military power in order to promote national security (SANDF, 2001:57-58). This should enable them to envisage alternatives – the essence of deep learning.

5.11. Security Studies – Geopolitics (SANDF, 2001:62-64)

The overarching goals/outcomes were defined as the ability to interpret the geopolitical factors that influenced international and regional security and stability with the aim of predicting threats to international and regional security and stability (SANDF, 2001:62). It was quite clear what the overarching goals were which provided unambiguous guidelines for any facilitator as to how to approach the subject.

The forms of understanding crucial to the curriculum that were developed entailed an introduction to the subject Geopolitics, a study of International Politics within a geopolitical context, African studies and South African studies. These factors would be analysed within

the framework of the following:

- Concepts
  - The state
  - The nation
  - Cohesion of a state
  - National interests
- Elements of a study
  - Physical elements
  - Population
  - Economy
  - Military aspects (SANDF, 2001:62)

This clear exposition makes it easy to keep the overarching goals in mind and is thus a promotion of deep learning. This is further strengthened by the logical way in which the different elements relate to the overarching outcomes.

The topics is open-ended as the curriculum makes provision for the fact that the situation with regard to the above-named framework is not static. The learning aims of interpreting tendencies and using them to predict possible threats to international, regional and internal stability lends itself to the development of critical thinking and active discussions (SANDF, 2001:62).

Assignments are set on different levels of difficulty to enhance complexity as the learning process starts off with an introduction to the subject, followed by the broader aspects such as international, regional and local factors. It also makes it a spiral curriculum where understanding is linked to previous understanding, as the student must first understand what Geopolitics is before it can be applied on international, regional and local levels (SANDF, 2001:62). This positive development in terms of deep learning could have been augmented by assessment criteria related to the goals for understanding, which is not the case. There is also no prescription that feedback should be given to students in terms of their academic performance.

The curriculum makes provision for self-directed learning and it is explained as the conduct of a geopolitical analysis of a selected sub-region in Africa, in order to identify possible security problems within the sub-region (SANDF, 2001:62). This lends itself to deep

learning as it directly relates to the application of knowledge in the workplace.

Integrated learning exists as other subjects such as OOTW and the Law of Armed Conflict will have to be considered in the conduct of an analysis of a sub-region in Africa. Syndicate group discussions will lead to integrated learning across inter/intrapersonal domains of learning. It also speaks to the learning outcomes in that such a study will enable the student to identify possible elements that can cause conflict and instability (SANDF, 2001:62-64). This is another example of the application of knowledge in the workplace, one of the cornerstones of deep learning.

In order to conduct a regional study within the subject of Geopolitics, the students will have to do research. Research-based facilitation methods are thus foregrounded, which promote deep learning. It also makes it clear as to what students must learn (SANDF, 2001:63).

The use of a case study will lead the students to think critically and creatively and to provide original solutions, solve problems and bring about positive change. The process of deep learning is further enhanced as this also blends practical training with theoretical education. This leads to the development of the skill to analyse international, regional and local geopolitical factors and the development of the character of the student (SANDF, 2001:62-64). Unfortunately, there is no mention of metacognition, the process of compelling the student to do reflection of the learning process, a central aspect in the process of deep learning.

More than one domain of learning is foregrounded in that the students will work in a group and the practical nature of the subject lends itself to the development not only of the cognitive domain of learning, but also psychometric skills. This relates to being a commander in military operations in Africa and knowing how to blend military and national security issues (SANDF, 2001:63-64).

The promotion of the ability to direct the student's own learning and development during the learning process is not specifically mentioned. It will thus be up to the facilitator of learning to implement this (SANDF, 2001:62-64).

This subject also does not promote UDL as methods of presenting information are prescribed, the students can present what they know in different ways, but the choice of technique is not up to them. It is also not conducive for deep learning when multiple ways

of engaging with curriculum exist, such as panel discussions and group presentations, but the choice of which approach is not exercised by the students. Aggravating this situation is the fact that the students can make no choices in the curriculum even though adjustable challenges exist in the curriculum from theoretical studies to a practical application in a regional case study in Africa (SANDF, 2001:64).

Does the curriculum give access to knowledge of the world with the ability to envisage alternatives or is it only bent on outcomes, competencies and specified assessments? This subject prepares the student for operational deployment in Africa and provide the cognitive framework for the ability to envisage alternatives in the workplace – an important part of deep learning (SANDF, 2001:62-64).

5.12 Conclusion

Curriculum 2001 provides the framework for the facilitation and assessment plans for the different subjects. There is, however, justification for why subjects form part of the learning process to prepare the student for the workplace, which is the day-to-day management of the SANDF and operational deployment in Africa. But the preamble and the structure of curriculum 2001 only partially and in vague terms refers to deep learning.

There is also no explanation as to how the intended curriculum would link with the enacted curriculum. It is clear how the knowledge to be gained was selected; it is sequenced according to module, subjects and elements and a table was provided describing the allocation of time per module and subjects. It was, however, too much focused on content and the process of implementation should have been more emphasised. Curriculum 2001 is thus a typical example of a model focused on content and not on purposes and organisation.

The structure and layout of the curriculum adheres to some of Entwistle's (2009:104) prescribed steps in creating a curriculum designed to teach for understanding. The overarching goals of the subjects in relation to the broad aims of the course are related to the developing forms of understanding that are crucial to the subject areas. It is also easy to keep in mind the goals of the programme and how the different topics relate to them. The use of syndicate group discussions and a symposium managed by the students would encourage active discussion.

The outcomes of the different elements are explained, providing guidance to the planning of the facilitation and assessment processes, but the assignments for the students is not specified. It is thus not possible from the planned curriculum, to determine if the assignments develop and assess deep understanding. Assessment criteria are also not specified and will have to wait for the discussion on the conversion of the curriculum to unit standards to determine if the assessment criteria properly link with the learning outcomes. The teaching methodology described in the curriculum does, however, encourage students to work among themselves. The system of portfolios of learning will also result in self-evaluation, but it is not specified in the curriculum. There is no process promulgated in the curriculum to encourage students to think critically about their approach to the learning process, which was the aim of the portfolios of learning, thus no mention of metacognition.

What needs to be asked is if the curriculum integrates learning across the cognitive, interpersonal and intrapersonal domains in ways most appropriate for the learning goals and did the structure of the instructional programme include researched-based teaching methods? There is a large amount of intermixture between military/doctrinal and academic subjects in Curriculum 2001, with emphasis on the cognitive domain, but the prescription of group work in all the modules adheres to the prerequisite of interpersonal and intrapersonal experiences, although last-named concept could have been specified more in detail in the sense that the portfolios of learning and their roles could have been specified in the curriculum for the sake of reflective learning. There is a definitive lack of prescription of assignments that teaches through research. The Commandant's Research paper comes to mind as well as smaller research assignments. It is unknown if the latter was deliberately left out of the curriculum to allow the facilitators the initiative to decide for themselves if they want to used it for facilitation and assessment. On the other hand, the Commandant's research paper is deemed equally important to the CPP and should have at least been mentioned in the curriculum.

There is no specific guideline in terms of feedback to the students as part of the process of building on their self-confidence. There is also no specific mention on research – based education in the curriculum, although I know from practical experience that several short research assignments are utilised during the presentation of the programme.

Did the curriculum promote critical thinking and creativity in order to generate original

solutions in the solving of problems also needs to be dwelt on? These would have been determined by the enacted curriculum, the facilitation and especially the assessment process but Curriculum 2001's focus in terms of preparing the student for the workplace as commanders and staff officers on the military strategic and operational levels of war, is correct. The combination of military/doctrinal and academic subjects provides that background as to what the graduates need to cope with the ever-changing global conflict environment.

There has been a combination of technical training and education for the graduates to understand systems as well as the people that are part of it. There is an emphasis on skills and character.

An important point to consider is if the curriculum makes provision for versatility and a broad basis of knowledge that must be achieved by developing capacity in more than one domain of learning which can lead to the development of professional skills in a real-life context? This is achieved by combining military/doctrinal training and academic education in a variety of subjects from Campaign Planning to the use of the Law of Armed Conflict in case studies and practical exercises.

The curriculum does not specify how self-awareness and self-directedness – that is, the ability to direct one's own learning and development – should be managed in the learning process. However, from personal experience I know that the students engage in such an exercise to develop this at the beginning of the programme, but it is not specified in the planned curriculum.

From the planned curriculum one gets the impression that the methods of assessment are standardised along traditional approaches of specific guidelines to which the submitted assignments must adhere and that students are not allowed to use alternative methods to present information or demonstrate what they know.

There is no provision in the planned curriculum in offering the students choices of content and learning tools or offering adjustable levels of challenge in the learning process. Everybody must study all the subjects and the use of facilitation and assessment methods are standardised.

There is provision for the development of the ability to envisage alternatives even though

the focus is very much on the standardised procedures, outcomes, competencies and specified assessments. However, during my interview with the Chief Instructor he confirmed the tendency to use case studies that reinforce doctrine and the general way of thinking about war at the SANWC (Author, interview, Mahao:2019).[2] The development of critical thinking could have been more specifically mentioned in the curriculum as that would have promoted deep learning.

[2] Author interview with Chief Instructor, Col C. Mahao, on 22 November 2019.

CHAPTER 6

THE FACILITATION AND ASSESSMENT OF A SELECTION OF ACADEMIC SUBJECTS AND EDUCATIONAL QUALITY ASSURANCE ON THE JOINT SENIOR COMMAND AND STAFF PROGRAMME OF 2018

6.1 Introduction

The next step after analysing the curriculum, which was done in the previous chapter, is to determine the extent to which deep learning was applied during the facilitation and assessment of the specific subjects on the JSCSP of 2018, that were chosen for analysis and how this application was quality assured. As was explained, purposeful sampling was applied by focusing only on those subjects with a substantial academic component. This was done because the military subjects fall within the ambit of training, rather than education.

Before the facilitation and assessment of the chosen subjects is done, however, the nature of the learning group of 2018 must first be analysed. This is situated in the top left corner of Entwistle's heuristic model, as discussed in Chapter 3. This is the realm of ability, knowledge and learning processes, in other words an analysis of the target group, the student body of the JSCSP of 2018.

Entwistle identified the following factors inherent in a target group of a case study that will have a direct impact on the effectiveness of the facilitation and assessment processes in promoting deep learning; influences of family, teachers and other mentors; intelligence and profiles of abilities; subject specific knowledge and skills; conceptions of knowledge and learning and approaches to learning. Related to this are factors such as identity and self-confidence; personal and vocational goals; motivation and work habits and study organisation and effort (Entwistle, 2009:115). I have used Entwistle's model and his questionnaires but applied it to the unique circumstances of the students of the JSCSP, specifically how these factors would serve as knowledge multipliers or barriers to learning.

6.2 The students of JSCSP 2018

The first step in the group analysis was to determine how past experiences influenced the students' approach to the learning process by the time they arrived to participate in the JSCSP.

Although at this stage of the officer's career, he/she had participated in a multitude of training programmes, my previous research (Jacobs, 2007:49) indicated that influences on the approach to the learning process can be traced back even as far as the school background of the student. As explained in Chapter 1, students originating from Black secondary schools demonstrated a lack of reading and writing comprehension in English (Ngwenya, 2004:2). In 2007 I compared the writing abilities of students on the JSCSP from 2004 till 2007 with the number of learners from former township and Bantustan schools. The number of Black students that attended former White schools increased and I detected an improvement in their writing skills in English from the academic essays that I assessed (Jacobs, 2007:49).

With regard to the students of the JSCSP of 2018, from the sample of 21 students, 12 indicated that their school education took place in exile camps, Bantustan states or townships. Nine students indicated that they came from former Model C schools, referring to a semi-private structure of initial Whites-only government schools in South Africa, that was introduced in 1991 (Jacobs, 2018c:1). Thus, many students struggled to express themselves in academic writing due to their school background. This was aggravated by the fact that 17 out of 21 students indicated that English, the language of tuition, was a second language while, for one that it was a 4th language and for another a 5th language. Only two students from the sample indicated to have English as a home language (Jacobs, 2018c:1). The deduction can thus be made that on average the students of JSCSP of 2018 were challenged by reading and writing in English.

Academic qualifications and specifically a prior knowledge of history paints an even bleaker picture. The level of academic qualification showed that from the sample of 21, two had postgraduate qualifications, six were qualified on graduate level, seven had diplomas, four had matric certificates and two only had qualifications on Grade 9 school level or lower. Previous knowledge of history proved problematic. One should remember that apart from being a subject on its own, Military History provides the case studies for most of the subjects on the JSCSP. Out of the sample of 21 students, none had qualifications in History on tertiary level, six had studied History at matric level, three had studied it only up to Grade 10 level and 12 members had only studied History at Grade 9 level or lower (Jacobs, 2018c:1).

Two learning events in their military careers had the most direct influence on the learning abilities of students on the JSCSP. The first one was the Junior Staff course, followed by

the pre-course training in the year before the residential phase of the JSCSP at the SANWC. In my previous research, I discovered that one of the barriers to learning was the time between the Junior Staff course and the start of the residential phase of the JSCSP (Jacobs, 2007:50). Of the group of 21 members, the sample from 2018, two members had done their Junior Staff course in 2016, but 19 members participated in it before 2013, a five-year gap in the learning cycle (Jacobs, 2018c:1). The problem is that it was only when on the course, apart from members that are appointed as directing staff at one of the training colleges in the SANDF, that students engaged in the study of theoretical military subjects. Their day-to-day functioning in the organisation entailed mostly management tasks and training of recruits or junior officers, apart from operational deployment, as explained in Chapter 1 (Vermaak, 2010). My experience of being involved in the education and training of officers in the SANDF is that there is not a tradition of reading and lifelong learning.

One should also ask the question about the extent to which the Junior Staff courses prepared the students for the academic component of the JSCSP. The Junior Staff courses are service unique, in other words the Army, Air Force, Navy and Military Medical and Health Services present the courses aimed at their specific needs on the tactical level of war. As explained in Chapter 1, the JSCSP is on the operational level with an overlap with the military strategic level of war. I lectured on the Junior Staff courses from time to time from 1997 till my retirement in 2014. Military History, for example, was only used to demonstrate doctrine, not to develop critical thinking about the validity of the doctrine. The focus was also different on the respective courses. During the Army and Military Medical and Health Services courses, an overview of the evolution of warfare was provided with specific lectures focused on demonstrating doctrine, such as the Gazala battles in North Africa in 1942 to explain the conduct of conventional military operations. During the Air Force course, the focus was on the development of air power and with the Navy the development of naval power in warfare. This did not provide much of a firm base for academic studies on the JSCSP, it was limited in scope and the focus was on training and very little on education. However, with a five-year gap before the student starts with the residential phase of the JSCSP, it is logical that much theoretical understanding had been forgotten.

The learning experience that had the most direct influence on the students participating in the residential part of the JSCSP was the pre-course training programme, which was

presented in the calendar year before the residential JSCSP. The pre-course training programme focused on the administrative and academic preparation of the students for the residential phase and was conducted through three contact sessions of one calendar week each by means of distance education. Most of the content was focused on training with some sharpening of academic skills. The following were addressed in the pre-course training programme course during 2017:

- Exercises in which the students learn how to work in syndicate groups and the election of a student committee
- Training in improving of computer skills with practical exercises in Microsoft Word, Excel, PowerPoint and Outlook Express
- Improving the academic writing skills of the student through lectures and a practical exercise in the form of writing an essay on a military topic of their choice, and other service writing assignments such as memoranda and official letters
- Exercises for the students' verbal communication skills, using PowerPoint presentations
- Improving the student's personal skills by participating in a performance management exercise
- Lectures provided by staff of the Military Academy on research methodology, combined with the completion of a proposal for the Commandant's research paper that would be completed during the residential phase of the JSCSP in 2018
- The conducting of a student officer's colloquium
- Technical training in the compilation of a Portfolio of Evidence
- The development of personal skills by participating in cultural diversity training
- The development of interpersonal skills by participating in a conflict management exercise (Krause, 2018:2)

The focus of the pre-course training programme was very much on technical training to be able to participate in the residential programme of the JSCSP. The only aspects that could possibly contribute to deep learning were the training in abilities to participate in syndicate groups, the writing of an essay, the lectures in research methodology and the formulation of a proposal for the Commandant's research paper. At this stage, however, it must be mentioned that the writing of one essay was not enough to overcome the problem of only a few students being English first language users. In Chapter 2, the literature demonstrated that training in the language of tuition is a must in order to

improve academic performance. That is why I had already recommended in 2007 that the students should participate in special courses in English at the University of South Africa to overcome the problem of studying in a second language (Jacobs, 2007:54).

The last aspect regarding the previous learning experiences of the student was the average age of the students on the programme. From the sample of 21 students, one person was between 31 and 40 years of age, 15 between 41 and 51 years of age and five members were between 52 and 60 years of age (Jacobs, 2018c:2). I have personally encountered students on the programme who were 59 years of age, one year before retirement, and was not able to understand the sense of nominating such persons for the programme at such a late stage of their careers. On average, the group of 2018 was mainly in their forties. This had two implications for the process of deep learning.

One the one hand, it might have been difficult for such persons to endure the academic pressure on the programme, which was also linked to an unwillingness to change their embedded style of learning. On the other hand, the implication is that this group has got a lot of practical work experience, which would contribute to the process of deep learning (Jacobs, 2007:49).

Another aspect that must be considered is the amount and quality of sleep that the students experienced on the programme. In Chapter 2, it was explained that traditionally - the educational philosophy on staff programmes was to put pressure on the students in terms of time for the completion of assignments to see how they reacted to simulate similar pressures in time of war. Denying them sleep was part of this process (Geldenhuys, 2008:25). This presented a unique barrier to deep learning and a good example of the clash of interests between the military and academic worlds. According to Sousa (2016:228), the encoding of information into the LTM of the brain occurs during sleep. When we sleep, the brain reviews the events and tasks of the day, storing them more securely than at the time we originally processed them. Little sleep has a detrimental effect on this process. In my interviews with the students of JSCSP of 2018, they indicated that they had no complaints about too little sleep on the programme. Thus, for them, lack of sleep was not a barrier to deep learning (Jacobs, 2018b). However, according to my personal experience both arguments have some validity and a solution to address both the needs of the military and academic worlds in this regard must be found.

The next aspect in the target group analysis was motivation. On the question of the relevance of the programme to the students' future work environment, out of the sample of 21, two indicated not at all, three indicated partially, one was uncertain. However, 10 indicated a strong relevance and five a very strong relevance. On the question of motivation for participating in the JSCSP, of the sample of 21, a total of six claimed it was to be promoted, 14 participated for self-development and 11 to further the interests of the SANDF and the RSA (Jacobs, 2018c:1-2). The questionnaires were completed in November 2018 at the end of the programme. Considering the psychological attrition of the programme, being away from home and their normal work environment and working under time pressure, this was remarkable in terms of the motivation of the students. The implication for deep learning was that if the facilitation and assessment approach promoted deep learning, they would likewise have tended to adapt to a deep approach towards the learning process.

The last aspect researched at the end of the programme by means of the questionnaire was that of learning styles. On the question on preferences of learning style, of the 21 students in the sample, one indicated a preference to listen to lectures, one a preference to reading, one a preference to writing notes and assignments, eight a preference for practical work and nine a preference for learning that was focused on practical application in the workplace. This provides a firm base that facilitators could use to promote deep learning.

Even more interesting was the question on preference to the learning approach, where seven indicated a preference to accumulate facts, five the identified the components of phenomena, eight members indicated seeing the bigger picture, and one's focus was the sequencing of events. Thus, a minority focused on accumulating facts, a typical surface approach to learning.

The last question was what was important when studying new information? One indicated the memorisation of facts, one the focus on passing examinations, three the identification of relations between facts and 16 indicated that the most important aspects in learning was to make sense of what was being studied (Jacobs, 2018c:1-2). In terms of deep learning, it seems that at the end of the programme the students focused on deep learning as the focus was on holistic thinking, identification of relations between facts and making sense of what was being studied.

The student group of the JSCSP of 2018 thus did not have a firm foundation for an approach to deep learning at the start of the residential phase of the programme. Yet, their reactions to the questionnaire at the end, reflected a marked improvement in this regard. The next aspect to be investigated is to what extent the facilitation and assessment processes and the impression of the facilitators on the students' approach to learning agreed with the above findings.

6.3 The flow of the education and training process of 2018

The flow of the education and training process will be briefly discussed to create an understanding of where the subjects to be analysed fitted into the broader process in 2018. The detail can be seen in the Course Schematic Diagram (SANWC, 2018e).

The programme was divided into five terms in the following manner. Subjects to be analysed is highlighted.

Table 3: Summary of the Course Schematic 2018 (SANWC, 2018e)

Terms	Dates	Topics
1: Induction	15–19 January 22–26 January 1–9 February	Induction programme Lectures on Research Methodology & Finalisation of topics for the Commandant Research Paper Skills development – functioning as part of a group
2: Management studies	12 February -– 29 March	Corporate Management
3: Strategic studies	9–20 April 2–11 May	**Security Studies** Capability visits
4: Joint Warfare (Foundation phase)	14–25 May 28 May – 25 June 18–25 June 29 June – 6 July	SANDF Combat Doctrine **Operational Art in Joint and Combined Operations** **International Humanitarian Law** **Military History (theory)**

	7–17 July	**Military History (staff ride)**
5: Joint Warfare (Advanced Phase)	19 – 27 July 13 August – 7 September 17 September – 16 November 7 – 19 October 19–23 November	The British Estimate Process **Operations other than war (peacekeeping)** The South African CPP Visit to the Eastern Cape Province Demobilisation and graduation

As the course schematic diagram shows, there is a problem with the logical flow of learning activities. All the subjects on the programme utilise historical case studies. Therefore, in sequence, Military History itself should be facilitated and assessed before the rest. Placing it after Security Studies, Operational Art and International Humanitarian Law is to put the proverbial cart in front of the horse. It creates the danger of considering these other named subjects as dogma and using history just as justification. This does not promote critical thinking.

Another aspect is the time allocated per subject. It is still mainly a military programme. But, as will also be analysed per chosen subjects, the time allocated to these academic subjects is far less than the military subjects and other activities. The implication is that the academic subjects, the main focus of education, was under time pressure, which was not conducive to in depth analysis, an important component of deep learning.

6.4 The students' experience of the learning process in the analysed subjects

A separate questionnaire was used to determine the students' experience of the learning process. This was collectively used for the chosen subjects. The students' experience of the facilitation of the analysed subjects was found as follows:

Table 4: Student experience of the learning process

Questions to the student	Agree	Disagree
It was clear to me what I was supposed to learn in this course unit.	17	4
The topics seemed to follow each other in a way that made sense.	12	9
What we were taught seemed to match what we were supposed to learn.	15	6
I developed a sense of what goes on behind the scenes in the subject area.	17	4
The teaching of the programme helped me think about the evidence underpinning different views.	18	3
The programme encouraged me to relate what I have learnt to issues in the wider world.	19	2
Staff tried to share their enthusiasm about subjects with us.	14	7
Staff were patient in explaining things which seemed difficult to grasp.	13	8
Students' views were valued on the programme.	11	10
The feedback given on my work helped me improve my ways of learning and studying.	14	7
The feedback given on my work helped clarify things I hadn't understood.	17	4

In the feedback reports from the students on the analysed subjects they indicated that they were satisfied with the quality of facilitation, the patience of the facilitators when explaining and practising new concepts and the quality of feedback on assessments. They also stated that they were satisfied in general that the assessments were fair and consistent. The only negative aspects pertained to administration and logistical issues from the side

of the SANWC as an educational and training provider. This will be addressed under Educational Quality Assurance (Van Oudtshoorn, 2018c). There should also be a concern about the strong indication that only with a majority of one did the students indicate that their views were valued on the programme. The deduction can be made that this would not promote the tolerance of alternative interpretations about social phenomena, which is one of the core values of deep learning.

6.5 The facilitation and assessment of selected subjects on the JSCSP of 2018

The next aspect of Entwistle's model is the critical features of teaching for a deep approach and integrative understanding (Entwistle, 2009:115). This will consequently be applied to each of the subjects chosen to be analysed.

6.5.1 The facilitation and assessment of Security Studies

The focus in the sub-module Security Studies was on the contemporary world with only a limited historical background, as a longer background would be covered by the subject Military History. From Security Studies, two subjects were chosen to be analysed, National Security and Geopolitics.

The subject National Security in the original curriculum was converted into the following unit standard, namely Unit Standard Number: 117987 – Contextualise a concept of National Security. At the same time the subject Geopolitics was converted into the following unit standard, namely Unit Standard Number:119920 – Analyse the impact of global aspects on Southern African military related aspects (SANWC, 2018d).

The facilitation process for the subjects National Security and Geopolitics, respectively in the sub-module Security Studies will henceforth be analysed in terms of deep learning.

As was explained in the previous chapter, this sub-module was introduced into the residential phase of the programme, whereas in the past it formed part of pre-course education and training. What are Security Studies about? The theory is focused on concepts that appear at the centre of contemporary debates about security, such as war, coercion, poverty, environmental change and health. Thus, any societal change that can disrupt stability. The focus is on contemporary global security issues (Williams, 2008b:11).

In Entwistle's heuristic model (Entwistle, 2009:115), as discussed in Chapter 3, it is important to determine what the approach to facilitation and the role of the teaching staff of the educational institution such as the SANWC was with regard to the two analysed subjects. The belief was that the two analysed subjects would provide the student with a background in terms of the world in which he or she would be operationally deployed (SANWC, 2018a). The target understanding, the proposed result of the learning process (Entwistle, 2009:115), was thus a clear comprehension of the security issues in the contemporary world of the 21st century.

Thus, the selection and organisation of course content had to support the above result of the learning process. The concept of National Security and Geopolitics were deemed important enough to be included in the sub-module Security Studies (SANWC, 2018a). The other subjects included Strategic Security, the role of technology in war and Civil Military Relations (Esterhuyse, 2020). However, these last three subjects were not part of the analysis, as the chosen subjects, National Security and Geopolitics provided enough evidence for the analysis of security issues in the 21st century.

The first aspect to consider was if the facilitators introduced the subject with enthusiasm, provided and overview and explained its importance in the qualification. From the lack of evidence available on the facilitation process this is difficult to determine, but the students' experiences in Table 4 clearly indicate that the majority experienced the facilitators introduced the subjects with enthusiasm, and they provided an overview of its contents (Jacobs, 2018d).

An important building block in Entwistle's model (Entwistle, 2009:115) is teaching (facilitation) that encourages thinking and understanding, especially critical thinking. This is particularly difficult to ascertain as the facilitation of the subjects National Security and Geopolitics was completely based on lectures with no group discussions. For one week, from 9–13 April 2018, the students listened to lecturing. Considering the scope of the specific outcomes and assessment criteria (SANWC, 2018d), the students were bombarded with so-called facts at a high tempo with little deep learning taking place, if at all.

In the learning process lectures were supplemented by educational aids such as PowerPoint presentations, video material and case studies, but the students did not get an opportunity to discuss the work done in groups (SANWC, 2018a). It would thus be fair

to surmise that in National Security and Geopolitics, deep learning, as it relates to critical thinking, did not take place in the initial facilitation of these two subjects. Educationally speaking, this is problematic when considering that the theory is at the centre of contemporary debates about security such as war, coercion, poverty, environmental change and health (Williams, 2008b:11).

In order to determine the level of deep learning, it must be confirmed that the students were provided with the opportunity to discuss issues, ask questions and reflect on what they had learnt. It is practice on the JSCSP to discuss issues and ask questions during Syndicate Room Discussions (SRDs), but for the subjects National Security and Geopolitics there were no SRDs (SANWC, 2018a).

Deep learning could, however, have been promoted if the facilitator augmented the learning process by letting the students participate in an exercise simulating a real-life situation on global security issues. The question is thus, Did the facilitator use scenarios or case studies by providing the students with a problem to solve? This was done in class but through the process of assessment. The students had to do a syndicate presentation as part of formative assessment where they had to apply the theory of contextualising the concept of national security and how it relates to geopolitical issues in Southern Africa (Syndicate2, 2018). For the summative assessment, the students had to individually write an academic essay on the same topic, namely, contextualise a concept of national security for Southern Africa (Identity of students protected, 2018:File 2 - Tag E3).

Until 2018 the SANWC annually visited other countries in which the students had to conduct a geopolitical study and relate it to possible conflict situations. Due to lack of money, this was not done in 2018. As an alternative, the Commandant made the decision that the students would visit the Eastern Cape Province over the period 7 to 19 October 2018 and conduct a geopolitical study of this area. Supplementary to this, battlefields of the nine wars between the Xhosas and colonial governments, 1779–1879, were visited. The students had to include this in the analysis of the stability in the province and, on return to the SANWC they conducted group presentations in their syndicates to the directing staff for formative assessment. The summative assessment consisted of an academic essay by the respective syndicates on the topic, ‘A Geopolitical Study of the Eastern Cape Province’ (Identity of students protected, 2018:File 2 - Tag E12).

With reference to deep learning, the concern is here that the first authentic engagement with problem-solving as it relates to deep learning were encountered during the assessment process. Suddenly the students had to, do work on a high level in syndicate groups and submit extended writing pieces. The problem is the disjuncture between the actual learning and the assessment process. This was aggravated by the visit to the Eastern Cape and the consequent assessments. Security Studies were presented in April. In October, the students were already in the process of learning the CPP. This lack of proper sequencing must have confused the students.

Authenticity as a principle of assessment means that the assessment must be based on evidence that is directly linked to or created by the student. It also refers to real-world problems, skills and performances (Nel, 2011:65). This was in place in the formative and summative assessments. However, the end result was not encouraging as far as deep learning is concerned. The directing staff's comments on several of the academic essays were that the students tended to provide only facts with very little analysis (Identity of students protected, 2018:File 2 - Tag E3). This is not surprising considering that the facilitation, learning and the assessments were not neatly aligned, and the students were exposed to large swathes of fact teaching.

The only aspect of deep learning that was clearly promoted in National Security and Geopolitics was the use of formative assessment to lay the foundation of the learning process and which was augmented by summative assessment to complete the learning process and certify the level of performance reached (Identity of students protected, 2018:File 2 - Tag D3).

The two assignments analysed above promoted the ability to conceive problem solutions differently as the students had to interpret the security situation in Southern Africa, theoretically and practically. It could not be determined if the assessment promoted the willingness to try something differently and to learn from it. But the available evidence shows that there was very little interpretation of facts by the students. The use of a syndicate presentation promoted the finding of collective solutions, but if it did not promote originality of thinking it would also not contribute to deep learning (Identity of students protected, 2018:File 2 - Tag D3).

In conclusion, one could argue that if deep learning is not promoted during the facilitation of subjects, designing assessments that promote deep learning will not on its own rectify

the situation. The students' lack of analysis in the academic essays demonstrated this reality. In general, the learning process in the subjects National Security and Geopolitics was a clear case of leaning towards surface learning. This probably arose because lecturers from the Military Academy, on short notice, had to present the lectures and the decision was probably that enough time was not available to include SRDs in the learning process.

The next subject under analysis, however, is focused on the knowledge that will be directly used during operations in Africa, that is, the theory of Operational Art.

6.5.2 The facilitation and assessment of Operational Art in Joint and Combined Operations

The core business of the JSCSP is the education and training of senior officers in the planning and conducting of military campaigns and major operations. Therefore, this subject, Operational Art in Joint and Combined Operations, can be considered to be the most important for preparing the student for the future workplace environment.

A single unit standard was used for the facilitation and assessment of International Humanitarian Law and Operational Art, that is, US 119918 – Apply military joint and multinational doctrine and policy during campaign planning (SANWC, 2018d).

Operational Art in Joint and Combined Operations is a mixture of doctrinal aspects and academic elements. The content is based on official SANDF doctrine but not the prescribed textbook itself, *JWP 101 - Operational Art*, written by a member of the Research and Development Branch in 2006 which also contain interpretations by members of the directing staff at the SANWC of the doctrine (Olivier, 2006). The term directing staff is used rather than instructor, depicting a preference for facilitating learning, rather than teaching. It might be a rather dated book, which should be rewritten to keep pace with the latest developments in warfare and to make the learning relevant to the workplace, in line with deep learning.

Operational Art is a theory about how to plan and conduct military campaigns and major operations in conventional warfare. It is based on operational concepts that were developed from Military History, such as the levels of war, described in Chapter 1, namely, the national strategic, military strategic, operational and tactical levels. It also provides a theoretical framework for the approach to the planning and execution of military

campaigns. Examples of the concepts on which it is based, are the operational factors, force, time and space. A military commander will plan a campaign or major operation to deploy the best combination of forces at the appropriate moment in the best location in a theatre of operations to gain the edge over his enemies (Olivier, 2006:3-1). Note: In some SANDF publications the numbering as indicated here depicts Chapter 3, page 1).

Referring to Entwistle's heuristic model, as explained in Chapter 3, the first aspects to be considered in educational planning, are beliefs about facilitation and the role of the facilitator. This can only be deduced from the approach to the process of facilitation and assessment. The facilitation and assessment of Operational Art were conducted according to an integrated structure of teaching methodologies, including lecturing, followed by the students building a scale model of the geographical features of two case studies, to be used in SRDs. The student group was divided into syndicate groups of 10 to 12 people, each group allocated to a member of the directing staff for learning purposes. The first case study was the Gulf War of 1991, the UN's campaign to evict Iraq from Kuwait, and secondly, Operation Barbarossa, the German invasion of the Soviet Union in 1941, during the Second World War with specific reference to the theatre of operations, German Army Group North. The first case study was used for formative and the second for summative assessment (Van Oudtshoorn, 2018a:13-16).

The learning process was conducted over a period of 14 days. Lectures and a DVD were used during the first two days to introduce the theoretical concepts of Operational Art and how it was applied in the Gulf War of 1991. During the following five days, lectures were presented and supplemented by SRDs with the emphasis on how theoretical concepts fitted into the case study. Formative assessments were conducted during each SRDs based on individual student participation. On the eight day, the case study on Operation Barbarossa was introduced, again using a DVD. During the next four days, the initial pattern of learning events was repeated. Every day lecturers took place, followed by SRDs (SANWC, 2018a). It seems that there was an overemphasis on lecturing, but that it had to be counterbalanced with group discussions.

On the eleventh day, the first summative assessment was conducted. The students, in their syndicates conducted a presentation where they had to apply the theory of Operational Art to the case study of Barbarossa. The next day, the students wrote an open-book theory examination consisting of a combination of paragraph and multi-choice questions (SANWC, 2018a). The assessment process was based on deep learning as Entwistle

emphasised the importance of using formative and summative assessments in order to promote scaffolding learning. He also claimed that a combination of paragraph type, combined with multi-choice questions promotes deep learning, (Entwistle, 2009:157) as was done in the summative assessment of Operational Art theory.

The thinking about the Operational Art and its pedagogy was clearly based on a constructivist approach where the traditional lecture served as the methodological instrument to convey large amounts of theoretical knowledge but was supplemented by group discussions and the practical application in two case studies. However, the use of video material on the two case studies illustrated real-life applications to promote deep learning (Entwistle, 2009:80).

Yet, during the last two days, the students only received lectures on new emerging theories of warfare and specialised subjects such as jungle warfare and urban operations. There were no SRDs or assessments (SANWC, 2018a). Emerging theories is about new ideas on warfare in different countries. Deep learning could have been promoted by using SRDs to enable the students to develop a new mind set for future warfare and to provide them with an opportunity to develop their own ideas. This meant a fracture in the planning structure and deep learning. The implication was that the last two days demonstrated a regression to surface learning and students were most probably not paying much attention as the named topics were not assessed.

The question that needs to be posed at this juncture of the analysis of Operational Art is, How did the learning process relate to what Entwistle identified as the teaching and learning cultures linked to the course structure, organisation and management (Entwistle, 2009:115)? Lectures, SRDs and short formative assessments were utilised in an integrative pattern. Sequentially, the theory was presented by means of lectures, then analysed and discussed by means of SRDs and then assessed. The SRD is an approach to facilitation where learning material is allocated to the students and they receive feedback on their discussion of the practical application of theoretical concepts in the case studies by the directing staff (Van Oudtshoorn 2018a:15). The work done in Operational Art was augmented by means of support for individual learning and understanding provided by the mentorship programme, where each directing staff member served as a mentor to four or five students. They met monthly where problems that the students encountered with

their studies were discussed (Interview Mahao, 2019:3).[3] This is an example of deep learning based on the argument that in cooperative learning groups the students learn from each other (Sousa, 2016:214).

The selection and organisation of course material was unique, as it did not follow a chronological pattern. The decision in terms of planning was to first study the Gulf War of 1991 and then Operation Barbarossa in 1941. It is not clear what the motive was for this approach, but the advantage was that the theoretical concepts were introduced by means of a recent case study with which most students would be familiar (SANWC 2018b). As indicated in the target group analysis of the student group of 2018 at the beginning of this chapter, very few students had studied history before the start of the residential phase of the programme (Jacobs, 2018a:1). With reference to the afore-mentioned this could be seen an example of scaffolding learning, working from what is known to the unknown. However, I would prefer a chronological approach for the sake of clear understanding of the events.

The planning for this subject reflects a clear leaning towards deep learning with lectures only providing a framework on knowledge while the focus of the learning process was on practical application of the theory in case studies by means of group work. The question is whether the actual facilitation and assessment was built on this approach.

In Entwistle's heuristic model, the first guideline is that the subject, in this case Operational Art, must be introduced by providing an overview of the course contents (Entwistle, 2009:115). According to the block programme, this was done in the first lecture on 28 May 2018 from 08:00 to 08:40 (Van Oudtshoorn, 2018a). This was supported by the students' experience of the learning process where they indicated that the introduction to Operational Art was conducted with enthusiasm, that their interest was aroused, and that terminology was explained to them (Jacobs, 2018d).

According to Entwistle's heuristic model (Entwistle, 2009:115), the next building block in building an approach to deep learning was that the facilitation should encourage thinking and understanding. Sousa claimed that learning by doing encouraged problem-based learning, whereby students got a real-world problem to solve that required using new information and skills (Sousa, 2016:213). The practical application of the theory of Operational Art, with case studies, being alternated with SRDs and formative assessments

[3] Author interview with Chief Instructor, Col C. Mahao, on 22 November 2019.

on a daily basis is indicative of an approach to facilitation that encourages thinking and understanding. The assessments were based on the directing staff observing individual students' participation in the discussions. It is not known if a mark sheet was used for this (Van Oudtshoorn, 2018a).

The next issue is if the facilitation process promoted what Entwistle calls 'exemplifying ways of thinking' (Entwistle, 2009:115). To my mind, this relates to critical thinking. On the one hand, the students overwhelmingly indicated that the learning process encouraged them to relate what they learnt to issues in the wider world. Yet, on the other hand, they indicated with a small margin that their views were valued. This indicates that a substantial number of students felt that critical thinking was not encouraged enough (Jacobs, 2018d). In my interview with the Chief Instructor, I got the impression that the focus in the learning process was that the students had to understand the theory of Operational Art and recognise its tenets in the case studies (Author, interview Mahao, 2019)[4]. This is contrary to the guideline for deep learning provided by Ohlsson, which is that the facilitator must guide the students to constantly question the truthfulness of so-called factual information (Ohlsson, 2011:1).

In any subject discipline, including Operational Art, there are simple and more complicated theoretical concepts. This gap is bridged by emphasising critical features of a theory and underlining the important role of threshold concepts in the facilitation process (Entwistle, 2009:79-80). An example of this were the operational factors, of time, force and space, as explained, which was easy to understand. Yet, to achieve the ideal of concentrating the right type of force, at the ideal time and place, the students needed to understand a more complex operational concept such as campaign design. In this concept, elements such as the scheme of manoeuvre ensured the accomplishment of assigned military objectives. (Olivier, 2006:7-3). The majority of students felt that the facilitators were patient in explaining things that seemed difficult to grasp, yet eight out of 21 were not satisfied with this (Jacobs, 2018d). The implication is that there was still a large group of the students who did not experience deep learning with reference to the use of threshold concepts and that the facilitators did not show empathy with their learning problems.

Entwistle's model also emphasised the importance of encouraging discussion (Entwistle, 2009:115). The whole structure of the SRD is designed around this principle, as students

[4] Author interview with Chief Instructor, Col C. Mahao, on 22 November 2019.

are assessed in terms of their individual participation in the discussions. The emphasis on lecturing was outbalanced by group discussions and the practical building of scale models for the case studies (Van Oudtshoorn, 2018a).

One can then conclude that with regard to the facilitation of the subject Operational Art the teaching process partially adhered to the tenets of deep learning, as there was still a strong emphasis on lecturing and even though group discussions played a major role, the focus was on understanding the theory of Operational Art and its application in case studies and not a critical analysis of its validity.

In terms of assessment, Entwistle's model emphasis is placed on the use of formative and summative assessment in the application of scaffolding learning, as well as the allocation of set work and feedback on it (Entwistle, 2009:115).

From the block programme of Operational Art, it is clear that during the whole process the facilitation actions were supplemented by formative assessment that ensured that learning had taken place. Every SRD was followed up by a formative assessment based on the students' individual participation in the discussions. It seems that deep learning was also promoted in aspects of the summative assessments. This consisted of a theoretical examination combining paragraph and multi-choice questions in the open-book format, a good foundation for deep learning according to Entwistle (2009:79-80). The practical component of the summative assessment was a syndicate group presentation (Van Oudtshoorn, 2018a). According to Bellanca, this is also an example of promoting deep learning which claims that the ability to be a team player and find collective solutions is conducive to deep learning (Bellanca, 2015:L1489).

All assessments in Operational Art were characterised by the allocation of set work and feedback on it. The Course Schematic (SANWC, 2018e) indicates the times of submission of assignments and when feedback had to be completed. Working through the assignments in Operational Art, it was clear from the data that feedback was provided on every assignment.

In conclusion, the facilitation and assessment processes for Operational Art followed the tenets of deep learning even though there was a strong emphasis on using lectures to provide the initial foundation of theoretical knowledge.

6.5.3 The facilitation and assessment of International Humanitarian Law (IHL)

In Chapter 1, I explained that the need for knowledge about wider aspects of conflict is imperative for senior officers. Very little would be achieved if the conduct of military operations achieved strategic results, but there were transgressions of international law in the conduct of military forces under command. During the facilitation of Operational Art, the importance of adhering to legal aspects was already mentioned to the students but after Operational Art was finalised, the opportunity to study legal aspects of war was a logical next step in the learning process.

As explained before, the unit standard for Operational Art, namely 119918, was also used for International Humanitarian Law (IHL), with specific reference to Specific Outcome 1. That is: 'Exercise appropriate judgement when applying international laws, national laws, treaties and conventions during military operations.' Examples are the Geneva Convention of 1949 comprising treaties and protocols that established the standards of international law for humanitarian treatment in war and the role of the International Court of Justice that deals with war crimes (Van Oudtshoorn, 2018a:3).

In IHL, the beliefs about teaching (facilitation) and the role of the facilitator, according to Entwistle's heuristic model (Entwistle, 2009:115), was based on the assumption that external lecturers were needed to present this specialised field of study. Thus, the facilitation and formative assessments were conducted by external lecturers from the SANDF's legal division who do not serve as staff members of the SANWC. They monitored the students' comprehension of IHL during presentations by the different student syndicate groups (Van Oudtshoorn, 2018a:4). This laid a firm foundation for deep learning as the students had to find solutions to legal problems in teams, which is indicative of facilitation that encourages thinking and understanding and was monitored by experts in the field of IHL (Entwistle, 2009:115).

The approach to the pedagogy of IHL was to provide the students, by means of the outside lecturers, with a theoretical background through formal lectures. This would then be augmented with SRDs where the theory had to be applied to a case study. The guest speakers participated in this process to ensure the students' comprehension of legal aspects. The Korean War, 1950–1953, was chosen as the case study, as this was the first example of an international crisis which the UN had to resolve, when the People's Republic of North Korea invaded the Republic of Korea (SANWC, 2018a:4).

The selection of course content was based on guidelines from the UN to military commanders on legal aspects during military operations. The course content included basic principles of IHL, legal responsibilities of military commanders, the definition of combatants and non-combatants, air and naval law and objects and places. The above was augmented by legal means and methods, peace support law of armed conflict, the role of the International Criminal Court and rules of engagement during military operations. Examples of the course content are the principles of *Jus ad bellum* which guides states in terms of when the use of force is legitimate (Chapter VII of the UN Charter) and *Jus in bellow*, the law in war trying to moderate the actual conduct of hostilities (The Geneva Convention of 1949). The course content was chosen by the external lecturers in consultation with the directing staff (SANWC, 2018a:5).

According to Entwistle's model (2009:115), the course structure, organisation and management need to be measured when considering deep learning. The subject IHL was presented over a period of six days. Three days were allocated to lectures, and on each day supplemented by an SRD. Two more days were used for further student presentations and discussions and the formative assessment was conducted on the last day which will be discussed later (SANWC, 2018a:5).

Entwistle defined the end state that must be reached through the learning process as target understanding (Entwistle, 2009:115). It is clear that the selection of course content and the end state of the learning process were to equip the student with sufficient theoretical and practical knowledge of IHL to ensure conformity with legal procedures during operational deployment in Africa. The question is, Did the facilitation and assessment processes build on this foundation?

The question that arises is whether these external facilitators introduced the subject with enthusiasm, aroused interest and explained terminology. According to the students' experience, they did (Jacobs, 2018d:1). From the week programme, it is also clear that they used appropriate instruments for the level of learning, based on PowerPoint presentations and linked to the work environment, as they applied the theory of IHL on a case study in the real world, the Korean War, 1950-1953 (SANWC, 2018b).

It is also necessary to reflect on whether the process of facilitation encouraged thinking and understanding (Entwistle, 2009:115). This process should enable the students to demonstrate exemplifying ways of thinking. From the students' experience and the

subject programme, it is clear that the facilitators kept in mind the unique concepts such as the rules of engagement on which this subject is built and that they guided the students in understanding concepts from the simple to the complex legal issues. For example, the facilitators started with a lecture on basic legal concepts and principles and moved on to complex issues such as the role of the International Criminal Court in a case study, in this case the Korean War. This should have led to a better understanding of the role of IHL in war. This is also indicative of a combination of problem-based learning with scaffolding, leading to the students gradually becoming more independent in their handling of operational problems related to IHL. This was further strengthened by incorporating the summative assessment in the CPP, where legal aspects are part of the scenario that students must use to plan a military campaign (SANWC, 2018b:6).

Entwistle recommended that facilitators should emphasise critical features of a subject discipline, encourage discussions and show empathy with students who do not understand the critical aspects of the subject (Entwistle, 2009:115). According to the students, the outside facilitators for IHL provided guidance when more complex concepts were being discussed and students were provided with the opportunity to discuss issues and ask questions (Jacobs, 2018b). The facilitators also used educational aids such as PowerPoint and case studies to demonstrate theoretical concepts (SANWC, 2018b). The students also felt that the facilitators explained the learning material in a clear and logical way (Jacobs, 2018d:1).

What also needs to be considered is if the facilitators gave the students time to understand new ideas related to IHL, explained the meaning of concepts, and if these were linked to previous learning experiences. The students' answers to that was that staff were patient in explaining things which seemed difficult to grasp (Jacobs, 2018d:1). It could not, however, be determined if the facilitators exuded empathy with the students if they struggled to comprehend concepts.

The unique nature of the pedagogy of this subject was clear in the facilitation structure where the main focus was on the practical application of legal concepts. The theory of IHL just provided a foundation for practical application (SANWC, 2018b). The facilitation structure was also clear in terms of the learning goals that had to be achieved, as the assessments were preceded by a learner assessor agreement in which the unit standard and its assessment criteria were discussed with the students (Identity of students protected, 2018:File 2 - Tag E6).

According to Entwistle (2009:115), assessment instruments should be designed to lead the student to discover the key aspects of an argument. The application of legal principles to case studies implies that the students had to analyse how legal issues related to the case study and also that the assessment structures only provided criteria of truth and allowed the students to present their own understanding of a topic related to IHL (Van Oudtshoorn, 2018a:4).

Entwistle (2009:115) emphasised that formative assessment should lay the foundation of the learning process and be augmented by summative assessment to complete the learning process and certify the level of performance reached. In the formative assessment on the last day of the course, the different syndicates had to apply IHL to the Korean War, 1950-1953, as a case study, which augmented the facilitation process in IHL. The summative assessment would be conducted during the CPP later in the programme and form part of the military appreciation that students had to conduct individually, and which was assessed by the directing staff (Van Oudtshoorn, 2018a:4). This makes sense in terms of deep learning, as the legal experts ensured that through formative assessment the students understood the theoretical aspects of IHL as applied in a real-life case study (the Korean War). Later in the programme, the directing staff assessed how the students incorporated the legal aspects of war in the CPP – practical campaign planning (Van Oudtshoorn, 2018a:6).

In conclusion, the outside facilitation and assessment of IHL was a good example of a deep learning approach. Lectures were extensively used but they were counterbalanced by students participating in group discussions (SRDs) during each day of the facilitation process. IHL was concluded by group presentations as part of the formative assessment. Students were also aware that when they started with the CPP legal considerations had to be kept in mind when planning military campaigns as was explained to them during a briefing on the assessment procedure for IHL (Van Oudtshoorn, 2018a:6).

6.5.4 The facilitation and assessment of Military History

I was the facilitator of this subject during 2018. As such, I was an insider to the process. Perhaps I therefore had an unfair advantage in terms of the application of deep learning as, at that stage, my literature review for this study was at an advanced stage. Consequently, I tried to implement deep learning as far as possible in the facilitation and assessment process.

The subject was designed in 2001 to form a foundation of knowledge for other subjects on the JSCSP. Examples are Operational Art, IHL and Military operations other than War (MOOTW), as most of them make use of historical case studies to demonstrate their theoretical frameworks. Thus, my argument earlier in this chapter about the importance of appropriate sequencing and putting the cart in front of the horse by facilitating and assessing Operational Art and IHL before Military History. It is only logical to study Military History to understand the origins of concepts before applying them in theories. I will return to this argument later in the discussion.

In accordance with Entwistle's heuristic model (2009:115), I held clear beliefs about how Military History should be facilitated and assessed. Two scholars directly influenced me in this regard. The first one was M. Howard of Oxford University in his article in the *Royal United Services Institution* magazine in which he argued that lessons from the past can be learnt by focusing on width, depth and context in the teaching of Military History. Width means to cover an extended period in history to demonstrate the major developments in the past. Additionally, some periods and their campaigns must be studied in depth and within the political, economic and social context that they occurred (Howard, 1962:4-8).

The next was a former commandant of the Indian Staff College, who argued that the value of studying Military History lay in exercising the human brain in the solving of military problems just as we need to exercise our bodies to be healthy (Nazareth, 1976:4-5). My intention was that the ideas of these two scholars would structure the facilitation and assessment of Military History on the JSCSP to promote critical thinking and thus deep learning. My aim was not to abuse the subject to reinforce current military doctrine, thereby promoting dogmatic rather than creative thinking as the end state to be achieved by the learning process.

After determining the approach that I would follow to the facilitation of Military History, the next step was to demarcate the end state of the learning process in this specific subject (Entwistle, 2009:115). I took what the enacted curriculum (unit standard) prescribed as a guideline. The unit standard used for Military History was US 119923 with the outcome being to equip officers to function at the operational level of war by developing their skills in evaluating the impact of the evolution of war on current military issues. A further outcome was broadening their understanding of military single service, joint and

multinational (combined) operations, the management of defence and the wider aspects of conflict (Van Oudtshoorn, 2018a:16).

Several factors influenced the selection and organisation of course content, the next stage in Entwistle's model (2009:115). The biggest barrier to deep learning, as determined by the questionnaire completed by the students, was the lack of background in historical studies as indicated earlier in this chapter (Jacobs, 2018c). This was aggravated by the fact that I had only six days in which to facilitate the theoretical component of the evolution of war. It was impossible to cover the total spectrum of the evolution of war since antiquity within the time available. The choice I made therefore was to focus on the period since the 17th century, the beginning of the era known as modern warfare – but adhering to Howard's guideline on width. The content covered started at the end of the Thirty-Years' War in central Europe and concluded with the Peace Treaty of Westphalia in 1648, where the principle was established in the international system that only sovereign states had the legitimacy to conduct wars, a feature that lasted into the 20th century. That is why this is deemed to be the beginning of modern warfare. The main focus of the learning programme in Military History was, however, on the 20th and 21st centuries, such as the First World War, 1914–1918; the Second World War, 1939–1945; different wars in the Cold War era, 1945–1991 and wars since 1991, such as the Gulf War, 1991; and the USA invasion of Iraq in 2003 (Van Oudtshoorn, 2018a:17). The reason for this focus was that the wars in the named periods had the most direct influence on current military affairs.

My approach to facilitation was to concentrate on the main developments in the nature of war, especially focusing on the period covering the wars of the 20th and 21st centuries which were done in more detail, depth and context. This was done to demonstrate the reality of what war currently is, in accordance with the tenet of deep learning that the focus of assignments must be on the real world. The focus was also on the historic events that laid the foundation for the theory of Operational Art – hence my earlier concern about the two subjects being facilitated in the wrong sequence. For example, during the facilitation of Operational Art, the students watched a DVD on Operation Barbarossa, 1941, the German invasion of the Soviet Union. During Military History, I presented a lecture on the same topic and showed a DVD, *Blitzkrieg, Part II, 1941*, on the use of Blitzkrieg during Operation Barbarossa (Van Oudtshoorn, 2018a:17). Apart from the fact that the topic was repeated, it would have been more cost effective in terms of time

management and more logical in terms of the educational process if Military History was facilitated before Operational Art, as it would then not have been necessary for the students to watch the DVD on Barbarossa twice.

According to Entwistle, the factors as described to this point promoted congruence with the aims of the subjects, which was an understanding of the evolution of war and with the students, especially if there was support for individual learning and studying (2009:115). The SRD played an important role in the facilitation of Military History. The topics chosen for the SRDs were especially the events that had the biggest impact on the evolution of war in which group discussions should develop their critical thinking. Examples were the development of trench warfare in the First World War, 1914–1918; the development of Blitzkrieg and its application, 1919–1942; and the origins of the USA doctrine of the Air-Land Battle, based on the lessons from the Yom Kippur War, between Israel and its Arab neighbours in 1973 (SANWC, 2018a).

I rotated between the eight syndicates to monitor the learning process while the SRDs were being conducted by the directing staff, that is, the staff members directly responsible for facilitating learning on the JSCSP. The students were given questions on each SRD to work out the night before to be discussed the next day. I worked out the possible answers for the directing staff as a control measure.

The use of the SRD was specifically designed to promote deep learning by means of the development of critical thinking. For example, during SRD 3 on the war in the Far East, 1941-1945, one of the questions was if it was necessary for Japan to attack Pearl Harbour on 7 December 1941 and thus get involved in a war with the USA. One alternative that the students had to consider was that the lack of oil and rubber supplies could have been overcome by the occupation of colonies of countries with which Japan was already at war, that is, France, Britain and the Netherlands, without dragging America with its industrial might into the war (SANWC, 2018a). The SRDs thus enabled me as the facilitator to emphasise critical features and encourage discussions in the evolution of war according to Entwistle's heuristic model (2009:115).

The next aspect to consider is what Entwistle described as the critical features of teaching for a deep approach and integrative understanding, starting with the facilitator providing an overview of course content and monitoring the delivery (Entwistle, 2009:115). In the introduction lecture, the nature of History as a subject was explained as well as the

concepts that students would use during their studies on the evolution of war. The key concepts were chronology, causality and the historical comparative method.

Chronology relates to how events unfold over time, while causality refines the effect of what caused events to occur. Furthermore, I explained to the students that the quest to learn possible lessons from the past was based on the historical comparative method. The argument is that although history, as human actions, never repeats itself in exactly the same format, a situation in future may resemble one in the past closely enough to be able to use a past event as a guide to the handling of challenges and problems in future (Garraghan, 1957:14). This concept also emphasises comparative situations with the focus on historical contingencies – a unique combination of particular factors or circumstances that may not be repeated, searching for a critical juncture to explain how several viable options may exist at a specific point in time and why a historical figure chose a specific course of action (Neuman, 2014:498). The afore-mentioned was explained to the students to arouse their interest, because later in the programme, during the CPP, one of the most important steps is the development of options during campaign planning as explained in Chapter 1.

The concepts of warfare developed from the limited warfare of the 17th and 18th centuries to the more complex concepts such as Blitzkrieg during the Second World War of 1939–1945. Lectures using PowerPoint presentations were used to introduce the warfare concepts of a certain time frame, such as the development of total war in the 20th century, supplemented by SRDs with the emphasis on the growing complexity of war. For example, in the 18th century, armies did not conduct operations in winter, while in the total wars of the 20th century all seasons were utilised for military operations (SANWC, 2018b). Thus, I tried to use scaffolding learning by facilitating in the above-named sequence of learning.

The question that has to be asked at this juncture is whether the facilitation process encouraged thinking and understanding, the central tenet in the theory of deep learning (Entwistle, 2009:115). Because of the lack of background in historical studies, as explained earlier, lecturing still played an important role in providing the students with a framework of knowledge and theory. All lectures were based on PowerPoint presentations. This was augmented with the use of DVDs to demonstrate real-life military conflict situations. Even historical fiction was used in this regard, for example, the film *All quiet on the Western Front* was used to demonstrate the nature of trench warfare in

World War I, 1914–1918. A total of 24 lectures and six DVDs were used to augment the SRDs (*All quiet on the Western Front, Blitzkrieg Parts 1 and 2, Enemy at the Gates, Pearl Harbour and Guadalcanal*). The facilitation of the theoretical component of Military History was followed by a visit to the Ditsong National Museum for Military History in Saxonwold, Johannesburg. The visit to the museum was aimed at learning about South Africa's participation in the wars of the 20th century. The museum staff conducted a PowerPoint presentation, followed by a guided tour of the museum exhibits. This was to demonstrate the real-life situations in war as demonstrated by weapons, photographs, scale models and maps of the wars in which South Africa participated.

The most important part was, however, the eight SRDs starting with the strategic deadlock in Western Europe during World War I and ending with internal wars in the Congo and Sudan, 1960–2018. The last two SRDs were especially valuable as some of the students had been deployed in these two countries and the other students could gain from their experience. The theoretical component of Military History was conducted over a period of six days (SANWC, 2018a).

The assessment of the theoretical phase of Military History was as follows:

- Submission of a factual workbook consisting of short questions covering the subject content on events in Military History from the 17th to the 21st century, formative assessment, submission date 12 June 2018.
- Position paper of 2000 words comparing Revolutionary Warfare in South Africa and Mozambique, 1960–1994, formative assessment, submission date 6 July 2018 (SANWC, 2018b). A position paper is a type of essay, favoured in the SANDF, where the writer makes a statement about doctrine and has to defend his argument using historical evidence. For example, a student can defend the statement that the Portuguese and South African Armies committed the same mistakes in counter-insurgency operations and what can be learnt from this.

The above assignments were assessed by the directing staff and the students received feedback within a week of submission. The assessment also laid the foundation for the summative assessment, based on the Military History staff ride that was to follow this process according to the tenets of deep learning in which formative assessment lays the foundation. This is followed by summative assessment which determines the grade of

achievement providing the students with a theoretical frame of knowledge on the evolution of war (Entwistle, 2009:157).

The facilitation of the theoretical studies was followed by the Military History staff ride. This can be considered the practical phase of Military History. Eight different syndicates each evaluated the actions of specific campaign commanders in a historical case study, followed by a group presentation (formative assessment) and the submission of an individual academic paper on the same topic (summative assessment). This relates to the specific outcome and assessment criteria relating to the students' ability to evaluate the application of Operational Art by military commanders in historic campaigns in Southern Africa (Van Oudtshoorn, 2018a:7).

The Military History staff ride is a learning activity in which students evaluate the actions of military commanders in history and use current military doctrine as a benchmark to determine their value as wartime leaders. The actual historic war theatre is visited and the campaign with its component battles studied (Robertson, 1987:1)

The staff ride was conducted over the period 7 to 17 July 2018 and covered the following topics:

- The Transvaal–Bapedi War (Sekhukune War), 1876-1877
- The British–Bapedi War, 1879
- The Anglo–Transvaal War (First Anglo-Boer War), 1880–1881, in the Transvaal theatre of operations
- The retrograde operations of the Boer Army from Pretoria to Komatipoort, 5 June to 27 August 1900 during the South African (Anglo-Boer War), 1899–1902 (SANWC, 2018a:9).

Students received reading material on their respective topics on the staff ride three weeks prior to the learning event and they were tasked with also conducting their own research. This was to provide them with an opportunity to do research on their topics for the staff ride. Two syndicates were allocated per campaign, evaluating the application of operational art by the two opposing commanders, respectively. During the staff ride itself, every day started with a lecture providing an overview on the campaign to be studied on that specific day, adhering to the first step in Entwistle's model of providing an overview and monitoring delivery (Entwistle, 2009:115). This was followed by a visit to the

different battlefields where battles were conducted during the specific campaign where students were briefed on the events. In the evening, the two syndicates whose campaign was studied on that specific day debriefed me and the directing staff as to what they had learnt during the day in preparation for their assessments (SANWC, 2018a:9).

In terms of deep learning, the process was designed to arouse interest in real-life historical context and explain the components of the campaign under study (Entwistle, 2009:115). Although lectures were given every morning using PowerPoint presentations and on the different battlefields, the actual terrain, the facilitation was still aimed at encouraging thinking and understanding by means of the debriefing at the end of each day (SANWC, 2018a:9). One could ask the question, why not let the students do the presentations? The reason for me facilitating was two-fold. This was the first time that most of them saw the actual terrain in the theatre of operations and set foot on the battlefields. It would thus be unfair to expect them to arrive and conduct a presentation. The second reason was that their focus had to be on the application of the theory of Operational Art and not on the reconstruction of the chronology of events. The process of facilitation was supplemented by the nature of the assessment process which will be discussed next.

Syndicate presentations (formative assessment), were conducted on 16 and 17 July at the SANWC. Individual academic papers were submitted on 20 July 2018 (SANWC, 2018a). Both the syndicate presentations and academic papers were assessed with the same assessment rubric (SANWC, 2018f). The rubric was designed to provide students with a framework to analyse the application of Operational Art during a specific campaign. It began with the strategic situation and the aims of the belligerents and led up to the analysis of the formulation of the military strategic problem facing the commander.

The main focus when guiding the student was on how to think and not what to think in terms of their approach to the analysis of the campaign. But it is important that the student had to determine if the campaign commander's plans and actions contributed to the solution of the problem on the strategic level. There were no right or wrong answers, and it was the student's choice as to what part of the theory of Operational Art would be used to evaluate the actions of the historic military commander under discussion. The focus was on group discussions and presentations as the first step to exchange ideas and in the summative academic essay each individual student could develop his/her own ideas as to how to evaluate the campaign commander as a practitioner of Operational Art (Van

Oudtshoorn, 2018a:7). This relates to Entwistle's guidelines of exemplifying ways of thinking, emphasising critical features and encouraging discussion (Entwistle, 2009:115).

Till 2014, when I retired, I assessed all the academic essays related to the staff ride. In 2018, working as a consultant facilitator I assessed a product per syndicate – eight in total – and in a work session with the directing staff I discussed each product with them in order to guide them in the assessment process. However, this aspect of the assessment process promoted deep learning in that the process was a way to ensure consistency in marking essay assignments. This was a system used at the SANWC called proof marking where the assessors discussed how marks were allocated to one product so that all assessors marked within a common framework. Proof marking and my variation of it in 2018 cannot be measured in absolute terms of consistency but it promotes a relative common approach to assessment.

Assessing the group presentations and individual academic essays since 2002, my observations were that only a small-group of students succeeded in using the academic knowledge gained during the facilitation of the academic subjects, such as Military History, to understand the conducting of military planning in the historical scenario. The tendency among most of the students was initially to just provide a chronology of events without measuring the planning and managing of the campaign by the historical commander according to the theory of Operational Art. This gradually improved under my guidance and by 2018 the majority did apply the theory (Student identification protected, Essay 1, 2018). However, in 2018 only one student did more than just apply the theory to the case study, he also critically analysed the validity of the theory of Operational Art based on the assigned case study (Identity of student protected, Essay 4, 2018).

A problem that has persisted since 2002 and appeared again during 2018 was the inability of some students to conduct an argument through to its logical conclusion. For example, one of the concepts of theory of Operational Art is the *Scope of the Theatre of Operations*. This relates to the opposing forces relating to each other in terms of time, space, resources and purpose. The terms deep, close and rear are used to describe how the operations of the opposing forces relate to each other. The close area is where the combatants meet in battle. The enemy's rear area (logistic installations, headquarters and communication centres) will be own forces' deep area (where own forces conduct operations behind enemy lines). The idea is to analyse how the opposing commanders utilised this in the

planning and conducting of the campaign strategy (Olivier, 2006:5-3). Yet some students identified the close, deep and rear areas with illustrated maps, but did not explain how the opposing commanders utilised these concepts (Identity of student protected, Essay 1, 2018).

The lack of depth of analysis should in reality not be the case as the staff ride is a good example of the integration of cognitive and social constructivist views on learning. The premise of constructivism is that knowledge is gained and expanded through active construction and reconstruction of theory and practice (Killen, 2000:xvii). Yet, the tendency is confirmed by one of the guest lecturers from the Military Academy, who wanted to remain anonymous. This is with regard to other subjects such as National Security, where students provide facts but little analysis (Author, interview with lecturer Military Academy, 2020).[5]

The staff ride is designed to contribute to the ability to apply gained insight into the nature of command in war during campaign planning. This is done according to an inductive reasoning process of using historical facts and determining deductions and conclusions in order to design and manage a campaign plan. It is also an effort to practically demonstrate the complex nature of war. The staff ride also provides the opportunity to apply critical thinking in a historical case study. Some students remarked that the process of evaluating the planning and conduct of campaigns by historical commanders assisted them during the CPP, as the analysis of how a historic campaign commander utilised the theory of Operational Art provided a useful framework of thinking when they had to design their own plans in a fictitious scenario.

One area where I could have improved in terms of facilitating deep learning was to give the students more time to understand new ideas and in explaining the meaning of concepts as building blocks of knowledge. I did, however, always try to link new ideas to previous learning experiences. I could also had gone to more trouble in explaining to the students that I had empathy with the fact that they would initially find it difficult to grasp certain concepts. Furthermore, whilst I guided them in the process of meta-learning on the staff

[5] Author interview with anonymous lecturer in Security Studies from the Military Academy, 18 July 2020.

ride, checklists were not used to enable students to do self-reflection and assist in peer observation.

The staff ride, as explained before, was a good opportunity to augment the more theoretical learning process by letting students participate in an exercise simulating a real-life situation, by studying an actual historic campaign. It was also a scenario that provided them with a problem to solve (SANWC, 2018b). Thus, it promoted deep learning in that the facilitator, being me, kept in mind the unique concepts on which the academic subject is built, and guided the students in understanding threshold concepts leading to a better comprehension of the nature of war (Entwistle, 2009:115).

The next question in terms of deep learning that needs to be considered is whether the assessment focused only the range of knowledge, skills and understanding of subject content, or whether it also considered that variations and creativity could lead to different solutions to problems. The use of case studies, especially the staff ride, focused on the analysis of the options available to commanders in history and an evaluation of the choices made. That, in itself, takes into account that there is more than one solution to a problem. Understanding why a military commander chose a specific option for his plan develops critical thinking in developing the mind of a senior officer in finding solutions to military problems (Van Oudtshoorn, 2018a:5). This relates to the argument earlier in the chapter, referring to the ideas of Nazareth about exercising the mind by studying Military History.

One should also consider if the assessment linked evidence to answers created by the student and if it was based on real-world problems (Entwistle, 2009:157). The students' answers to the problem statements were assessed and all assessments were based on real-world problems – the evolution of warfare and the development of military doctrine. Examples given were the different campaigns studied on the staff ride where the students had to analyse the planning and management of a military campaign by a historical commander (Identity of students protected, 2018:File 2 - Tag E9).

In conclusion, it is clear that deep learning was promoted during the facilitation and assessment of Military History and its practical component, the staff ride. Lectures were still used but were augmented by SRDs. There were no closed-book assessments in the theoretical phase in which the students had to remember so-called historical facts. The theoretical component also served as a frame of factual reference and formative

assessment for the practical component, the staff ride. The staff ride contributed to the critical analysis of the conduct of historical commanders, using the theory on Operational Art as measurement. In that way, critical thinking was promoted and laid the foundation for the student to find unique solutions to real-life problems in a war situation. The last subject to be analysed represents how the SANDF is currently being utilised in Africa for, peacekeeping operations.

6.5.5 The facilitation and assessment of Operations other than War

The last subject to be analysed is the theory and practice of Peacekeeping Operations, currently the core business in which the SANDF is involved on the African continent. In the curriculum, it is referred to as OOTW. With the passage of time, however, at the SANWC it was referred to as MOOTW. I will use the original naming but some of the reference material will refer to the latter.

This subject overlapped with Operational Art, IHL and Military History by using the same unit standards of these three subjects, but also a specific unit standard for Peace Support Operations (PSO), that is 119922: Solve Joint and Multinational Military and Civil-Military Problems by applying Qualitative and Quantitative Problem-Solving Techniques (Van Oudtshoorn, 2018b:5-6).

The first step in the analysis, according to Entwistle's heuristic model is to determine the beliefs about teaching (facilitation) and the role of the teacher/facilitator (Entwistle, 2009:115). From the flow of the learning process, one could deduce that theory had to be facilitated by external lecturers from institutions such as the Institute for Security Studies (ISS) in Pretoria. This is an organisation that promotes peace and stability in Africa by means of research, providing expert policy analysis and advice and delivering practical training in PSO. However, the main focus had to remain on practical application in the workplace. Consequently, the thinking about the pedagogy of OOTW focused particularly on practical exercises (Van Oudtshoorn, 2018b:7).

Entwistle's concept of target understanding of the learning process, in other words what must be achieved (2009:115), is, in the context of this subject, that the student must be prepared for the environment of peacekeeping operations in Africa. Therefore, the selection and organisation of course material was based on current peacekeeping in Africa as will be consequently explained.

In the light of the above the course structure for OOTW was as follows as explained below (SANWC, 2018e).

19 July – 3 August 2018: Lectures on the British Estimate Process problem-solving model. This was not assessed as directly instructed by Chief SANDF, as he regarded the CPP as official SANDF doctrine. The rationale behind the instruction was that lectures on the British Estimate Process as a problem-solving model were needed, as that was what most African countries incorporated into their doctrine. Since the SANDF deployed in the continent of Africa in cooperation with officers from other African countries it was imperative that officers of the SANDF grasped the contents of the Estimate Process as a problem-solving model. The lectures were conducted by the directing staff of the SANWC (Van Oudtshoorn, 2018b:7).

6 August – 8 September 2018: Lectures on PSO Theory were presented by external lectures from the ISS. The details of this theoretical lesson could not be determined for security reasons. The following exercises supplemented the theory:

- 6–20 August : Exercise Isigalo
- 22 August : Exercise Kwakanya (Part 1)
- 27–31 August : Exercise Thebe
- 31 August : Exercise Kwakanya (Part 2)
- 1–8 September : Exercise Uhuru

Exercise Isigalo was a formative syndicate assignment in which the students had to conduct research and do an analysis of the conduct of PSO operations in a country where the UN or the AU were deployed. The syndicate presentation and academic paper also served as the summative assessment for the qualification awarded by the Peace Mission Training Centre (PMTC), the PSO Staff Officer Qualification. Situated in the area of the South African Army College at Thaba Tshwane, the PMTC as a sub-unit was under command of the SANWC till 2017 when it was elevated to unit status on the same level as the SANWC. Both are still under command of Training Command at Defence Headquarters. All PMTC courses are accredited with the UN (Van Oudtshoorn, 2018b:7).

The case studies per syndicate were the following:

- Syndicate 1: UN-AU mission in Darfur (Sudan)
- Syndicate 2: UN mission in Sierra Leone

- Syndicate 3: UN mission in Mali
- Syndicate 4: UN mission in Congo
- Syndicate 5: UN mission in South Sudan
- Syndicate 6: UN mission in the Central African Republic
- Syndicate 7: UN mission in Rwanda
- Syndicate 8: UN mission in Western Sahara where the UN, in agreement with Morocco was involved since 1989 in leading this country to self-government

Exercise Kwakanya was a summative assessment exercise in which PSO theory, as facilitated by the ISS, was assessed by means of an open-book theoretical examination. The students had to answer the theoretical questions with paragraph format type answers (Van Oudtshoorn, 2018b:8).

Exercise Thebe was a formative syndicate assignment within a PSO scenario in which the AU Integrated Planning Process problem-solving model, as facilitated by the directing staff, was applied. The UN and the AU have different problem-solving models for PSO (Van Oudtshoorn, 2018b:8).

Exercise Uhuru was a syndicate planning exercise in PSO that formed part of the Southern African Development Community (SADC) exercise in cooperation with the staff colleges from these countries. The SADC has 16 members but only South Africa, Zambia, Zimbabwe and Botswana directly participated. Namibia and Mozambique sent observers (Van Oudtshoorn, 2018b:8).

According to Entwistle heuristic model (2009:115), deep learning was promoted during the facilitation process if the facilitators provided an overview of the learning process and monitored its delivery. Although external lecturers facilitated the theoretical part of the course, the directing staff played an important part in the monitoring process by participating with the students in the respective exercises described above. Thus, they were able to monitor the delivery of the subject through direct observation (Van Oudtshoorn, 2018b:9).

A positive aspect in terms of deep learning is that the theoretical learning process was augmented with participation in exercises simulating real-life situations, based on scenarios and case studies where the focus was on solving problems in PSO operations. Deep learning was further strengthened by the use of group discussions (SRDs) in a way

that students could learn from one another and where they were actively involved in the learning process (Van Oudtshoorn, 2018b:7-8; Identity of students protected, 2018:File 2 - Tag E11; Jacobs, 2018b:1). This approach to learning adheres to Entwistle's guideline for the promotion of deep learning through teaching that encourages thinking and understanding, as the focus of the learning process, was on problem-solving in PSO operations (Entwistle, 2009:115).

The structure of the different exercises as part of the facilitation process demonstrates a combination of a serial approach, chronological sequencing and a holistic reference to real-world problems as demonstrated by the eight cases studies mentioned above, being contemporary conflicts in Africa. However, I could not trace a linkage with the Security Studies subjects such as National Security and Geopolitics which were facilitated earlier in the programme, which to my mind is again relevant in PSO operations (Van Oudtshoorn, 2018b:7-8).

During the group interviews with the students, I did not get the impression that the volume of the learning material reflected too much information and that the learning process was focused on demonstrating concepts of PSO. Also, that the tempo of the learning process gave them enough time to comprehend these concepts, thus it was a facilitation structure that supported deep learning (Jacobs, 2018b).

As already explained, theoretical aspects of the subject were supplemented with exercises and under such educational circumstances it is possible for the students to build their own constructions of knowledge (Van Oudtshoorn, 2018b:7-8). A large number of students had previously been deployed in operations in Africa. My personal experience of SRDs is that the inputs of such students are valuable in group discussions. Their prior knowledge helped to emphasise critical features of PSO. It also encouraged discussions: two aspects that promoted deep learning according to Entwistle's model (2009:115).

A question that needs to be asked is whether assessments were designed according to the principle of 'from the simple to the complex' in the same way that threshold concepts were introduced during facilitation. The structure of the assessment plan contributed to this aspect of deep learning. For example, Exercise Isigalo was the application of theory of PSO operations in a historical case study, followed by Exercise Kwakanya the theorical open-book examination, also using a case study. The process ended with Exercises Thebe and Uhuru, the practical application of theory in cooperation with other countries in

Southern Africa (Identity of students protected, 2018:File 2 - Tag E11). Thus, the assessment process flowed from a theoretical formative assessment to a summative open-book summative assessment based on a case study. The process was completed by summative assessments by means of practical exercises. This is in accordance to Entwistle's guideline for deep learning where formative assessments provided the foundation on which summative assessment were built (Entwistle, 2009:115).

The next question relates to the quality of feedback on assessments. Did it reinforce the students' ability to think for themselves with suggestions on how to improve their reasoning? The majority of students' experience was that the feedback did reinforce the students' ability to think for themselves (Jacobs, 2018d) and this was confirmed when studying the written feedback on assignments. This is based on the comments of the directing staff in the assignments (Identity of students protected, 2018:File 2 - Tag E11). The reason why students at this stage became more able to apply critical thinking in comparison with for example the Military History staff ride, is probably because PSO relates directly to a work environment that the students had practical experience of.

In the theoretical examination multiple-choice questions were used, but it was supplemented by open-book, short-paragraph-style answers (Identity of students protected, 2018:File 2 - Tag E11). These assessment practices was indicative of an approach to deep learning as it encouraged personal understanding of phenomena (Entwistle, 2009:115).

Regarding the subject OOTW/MOOTW/PSO, it can be concluded that the facilitation and assessment process adhered to some extent to the tenets of deep learning as explained in Entwistle's heuristic model.

A general aspect with regard to all six subjects that were analysed is the fact that facilitation of learning occurred from 08:00 to 16:15 on weekdays and even over some weekends (SANWC, 2018a). The implication was that students only had time after hours for reflection and research. This did not promote deep learning. From 1997 till 2014, I visited several staff colleges in other countries. In the majority of them, facilitation of learning only occurred until lunchtime and the students learnt more by completing numerous short research assignment, rather than listening to lectures for most of the working day. This was more in line to what Entwistle recommended in order to promote deep learning through research assignments (Entwistle, 2009:82).

6.5.6 Conclusion on the facilitation and assessment processes in the selected subjects

The contribution of the warfare subjects to the ability of the student to conduct the CPP is the ultimate test of the validity of deep learning. After all, the clients' (the SANDF, the AU and the UN) needs are that the student's ability to plan military campaigns and major operations must be developed. Part of the measurement relates to the student's ability to plan and demonstrates an understanding of certain complexities such as that war is about reaching a political end state. Also, there are different planning and execution of activities on different levels, inter alia the tactical, operational, military strategic and national strategic levels in order to reach the political end state. At the same time, military activities must stay within the boundaries of the international law of armed conflict. Thus, there are no simple solutions to a complex problem when devising plans for military operations in Africa.

Therefore, the main question is, To what extent did the approach to facilitation and assessment of the six subjects analysed through deep learning contribute to the above-mentioned ideal situation?

I will first focus on the strong points as they relate to deep learning. There was a clear and realistic focus on the real world in which the graduates would find themselves after completing the programme. The educational component did not just focus on military aspects, but on the wider aspects of conflict, in which the soldier-diplomat would find himself.

As explained in Chapter 5, the curriculum prescribed only in general terms how the above-mentioned should be addressed. However, the use of unit standards had the advantage that specific outcomes and assessment criteria – the latter being lacking in the curriculum – provided an alignment between the intended and enacted curriculum. All assessment criteria were not tested but, to my mind, those addressed provided sufficient educational value to prepare the student for the real world.

Another strong point is the focus on group work, with the SRDs as the core facilitation activity during the programme. During the literature study, it was emphasised by educationalists such as Marton, Entwistle and Bellanca that the exchanging of ideas during group activities is central to deep learning (Entwistle, 2009:134-135; Bellanca, 2015:L5452). Closely linked to this is the use of historical case studies and a focus on problem-based learning which creates the framework for a critical approach.

Scaffolding learning was used in various ways in all the analysed subjects. The focus was always on starting the learning process with simple concepts as building blocks of knowledge and gradually moving towards more complex issues.

There was no evidence of closed-book assessments. All assessments were open-book and focused on the application of theory in practical situations. Also, a range of assessment methods were used which contributed to an atmosphere of enticing the student to consider alternative solutions to real-life problems. Feedback was, in most cases, constantly provided and the students could learn from this.

The weakest point in the presentation of the programme was the sequencing of the learning process. In Chapter 5 – the analysis of the curriculum – it was already identified as a problem and with the facilitation and assessment it was not rectified. Discarding the approach until 2014, when the theoretical component of Military History was facilitated sequentially before the other analysed war studies subjects, the consequence was of the learning process not being logical and a large amount of duplication occurring. For example, lectures and DVDs on Operation Barbarossa, in Military History took place after it were used in Operational Art.

In Chapter 2, it was pointed out that globally a critical approach towards doctrine is lacking in most staff colleges (Jordan, Kiras, Lonsdale, Speller, Tuck & Walton, 2011:20; Johnson-Freese, 2013:21). The focus during the facilitation and assessment of the analysed subjects on the JSCSP was clearly that the student must understand and apply the current doctrine. In the academic essays of the Military History staff ride, the students had the ideal opportunity to not just apply the theory of Operational Art, but to test its validity as a doctrine for warfighting. Even though the rubric provided the framework for this approach, it was, in most cases, absent. This led, or at the very least had the potential for doctrine to become dogma, rather than being a guideline for critical thinking.

The Military History staff ride was the only activity in which rubrics were used as assessment instruments. In the other assessments, there was thus no evidence that the student was encouraged to provide own solutions to problems at the hand of clearly structured guidelines. That is, however, not true of the CPP, but the academic subjects should already promote a critical approach if they are designed to contribute to critical thinking during campaign planning.

Another weak point in terms of deep learning was the decision to replace the portfolios of learning with portfolios of evidence, the latter being merely a compilation of assessment products. This took away the only component of meta-learning on the programme and it was detrimental to the promotion of deep learning. There was thus no opportunity for the students to reflect on the learning process itself, a vital component of deep learning.

6.6 The quality assurance system on the JSCSP

In Chapter 3, it was explained that Entwistle's theory made provision for the role of quality assurance in the education and training process and that the questionnaires used in his research did more than determining student satisfaction with the learning process, but also ensured ways to improve it.

I also explained that the introduction of the NQF in South Africa since 1994 confirmed that quality assurance in education and training developed into a value system to which all role players must agree so as to protect the interest of the student.

Deep learning will be promoted if quality assurance ensures that education and training processes are designed to prepare the student for the workplace and further study. In Chapter 1, it was explained that the workplace for the graduates of the SANWC is possible operational deployment in Africa and possible further studies entails the nomination for participation in the Security and Defence Study Programme at the South African National Defence College.

By using SASSETA for accreditation the SANWC already became part of the NQF system. It was also explained in Chapter 1 that this will be retained for those students on the JSCSP who do not qualify to enrol on a postgraduate programme. One of the research questions at the beginning of this thesis was to what extent the SANWC was ready by 2018 to present a postgraduate qualification. In order to determine this status, I have linked the quality assurance system to the SANWC corporate strategy which will ensure that there is an integrated system approach in the evaluation process, also using the CHE's criteria for accreditation.

6.6.1 General guidelines

The CHE guidelines are managed by the Higher Education Quality Committee (HEQC). This institution plays the same role as external verifier that SASSETA conducted until

2018. The general guidelines of the HEQC are that education and training service providers such as the SANWC must strive to achieve the following:

a. Assure and enhance the quality of higher education programmes so that the HEQC can identify and grant recognition status to the programme according to its minimum standards for provision.

b. Provide education, training and development services that protects students from poor quality programmes through accreditation and re-accreditation arrangements that build on reports from self-evaluation and external evaluation activities, including HEQC audits.

c. Institutionalise a culture of self-management evaluation that builds on and surpasses minimum standards (CHE, 2004:9).

6.6.2 Organisational structures and responsibilities

The structure of the SANWC in 2010 was as follows:

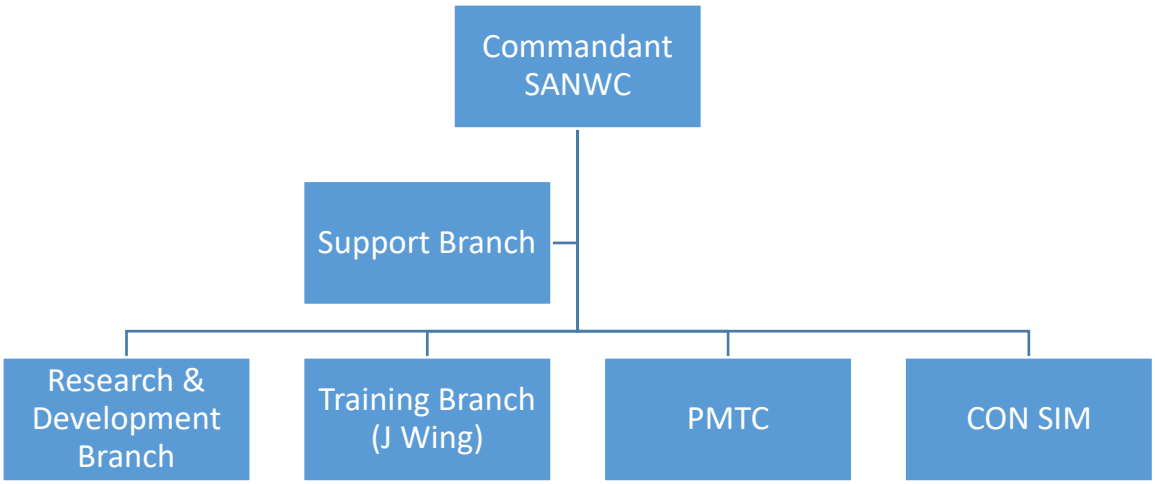

Figure 6.1: Organisational structure of the SANWC in 2010 (Jacobs, 2010)

The Commandant, assisted by his personal staff, was responsible for the command and control of the SANWC as a unit. The Chief of Staff commanded the Support Branch which were responsible for personnel, financial and logistical support. The Research and Development Branch (R&D) was responsible for programme development and the management of educational quality assurance under the command of the Senior Researcher (SR). The facilitation and assessment of the JSCSP was the responsibility of

the Chief Instructor, under command of the Training Branch, which, since 2015 has been known as the Joint Warfare (J) Wing.

Situated in the area of the South African Army College at Thaba Tshwane, but under command of the SANWC, were the Peace Mission Training (PMTC) and Conflict Simulation (Con Sim) Centres. The last two subunits were utilised during the JSCSP in 2018 but have no relation to the accreditation of the JSCSP as a qualification. All PMTC courses are accredited with the UN, while Con Sim provides simulation to military training. In 2017 the PMTC was no longer part of the SANWC.

Several changes were instituted up to 2018 and these had a direct impact on the ability of the SANWC to apply quality assurance. When I retired at the end of 2014, the R&D Branch consisted of six staff members, which by 2018 were reduced to three and this sub-unit became known as the R&D Section. The Military Academy had taken over the duty of programme design and development duties, but the R&D Section was severely curtailed in terms of its ability to practise quality assurance of the learning process with too few people. Thus, all that they could manage was liaison with SASSETA and the Military Academy (Author, interview Lt Col K. Krause, 2020). [6]

The quality management procedures of the SANWC are encompassed in the so-called Training Manual which serves as the guiding document for all related education and training related activities in the JSCSP (SANDF, 2008). This is based on policy documents that provide guidelines within the DOD on educational, training and development activities (SANDF, 2005b; SANDF, 2005a).

Since its inception the SANWC was managed according to the principles of the South African Excellence Model. This has been retained in the new education and training dispensation that was introduced at the SANWC since 2019 (Faculty of Military Science Stellenbosch University, 2018). This model refers to a systematic process of evaluation to describe the state of an organisation at a specific time along key-predetermined dimensions (Williams, 2000:iii). Thus, a proper management system for quality assurance that could facilitate deep learning was in place in 2018.

[6] Author interview with Lt Col K. Krause on 18 September 2020 on the Organisation of the SANWC.

6.6.3 The criteria of the CHE for accreditation

The next question to be answered is to what extent the education and training system at the SANWC in 2018 adhered to the criteria of the CHE. This will be an indication as to what was in place and what has to be implemented in order to be able to present a postgraduate qualification.

Criterion 1: The programme is consonant with the institution's mission, forms part of institutional planning and resource allocation, meets national requirements, the needs of students and other stakeholders and is intellectually credible (CHE, 2004:10).

The key question in these criteria is how the requirements of a military programme can be reconciled with the standards of the academic world. As explained in Chapter 6, the academic component of the programme was facilitated by guest lecturers and the assessment done by the directing staff. The programme is thus consonant with the institution's mission, but as was the case in 2018, it only partially met national requirements, the needs of students and other stakeholders and there was no control over its intellectual credibility. The problem is that there is no academic faculty at the SANWC as at other staff colleges in the rest of the world as I observed during my official visit to the USA Army War College in 1997. This does not promote a system in which deep learning is part of the learning culture.

Criterion 2: Student recruitment, admission and selection. Prospective students must be informed by means of recruitment documentation on the content of the programme. Admission and selection of students must be commensurate with the programme's academic requirements (CHE, 2004:10).

This programme was designed exclusively for members of the DOD. Recruitment was done within the DOD and SASSETA's minimum requirement matriculation. Yet this has been ignored since 2002 and candidates without a matriculation certificate were admitted on the programme. For example, in 2004, of the 100 students on the programme, seven had only passed Grade 11 at school (Jacobs, 2007:52). Thus, the admission policies of the SANWC were not in line with SASSETA requirements let alone that of the CHE, which will not promote deep learning.

Criterion 3: Academic staff responsible for the programme must be suitably qualified and have sufficient experience and teaching competence. Their assessment competence and

research profile must be adequate for the nature and level of the programme and it must be higher than the exit level of the programme (CHE, 2004:11).

The guest lecturers utilised on the programme adhered to the above criterion, in terms of subject matter expertise, but none were qualified in educational sciences. Also, the fact that most of the assessments were conducted by the directing staff, as explained in Chapter 6, who were not all qualified on a postgraduate level implies that in future the Military Academy staff will have to conduct all assessments. Yet, even that does not guarantee an approach to assessment based on deep learning, unless they are qualified in educational sciences.

Criterion 4: The academic and support staff is large enough to ensure that all activities related to the programme can be conducted effectively (CHE, 2004:11).

The number of directing staff in 2018 could cope with the assessment process, but as they will not be able to conduct assessment for the postgraduate qualification the allocation of guest lecturers and specifically those from the Military Academy will have to be sufficient for the number of assessments on the postgraduate qualification. The scaling down of personnel in the R&D section implies that it would be difficult to conduct proper archiving of study material. That is not conducive to protecting the interest of the student.

Criterion 5: The institution gives recognition to the importance of promoting student learning. A teaching strategy is in place that is reflected in the programme type, research, modes of delivery and student composition. Mechanisms must be in place to ensure that teaching methods are appropriate for the design and use of learning materials and learning technology. Policies and procedures provide for staff development opportunities where staff can upgrade their teaching methods as well as targets, plans for implementation, ways of monitoring progress and evaluating impact, and mechanisms for feedback and improvement (CHE, 2004:12).

On the point of a teaching strategy and appropriate teaching methods, the facilitation and assessment plans at the SANWC were in place for the two modules in Joint Warfare (Van Oudtshoorn, 2018a). However, policies and procedures for staff development – specifically academic staff – their teaching methods, plans for implementation and monitoring progress, could not be planned for as guest lecturers are not staff members at the SANWC. Mechanisms for feedback and improvement did, however, exist (Van Oudtshoorn, 2018a).

Criterion 6: The different modes of delivery of the programme have appropriate policies and procedures for internal assessment, internal and external moderation, monitoring of student progress, explicitness, validity and reliability of assessment practices, recording of assessment results, settling of disputes, security of the assessment system, recognition of prior learning and development of staff competence in assessment (CHE, 2004:12).

According the SASSETA verification report of 2018, the SANWC adhered to all to above criteria. One must, however, keep in mind that staff development with regard to assessment practices was only focused on the directing staff as the guest lecturers only facilitated learning (Safety and Security Sector Education and Training Authority, 2018). This system would thus fit in well with HEQC system, with the provision that academic staff would have to be educated and trained in the tenets of deep learning in order to improve academic standards.

Criterion 7: Suitable and sufficient venues, information technology infrastructure and library resources are available for students and staff in the programme. Policies ensure that proper management and maintenance of library resources, including support and access for students and staff (CHE, 2004:12).

According to the SANWC's own annual report for 2018, the current delivery of education and training cannot be maintained if support systems are not at their full potential. It was recommended that the WiFi bandwidth be upgraded from a two to a ten mega-byte line to satisfy the internet needs of the students (SANWC, 2018c:3). In their feedback report on the programme the students also complained about the quality of service of the placing of learning material on the K-drive (SANWC intranet) and that they wasted time in waiting for this system to function properly (Van Oudtshoorn, 2018c:2).

The SANWC library only had more or less 2 500 books and a variety of magazines. In the library and the internet room, the staff and students had access to 20 internet points. Currently, two librarians serve, one qualified with bachelor's degree in Communication Sciences (assistant) and one qualified in Library Sciences (Author, interview with librarian, 2020).[7] From time to time, a member of the part-time forces is called upon to assist them. The librarians attended Sabinet (the system interlinking all libraries in South Africa) and Sinet (the system linking all libraries in the DOD) courses.[8] But these systems

[7] Author interview with librarian, 2020
[8] Author interview with Dumisa, N.E. 10 June 2020. Library services at the SANWC. Pretoria

just enable the librarians to locate books and magazine articles for the students. It does not represent an online database system.

Yet, the library also constitutes a huge problem in providing support to the academic component of a learning programme based on the tenets of deep learning. While I served as the SR, the library was under my command. In 2010 a new plan was promulgated to drastically increase the number of books and magazines (Jacobs, 2010). The reality was that the cumbersome procurement system made it impossible to buy any new books until 2014. That has not changed and the increase in the collection is dependent on private donations and books bought by the British Military Support Team. Every year, for the Military History staff ride, I had to make copies from my own books for the students. In 2018 the students also had no online access to a library of any university. During that year, an online capacity to the library of Stellenbosch University was installed, but it was only available in 2019 for the students who enrolled on postgraduate diploma (Author, interview with librarian).[9]

Lecturers from the Military Academy share my misgivings about the ability of the library to support the learning process, let alone one based on deep learning (Esterhuyse, e-mail:2020). Thus, there is adherence to these criteria only to a limited extent.

Criterion 8: The programme has effective administrative services for providing information, managing the programme information services, dealing with a diverse student population, and ensuring the integrity of the process leading to certification of the qualification (CHE, 2004:13).

Records for students on the programme for the National Learner Records Database were kept at SASSETA until 2018 and this will continue for those students that only qualify for the SASSETA diploma. The accreditation officer in the R&D section managed the processing of the issuing of certificates and ensured that no illegal certificates were issued. The SASSETA system of allocating assessors and moderator numbers to qualified people that must be indicated on all assessment products ensured the integrity of the certification process (Author, interview Lt Col K. Krause, 2020). [10] For the purpose of the postgraduate qualification, the SANWC would have to liaise with the Military Academy and this responsibility would be shared with this institution, but this has a considerable cost

[9] Author interview with librarian, 2020
[10] Author interview with Lt Col K. Krause on 18 September 2020 on the Organisation of the SANWC.

implication taking into account the distance between Pretoria (Gauteng Province) and Saldanha (Western Cape Province).

Criterion 9: Postgraduate programmes have appropriate policies, procedures and regulations for the admission and selection of students, the selection and appointment of supervisors and supervisors' and students' roles (CHE, 2004:13).

This system was under development in cooperation with the Military Academy during 2018 and was implemented in 2019 (SANWC, 2018c). Therefore, the academic component of the JSCSP would be managed according to the policies, procedures and regulations of Stellenbosch University.

Criterion 10: The programme is effectively coordinated in order to facilitate the attainment of its intended purposes and outcomes (CHE, 2004:13).

According to this provision, a suitably qualified academic must be identified as programme coordinator and this person must operate within the framework of an agreed-upon mandate and defined procedures and responsibilities. This person will also coordinate logistic and other issues regarding:

a. Day-to-day delivery of the programme

b. All aspects of the programme quality management system, including the provision of resources

c. The review of the programme and feedback for improvement

d. The monitoring of expenditure.

In the system as it was practised in 2018, the CI was responsible for the first two aspects and the SR for the last two. Both reported to the Commandant and an Academic Committee consisting of the Commandant, CI, SR and the CI Con Sim. As explained earlier in this chapter, the programme was presented in a properly structured manner. With the introduction of a postgraduate programme in 2019, the academic responsibilities reverted to the Dean of the Faculty of Military Science, of Stellenbosch University (Military Academy). What still had to be sorted out was the role of the CI and the SR in cooperation with the Dean (Faculty of Military Science Stellenbosch University, 2018:17).

Criterion 11: Academic development initiatives promote student, staff and curriculum development and offer academic support for students, where necessary (CHE, 2004:13).

To meet this requirement, the lecturers from the Military Academy could no longer be just guest lecturers, but had to take over the responsibility of the complete learning process, including facilitation and assessment, apart from exclusive military subjects. As explained in this chapter, the pre-course training programme provided the students with some skills to participate in the residetial phase of the programme, such as computer skills and language training. The only question is whether the writing of one academic essay is enough to overcome the disadvantage of studying in a second language and improve the reading and writing abilities of students to promote a deep learning approach.

With regard to staff development, an investigation would have to be done as to the level of the qualifications in the educational sciences of the guest lecturers and the academic staff of the Military Academy. It would be ideal if they can be convinced to qualify themselves in a qualification such as the Postgraduate Diploma in Higher Education. Alternatively they could be invited to participate in a seminar on deep learning.

The system as practised in 2018 did not lend itself to offering academic support for students. There was a mentorship programme run by the directing staff, but the academic staff worked on the basis of being guest lecturers. With the limited time available, there was no time available to also act as academic mentors for the subjects that were analysed. The exception was the appointment of research supervisors for the Commandant's Research Paper, but that was only for this specific assignment (SANWC, 2018c).

Criterion 12: Effective teaching and learning methods and suitable learning materials and learning opportunities facilitate the achievement of the purposes and outcomes of the programme (CHE, 2004:14).

The first step in this process was to guide students on how components of the programme contributed to the learning outcomes of the programme. This was done during the pre-course training, during the first week of the residential phase of the programme and at the beginning of each module (SANWC, 2018a, 2018c).

There must be a balance between and a mix of different teaching and learning methods that are appropriate to the design of the learning materials and technology. The directing staff had to be qualified in the unit standard, 'conduct assessment of OB learning' (Safety

and Security Sector Education and Training Authority, 2018) but there was no provision made for the qualifications of the guest lecturers.

Criterion 13: The programme has effective assessment practices which include internal or external assessment, as well as internal and external moderation (CHE, 2004:14).

This aspect was analysed in this chapter where it was explained that a system of formative and summative assessments were used. This was also done according to SASSETA guidelines and guidelines from the DOD. Also is this regard, it must be mentioned that all assessments had to be moderated (internal) and verified (external moderation), which was duly done (Safety and Security Sector Education and Training Authority, 2018; SANDF, 2005a).

Criterion 14: The programme has taken measures to ensure the reliability, rigour and security of the assessment system (CHE, 2004:14).

The SANWC Training Manual (SANDF, 2008:18) made provision for certain requirments to adhere to the above-mentioned provision for an effective assessment system. Institutional rules with regard to assessment had to be published and communicated with the students and other stakeholders. In this chapter, it was explained that a pre-assessment meeting was conducted before every assignment where the facilitators and assessors were present.

The next requirement was that breaches of assessment regulations had to be dealt with effectively and timously. During my analysis of the specific subjects in the first part of this chapter, I explained that this did not occur during 2018, but what is important is that provision for such actions were present in a policy document. The same was applicable to the provision that student appeal procedures were explicit, fair and effective.

The last requirement was not easy to determine, that is, there had to be clear guidelines for the marking and grading of results. As explained in in this chapter, for the type of assessments such as multi-choice questions, this was in place. However, for the majority of assessments, consisting for example of application of theory in case studies, this was not possible. A good system used at the SANWC was one of proofmarking. Here the CI would make copies of one assessment product for each member of the directing staff who would then conduct the assessment. In meeting afterwards, the handling of the assessment

would be compared and analysed. This ensured a somewhat standardised appraoch to assessment (SANWC, 2018c).

Criterion 15: The coordination of work-based learning is done effectively in all components of the programme (CHE, 2004:15).

In Chaper 5, the analysis of the curriculum, and the current chapter, the facilitation and assessment of the programme, it was explained that the JSCSP was designed specifically for the workplace. Examples of this include the Corporate Management module in which the students were assessed on their ability to design business plans. In Security Studies, they studied the practical application of national security and conducted a geopolitical study of a province. The Military History staff ride provided the opportunity to apply the theory of Operational Art in a practical historic case study. Also, different exercises provided the opportunity to assess the students in terms of their ability to plan and conduct peacekeeping operations (Van Oudtshoorn, 2018a; Van Oudtshoorn, 2018b).

Criterion 16: The ability of the institution to manage a postgraduate programme (CHE, 2004:15).

This was not in place in 2018. During that year, the Military Academy was busy with the design and development of the new programme and it was implemented in 2019 (Faculty of Military Science Stellenbosch University, 2018).

Criterion 17: Student retention throughput rates according to national benchmarks in terms of race and gender (CHE, 2004:15).

This was addressed through the policies and procedures of the DOD in terms of race and gender equality (SANWC, 2018c).

Criterion 18: The programme should take steps to enhance the employability of students and alleviate shortages of expertise in certain fields (CHE, 2004:15).

This programme, the JSCSP, was specifically designed to address the needs of the SANDF in terms of senior officers and their ability to plan and design military campaigns in operations on the African continent. The programme also had to provide a firm base of preparation to enrol in the Security and Defence Study Programme at the South African National Defence College later in their careers.

Criterion 19: User surveys, reviews and impact studies on the effectiveness of the programme are undertaken at regular intervals. Results are used to improve the programme's design, delivery, resourcing, staff development and student support (CHE, 2004:15).

This criterion relates directly to quality assurance. Until my retirement in 2014, the R&D Branch conducted all of these functions, culminating in an alignment report that should have formed the foundation of the new JSCSP that included a postgraduate component (Jacobs, 2014). The downscaling of the branch to a section with half the personnel seriously curtailed the ability at the SANWC to manage the process of quality assurance. Guest lecturers and the personnel at the Military Academy could provide academic expertise for the programme, but they were not qualified to manage quality assurance. Thus, by 2018 the SANWC had lost the ability to manage the quality assurance of the learning process on the JSCSP.

6.6.4 Conclusion on quality assurance on the JSCSP

During the presentation of the JSCSP of 2018, the SANWC was already part of the NQF system. The R&D Management Plan of 2010, as a sub-division of the Excellence Management Model, provided a firm foundation to follow an integrated system approach to quality assurance, educational standards were set and it ensured the credibility and quality of programme delivery. Leadership was applied in the management of the quality of the learning process. Members of the directing staff were trained as facilitators and assessors and cooperation between the branches at the SANWC ensured a proper quality assurance process.

By 2018, the curtailing of the above-mentioned process implied that quality assurance of the learning process on the JSCSP was seriously downgraded. Even though the programme's design prepared the students for the workplace, serious problems existed with regard to the provision of information technology and library services. The fact that the SANWC did not have an integrated academic faculty implied that the problems identified with the system of guest lecturing would be carried on in the new postgraduate dispensation. It was thus difficult to do proper quality assurance to promote deep learning. A positive point is that the South African Excellence Model of management was retained, providing a foundation for the re-upgrading of the quality assurance system at the SANWC.

6.7 Chapter conclusion

The research findings in Chapter 5 showed that the curriculum design only partially complied with the tenets of deep learning especially due to lack of prescription of a logical sequence in the presentation of subjects and the absence of assessment criteria. That impeded on the facilitation and assessment of the selected subjects that had to be rectified through the use of unit standards. In the facilitation and assessment of the selected subjects, the extent of deep learning ranged from a strong leaning towards rote learning (National Security and Geopolitics) to a strong compliance to deep learning (Military History). Educational quality assurance was in a state of neglect by 2018 with the main reason being the scaling down of personnel levels in the R&D section of the SANWC.

The next chapter is the discussion of the research findings and the conclusion of the study.

CHAPTER 7
DISCUSSION AND CONCLUSION

7.1 Introduction

In the previous chapter, the facilitation, assessment and quality assurance of a selection of academic subjects on the JSCSP were analysed. In this chapter, the focus and purpose will be on proposing answers to the research questions:

a. To what extent did deep learning take place in the education of senior officers on the JSCSP at the SANWC?

b. Why did the learning process take place in its present manner?

c. What could be done to improve the level of deep learning on the programme?

The structure of this chapter will be according to the following topics. First, an overview followed by the findings of the research which will be listed. The implication of the findings will then be discussed as related to the theory of deep learning. This is followed by recommendations based on the study, personal and professional reflections and the conclusion on if I as the researcher had sufficiently answered the research questions.

7.2 Chapter overview

In Chapter 1, it was explained how important academic education on staff programmes have become. The experiences of other countries were considered but also the South African situation, which led to a new curriculum design in 2001 and its implementation between 2002 and 2018 – these were reviewed.

The focus of this study was on the state of the use of deep learning on the JSCSP of 2018 in terms of the extent to which the selected academic subjects adhered to deep learning. This explanation entailed to what extent deep learning was prescribed in the curriculum and to what extent it was practised during facilitation, assessment and quality assurance. The purpose of this research was, as explained in Chapter 1, to determine to what extent the learning process on the JSCSP contributed to the ability of students to apply critical thinking in solving work-based problems (the ultimate aim of deep learning) and to determine measures to improve this. What was revealed in this chapter was the challenge to determine if the utilisation of the deep learning approach in the study of the warfare

subjects could contribute to reaching the ideal of students properly utilising military problem-solving models, and thus contribute to work-related, problem-based learning. My personal experience in this regard was also shared, namely that in a military environment this was not always achieved as other factors, such as a preference for structured thinking, sometimes impeded the learning process. One example is the quest of students to focus mainly on short-term practical solutions without an appreciation of the complexity of war as a social phenomenon. Thus, it was argued that deeper academic understanding was vital in the solving of real work-based problems.

In this chapter, the question was also asked to what extent the educational component of the programme since 2002, and especially in 2018, was in line with international trends outlined in the chapter. That was also the rationale for the focus of the research being formulated on the state of the use of deep learning on the programme, namely to determine the extent to which the facilitation of the named academic subjects adhered to deep learning on the JSCSP of 2018 or if students on the JSCSP tended to devise oversimplified, short-term solutions to complex problems as experienced in other staff colleges such as the USA Army War College.

In this chapter, the research also found that there were unique barriers to learning in staff programme education in South Africa, such as a school system that does not provide an adequate intellectual foundation and the fact that the majority of students had to study in another language than their mother tongue. These findings from a prior study (Jacobs, 2007:56) had to be considered when analysing the extent of deep learning in staff programme education in South Africa.

In Chapter 2, an historic overview was used to analyse how the idea of deep learning evolved in the 20th century. On the one hand, until the mid-1960s, one of the dominant theories of learning were based on the behaviourist belief that the role of the teacher was no more than the shaping of correct responses by students through intermittent reinforcement of factual knowledge. The alternative theory from behaviourism was constructivism, which focused more on the student participating in the learning process, but the main focus was still the teacher/facilitator as the centre of all knowledge, transferring it from a curriculum in a linear pattern. However, it was the first step towards seeing the role of the educator more as a facilitator of learning than being a teacher of knowledge. Even in the military environment, the term ‘directing staff’ was being used in the place of the term ‘instructor’ at staff colleges.

Although deep learning still relates to the constructivist theory, it developed to a new approach to the learning process. This was promulgated by Ference Marton at the Gothenburg University in Stockholm, Sweden with the so-called variation theory. This theory saw the aim of the learning process to be the ability of students at university to discern critical features of social phenomena, by actively using prior knowledge and experience to formulate solutions to work-based problems (Marton, 2014:1). This inspired academics in the United Kingdom such as Noel Entwistle (2009:xii) and in the USA, James Bellanca (2010:L84; 2015:L185) to develop a comprehensive theory of deep learning.

Research on brain functioning has indicated that the manner in which information is processed is vital in promoting deep learning. STM and analytical capabilities are situated in the front lobes of the brain. This has to be combined with the correct storage of LTM in other parts of the brain to unravel complex problems. The more connections made between past and present learning, the more students were able to understand social phenomena, and this was strengthened with maximum participation of students in the learning process.

The essence, as per Chapter 2, was that in order to promote deep learning students had to learn to see meaningful wholes, features, patterns and structure in the environment of social problems. It is essential to distinguish between variation and invariance in order to find novel meanings in phenomena. Eventually, the students must perceive the world in more differentiated ways, enabling them to develop different options to the solving of work-based problems. What is also important is that deep learners realise that all knowledge is temporary and should be questioned. This contrasts to surface or rote learning that focuses on the recall and regurgitation of so-called facts based on universal and unchanging truths as accurately as possible to pass examinations.

The research conducted by the academics such as Marton (2014:1), Entwistle (2009:xii), Bellanca (2015:L185) and Sousa (2016:x) indicated that the social context of learning was also important and that the approach of the learning institution had a direct impact on the ability of the students to adapt to a deep learning approach. The focus was on developing the ability of students to understand social phenomena and to utilise the learning experience in the solving of work-based problems. But to achieve a deep learning approach, there had to be a new approach to curriculum design, facilitation, assessment and educational quality assurance. The above approach contrasted with rote learning that

focused on the memorisation of facts and its accurate regurgitation in closed-book examinations according to the behaviourist school of thinking in education.

According to the literature, at other staff colleges, such as the USA Army War College, there was still too much emphasis on training (Johnson-Freese, 2013:23). Also, most students at this institution had a background of technical knowledge with little comprehension of subjects such as Military History, Leadership and National Security issues. There seemed to be a direct conflict between a profession focused on training, military procedures and simplistic concepts such as the so-called principles of war. What was also revealed in this chapter was a tendency to accept current military doctrine at face value, while a critical approach towards the validity of such doctrine was not the norm. There seemed to be a resistance to academic-based education, retarding the ability to focus on the ability to recognise a multitude of methods to solve work-based problems.

In Chapter 3, the literature reviewed in Chapter 2 was augmented with Entwistle's heuristic model (2009:115), ideas of other authors, such as Sousa (2016), Bellanca (2015) and, Nel (2010; 2011) and Bloom's revised taxonomy (Krathwohl, 2002:212) so as to provide a firm theoretical foundation to determine which social factors in micro-level situations interacted with the macro-level consisting of larger social forces in the learning process. Chapter 3 provided a more complete foundation to the learning process in that it provided a structure of how information was understood and remembered during the learning process and how it was influenced by personal and environmental factors and previous experiences. Also, in Chapter 3, the differences in approach between deep and rote learning were explained, as well as the importance of strategic learning in which a student must plan the execution of his studies on a programme such as the JSCSP.

Entwistle (2009:115) identified an interface between student characteristics, facilitation and the learning environment. Therefore, there had to be a synchronisation of students' perception of the relevance of the facilitation process and task requirements in order to promote the students' ability to achieve an integrative personal understanding and way of thinking. It was made clear that student characteristics would influence the choice of approach between deep, rote and strategic learning. However, this relates to the field of educational psychology and certain characteristics such as the impact of being an introvert were not investigated in the case study. However, a profile of the student group in terms of characteristics such age and the ability to study in their mother tongues, subject-specific knowledge, conceptions of knowledge and learning and motivation were identified as

factors that would influence the approach to the learning process that had to be investigated.

The above-mentioned factors would, however, be directly influenced by the features of the teaching-learning environment. Staff colleges such as the SANWC are not universities but have academic partners in the form of established universities. The Military Academy (Faculty of Military Science of Stellenbosch University) is the academic partner of the SANWC. However, other lecturers from within the SANDF, such as members of the Legal Division that presented IHL and other institutions such as the ISS, were also involved in the learning process. The SANWC itself had the largest impact, as it was still a military programme but with certain academic inputs. Consequently, it was argued in this chapter that the factors that determined whether students would adopt a deep approach to the learning process were the features of the teaching-learning environment. The first feature was the belief system about facilitation and the role of the facilitator. The process would then lead to the next feature, namely how a specific subject's pedagogy would guide the facilitator in terms of how to teach the subject. It was explained in this chapter, that all disciplines have some common characteristics, but certain subject unique features must be considered.

The next feature of the teaching-learning environment, as unpacked in Chapter 3, was that the facilitator must understand the end state that must be achieved through the learning process, what Entwistle (2009:115) described as target understanding and through lines. This feature would determine the selection and organisation of course content, course structure, organisation and management, which should be encompassed in the curriculum design. In curriculum design and development, the quest to understand must be the central activity and all topics in a course must relate to this ideal. Therefore, in the case of the JSCSP, all facilitation must point towards helping the student to think as a practitioner of Operational Art, the theoretical foundation for the planning and conduct of military campaigns in war.

What became clear in this chapter was that the structure to promote deep learning will, however, depend most of all on the facilitation and assessment processes. This process should start with providing an overview of the subjects, which must be monitored, while at the same time the facilitator must arouse the interests of the students and explain terms in the subject or concepts that provide its theoretical basis. The research also demonstrated that Bloom's original and revised taxonomy of learning is still a convenient tool to help

in the design of scaffolding learning and assessment (Krathwohl, 2002:212). This theoretical foundation was used in Chapter 6 to determine the adherence of the JSCSP to the process of deep learning.

The findings in Chapter 3 were also that educational quality assurance was an important aspect of the learning process. This was the one aspect in Entwistle's theory on deep learning (2009) that had to be supplemented. Entwistle used questionnaires to determine the satisfaction of the students with the learning process as well as how the facilitators could improve their practice (2009:162). Yet, educational quality assurance entails more than the above-mentioned aspects. Quality assurance must be part of a national framework such as the South African NQF. Educational institutions must also be managed according to a quality management system, such as the South African Excellence Model and adhere to criteria for accreditation such as those of the CHE (Nel, 2010:vi-vii). In Chapter 6, the adherence of the SANWC as an educational provider to the above-mentioned was also analysed.

In Chapters 5 and 6, it had to be determined if there was a link with the need guidelines of the DOD, as outlined in Chapter 1, and its interaction with the academic world. In other words, to what extent was the SANWC as an education and training institution and its primary qualification, the JSCSP in 2018, ready to make the transformation towards a postgraduate diploma in Defence Studies, as well as assisting the students enrolled on the SASSETA diploma, to later participate in postgraduate studies? Also, to what extent did the JSCSP of 2018 prepare the graduates for operational deployment and for the last educational step in their military careers, the Security and Defence Study Programme at the South African National Defence College? Before these questions could be answered, in the next chapter there had to be an investigation towards finding the appropriate scientific method to address the social problem as formulated in Chapter 1.

Chapter 4 focused on the appropriate research design and methodology to propose answers to the research questions posed. The research was conducted within the paradigm of interpretivism with the focus on how people experienced the learning process on the JSCSP. Because the main focus was on the student's experience of the learning process, the paradigm for the evaluation, which asked to what extent the theory was applied on the JSCSP as explained in Chapter 1, was in the interpretivist tradition where behaviour is studied based on the understanding of the meaning and purpose that individuals attach to their personal actions and experiences. The main focus was to understand the

phenomenon – student approaches to the learning process − not to predict outcomes and not based on generalisations.

Logically flowing from the above, the research approach was within a qualitative framework that strengthened the paradigm, as the design was also focused on exploring and understanding the meanings that individuals or groups ascribed to a social problem, in this case the extent of deep learning on the JSCSP. Both the research paradigm and approach also had the advantage of allowing an inductive reasoning style, thus ascribing individual meaning and the importance of reporting to the complexity of the situation. However, the research approach also made provision for a deductive approach in utilisation of the theory of deep learning. I am satisfied that this was the right approach to answering the research questions, as it provided answers through people's experience of the learning process and to what extent deep learning was practised.

The methodology of case study research with the focus on the programme of 2018, provided good lessons in terms of the extent to which the SANWC was ready in the said year to migrate to a postgraduate dispensation. My personal experiences, of which I made notes, stretched from 2001 when I got involved in the programme design, development and presentation of the JSCSP. However, the methods of data collection in terms of a documentary study, questionnaires and interviews focused mainly on 2018, the last year before a new educational dispensation was implemented at the SANWC. Focusing on case study research enabled me to determine to what extent the SANWC was ready by 2018 to implement a postgraduate dispensation.

It is, however, necessary to point out that certain methodological shortcomings did occur. I had to make do without certain data. My plan was to study video material of the facilitation sessions of the selected subjects, but Covid 19 intervened, making it too risky to visit the SANWC for long periods. Interviews were conducted since 2018, and the students completed questionnaires on their experiences of the learning process. The utilised documentary evidence used had to suffice for the sake of data collection.

According to Entwistle's 2009 heuristic model the curriculum was the cornerstone of the learning environment in which the learning programme would find fruition (Entwistle, 2009:106). Thus, the next step in the research process, in Chapter 5, was the analysis of the curriculum of the JSCSP as utilised from 2002 till 2018 according to the tenets of deep learning.

Curriculum 2001 was used, with minor adaptations, until 2018, when it was replaced by the new curriculum for the postgraduate diploma developed and implemented by the Military Academy in 2019, although components of the 2001 curriculum were retained for the students enrolled on the SASSETA diploma. An analysis of the original curriculum thus relates directly to a component of the research question as explained in Chapter 1, namely, to what extent was the SANWC in 2018 ready to incorporate a postgraduate programme as part of the staff programme education and training process?

While Chapter 5 focused on the 'intended' curriculum, the 'enacted curriculum' was analysed in Chapter 6 as part of the facilitation and assessment processes. It was postulated that a curriculum should be conceptualised as a course of study, a syllabus consisting of educational objectives, learning outcomes, guidelines for facilitation and assessment and a description of the educational ideal that it strives toward. It was clear that the SANDF envisioned future officers who would be critical thinkers and have the ability to find creative solutions to problems. Based on the assumption that deep learning would contribute towards this ideal, the guidelines for curriculum development that promoted deep learning were analysed.

In Chapter 6, the facilitation and assessment of selected subjects were analysed in terms of deep learning, as well as the role of educational quality assurance in providing an institutional framework to promote deep learning. The study of the student group of 2018 indicated a clear lack of background to deep learning. The Junior Staff courses at the respective services colleges, namely the Army, Air Force, Navy and Military Medical and Health Service, were mainly focused on training with only a very limited academic component. Learning with comprehension in a language of tuition other than one's mother language can only occur if there is specific training in the use of the language of tuition. The only action in this regard was the writing of one academic essay during the pre-course training.

Interviews with the students and questionnaires completed by a selected few at the end of the programme indicated that they were very motivated, and that their learning styles indicated a preference for learning that was focused on practical application in the workplace. The majority also indicated a learning approach identifying the components of phenomena, seeing the bigger picture of events and making sense of what they studied. Thus, in this student group, the potential for deep learning was strong. Consequently, the students' experience of the learning process indicated a leaning towards deep learning but

for one aspect, that is that their views were not valued. This was an indication that critical thinking was not promoted during the learning process.

In turning to specific subjects, the facilitation of the two subjects in Security Studies (National Security and Geopolitics) leaned strongly towards rote learning with lecturing as the main methodology of facilitation. Yet in the assessment, the students were expected to provide practical solutions to national security problems. The result was that there was little interpretation of facts in the studied assignments. Thus, deep learning must be adhered to during facilitation and assessment. Only designing assessments that promote deep learning will not rectify the situation. Operational Art, IHL and OOTW are the subject directly related to the planning and conduct of military campaigns. At the same time Military History was supposed to provide the intellectual foundation for these subjects. Chapter 6 thus also focused on analysing to what extent the above-mentioned subjects adhered to deep learning. The educational quality assurance system was also measured against the theoretical tenets of the theory on quality assurance as postulated by Nel (2010) with specific reference to the accreditation criteria of the CHE (2004).

In Chapter 7, the final chapter, an overview of the previous chapters in the thesis is provided, to serve as an introduction to the research findings in terms of the research questions, which will be discussed. Proposed answers to the research questions, the thesis' contribution in this regard and recommendations as to how the JSCSP of 2018 could have been improved to promote deep learning will be addressed. This chapter will end with my personal and professional reflections on the study and a final conclusion.

7.3 Findings

The findings showed that there was a global need for more emphasis on education in academic subjects in staff programmes (Chilcoat, 1999:60-62). However, globally, there was a clash of cultures between military institutions bent on structural thinking with the main focus on training and an academic world that is focused on critical analysis of information (Jordan, Kiras, Lonsdale, Speller, Tuck & Walton, 2011:20). In Chapter 2, the literature study indicated that the lack of deep learning was present in staff colleges in several countries, in spite of an optimistic view, that staff programmes created an intellectual frame of mind that enabled military leaders to find appropriate solutions to contemporary security issues. The assumption was that through a process of deep learning the ability of senior officers on staff programmes to apply creative and critical thinking

would improve to overcome the overemphasis on structured thinking in military organisations. Consequently, the investigation done in Chapters 5 and 6 was used to determine findings as to the extent of deep learning on the JSCSP at the SANWC.

In South Africa the structure of the new JSCSP since 2002 incorporated a larger academic component compared with the previous programmes to date. The new curriculum was, however, not developed with deep learning in mind and there seemed to be a conflict of interest between the curriculum and the theory of deep learning. The major issues revolved around learning that was focused on understanding current military doctrine in contrast with a quest to also analyse the validity of such doctrine critically:

- At the end of the programme, the students were surprisingly motivated that the learning process had been worth the while in terms of preparing them for their future work situation as determined through interviews and questionnaires. Their enthusiasm indicates that some deep learning did take place.
- Their approach to the learning process also reflected a positive attitude, as the majority indicated that they learnt to identify components of phenomena and seeing the bigger picture. Their learning preferences were predominantly for learning that was focused on practical application in the workplace. They also indicated that when studying new information, their focus was to make sense of what was studied. Thus, taking into account their lack of experience in deep learning at the start of the programme, incidentally deep learning did take place on the programme.
- The intended curriculum could not be implemented and had to be converted to an enacted curriculum based on unit standards. There was not always synchronisation between these two versions of the learning programme.
- The preamble of the curriculum explained clearly what must be achieved with the programme, namely the development of the analytical skills of senior officers to solve work-based problems in the planning and conduct of military campaigns. But, the preamble of the curriculum was mainly focused on outcomes and competencies and not on how to develop students' ability to envision alternative solutions. There was also no justification of the content of the curriculum and how the gaps between the 'intended' and the 'enacted' curriculum would be closed.
- The structure of the curriculum was confusing. In Appendix A of the curriculum, the allocation of instructional time per subject was listed, but on page two of the

document and in Appendix B, the flow of the educational process was explained as existing in three terms, Joint Foundational Term, Single Service Term and Joint Advance Term without spelling out in detail how this was related to the modules, subjects and elements. This had to be very confusing fir the directing staff who were responsible for implementing the curriculum, as it did not explain how the modules, subjects and elements fitted into the three terms. This also made it difficult for the students to envision how the elements of the structure of the curriculum formed a logical picture of learning, especially as it related to the clear understanding of the overarching goals of the programme.

- There were also other ramifications. The sequencing of the learning process did not always make sense. A serious weakness in the structure of the curriculum was that the flow of the educational programme was not discussed. This had serious implications. Operational Art was presented before Military History, which formed the intellectual foundation for Operational Art. The presentation of the subjects was conducted as they were listed in the curriculum, in this case Operational Art being listed before Military History, in a mechanical way.
- Scaffolding learning was not mentioned in the structure of the curriculum, nor how critical thinking would be promoted. The structure of the curriculum was, however, designed to increase levels of complexity by moving from theoretical to practical subjects in the sequence of education and training. For example, Operational Art and Military History provided the theoretical framework for later subjects that focused on the CPP. Also, Security Studies provided an academic framework for the deeper understanding of OOTW – Peacekeeping Operations.
- There was no mention of the use of research assignments as a form of learning and assessment, something that is key to deep learning. Neither was there mention of the importance of feedback on assignments to the students in the curriculum, or the importance of meta-learning, another key aspect of deep learning.
- The students came from a background of limited deep learning, as their careers until then had focused mainly on training and with very little academic education. This was due to their school backgrounds having being based on an inferior educational system and the fact that English, the language of tuition on the JSCSP, was not the home language of 96 per cent of the students. The students' language background was thus detrimental in the development of academic discernment in the writing of essays.

- Most of the students had little experience in historical studies, which was detrimental to the learning process, as Military History provided the case studies for use in all the subjects on the JSCSP.
- The Junior Staff courses of the different services, Army, Air Force, Navy and Medical Health Service were mainly focused on training with limited academic scope. Thus, they did not provide much of a prior platform for deep learning. The gap in time between the Junior Staff courses and the JSCSP implied that for several students a lot of knowledge would be lost before they enrolled on the residential phase of the latter programme.
- The focus of the pre-course training was mainly on technical training to enable the students to participate in the residential phase of the JSCSP. Only the training to be able to participate in syndicate group discussions, lectures in research methodology and the formulation of a proposal for the Commandant's Research paper provided some platform for deep learning. The writing of an academic essay during pre-course training would not have improved their comprehension of the language of tuition, English, substantially nor enabled them to write essays of a high standard.
- The average age of the students being 45 years might have implied that the high time pressure on the programme could have been detrimental to the process of deep learning. Yet, according to the questionnaires most of them were motivated at the end of the programme. Also, their learning preferences and approach indicated that an approach to deep learning was somewhat imbedded in their approach to the learning process. Considering that the students came from a culture of limited deep learning, the indication was that the programme of 2018 incidentally improved their approach to deep learning somewhat.
- The logic of the flow of the education and training process was not always present. Military History formed the foundation for most of the subjects, but it was facilitated after Operational Art and IHL. That created the impression that Military History just served as intellectual justification for the official doctrine in Operational Art and IHL. This could be a case where doctrine becomes dogma, rather than being a guideline for planning campaigns. Also, during the facilitation of Operational Art, the case studies were not utilised in a logical chronological order, analysing the Gulf War of 1991 before Operation Barbarossa in 1941.

- The feedback from the students was that a strong majority were satisfied with different aspects of the learning process. However, in terms of the question if their views were valued on the programme, a total of 10 out of 21 indicated that it was not. This was confirmed by the finding that the programme, neither in the curriculum nor in the learning process, promoted critical thinking. Accordingly, they felt that critical thinking was not encouraged enough.
- The timing of the visit to the Eastern Cape Province for the analysis of how this province fitted into the concept of National Security, was detrimental to the learning process. The visit and its assessment focused on a national strategic analysis, which was part of the Security Studies sub-module. Yet the visit was conducted in the last part of the programme, during the CPP, which was about practical campaign planning. From a learning point of view this was confusing.
- During the assessment assignments in Security Studies, the available evidence demonstrated that the students applied very little interpretation of facts to National Security and Geopolitics. Their group presentations and academic essays were mainly a regurgitation of facts and thus a good example of surface learning. Hence, there was an extension of the trend in facilitation in this sub-module, where the emphasis was on lecturing with no group discussions.
- The majority of the students were satisfied that scaffolding learning was utilised and that the introduction of threshold concepts was done in a manner that was understandable. Yet, eight out of 21 students, a substantial minority were not satisfied with this.
- The facilitation and assessment of Operational Art and IHL was a good example of a deep learning approach. Lectures were extensively used but were positively counterbalanced by students participating in group discussions during each day of the facilitation process. The practical application of theories in case study discussions further improved deep learning.
- In Military History, the SRD and the staff ride were used to promote critical thinking, because I planned it as such. The students had to submit an additional position paper and an academic essay on the case studies utilised during the staff ride. This was an example of using research as an approach to learning, that promoted deep learning. Group work also promoted critical thinking during this learning activity. Yet, in the academic essays on the staff ride, there was still a tendency to provide only a chronology of events without measuring how the

historical commander planned and managed the campaign. Most of the of students applied the theory of Operational Art to the case study, but some just described it and did not analyse how the historical figure used it. Only one student went on to the final critical step and that was to analyse the validity of the theory in the case study.

- Some students indicated that the Military History staff ride provided them with a useful intellectual framework that they could use during the CPP when they had to design their own plans in a fictitious scenario.
- During the facilitation and assessment of OOTW the use of group work, case studies and exercises promoted comprehension of real-world problems and exhibited tenets of deep learning. The practical work also provided the opportunity for the students to build their own construction of knowledge, especially as they could learn from those students that had been deployed in peacekeeping operations in Africa.
- The assessments in the six analysed subjects all used formative and summative assessments as a form of scaffolding learning. All assessments were also open book and the focus was on the solving of problems in the real world.
- The weaknesses in the assessment process were first that the principles of UDL were not applied. Students thus had no choice in the assessment as to how they wanted to present information and there were no choices in the learning process. Every student had to participate in all facilitation and assessment.
- The second weakness was the replacement of portfolios of learning with portfolios of evidence, the latter being a compilation of assessment products. This took away the only component of meta-learning where the students could critically analyse their approach to the learning process.
- The facilitation process was conducted both weekdays and even on some weekends, from 08:00 to 16:15. Thus, the students only had after hours for reflection and research, which was not ideal. This contrasted with the practice in most staff colleges globally where facilitation stopped at lunchtime and the students had more opportunities to conduct research. During the interviews, the students indicated that they were not under unnecessary pressure in terms of time for their studies. Yet, from personal experience, as an insider, I know that the philosophy of staff course education and training was that pressure simulated the stress of wartime on senior officers. On the other hand, to achieve deep learning,

students must get adequate sleep, to provide the brain with the opportunity to process the learning activities of the day. Thus, the timing issue on the JSCSP of 2018 is an example of the cultural differences between the military and academic worlds. A solution must be found for this conflict of interest.

- The use of the Quality Management System and being part of the NQF system provided a firm foundation for educational quality assurance that went beyond Entwistle's requirement which focused only on student satisfaction with the learning and how facilitation could be improved (Entwistle, 2009:161).
- There were discrepancies in the admission of students to enrol on the JSCSP during the period 2002 to 2018. The SASSETA requirement of a matriculation certificate was not always adhered to. Students were not be allowed to enrol on the postgraduate diploma in Defence Studies at Stellenbosch University without a pre-graduate qualification. It remains to be seen if the SANWC will comply with the SASSETA diploma entry requirement of matriculation for those students studying for this qualification. Adherence to admission requirements is an important facet of accreditation and has an impact on the credibility of the SANWC as an educational institution.
- In contrast to the practice in staff colleges, globally, which I personally observed, during official visits to several countries between, 1979 till 2014, the SANWC does not have an academic faculty permanently on location. The implication was that the lecturers from the Military Academy and other outside institutions, such as the ISS, could only play the role of guest lecturers. Thus, the mentorship programme had to be conducted by the directing staff, whereas the academic staff could not participate in due to the distance between Saldanha (Western Cape Province) and Pretoria (Gauteng Province).
- Not all the academic lectures from the Military Academy and other institutions, nor the directing staff of the SANWC were specifically schooled in deep learning. Adherence to the tenets of deep learning was thus incidental rather than purposeful, most probably because of the developmental programmes presented to the lecturers of Stellenbosch University which contributed to deep learning. Only the facilitation and assessment of Military History adhered, to a large extent, to the tenets of deep learning because I deliberately planned it as such.
- Holistically speaking, there was only a partial grasp of deep learning by the facilitators and students alike. The implications were that the students were not as

developed and educated as they should have been in terms of what was envisaged by the new design of the programme with the main focus on critical thinking and the finding of creative solutions to complex military problems.

- The coordination of work-based learning was done effectively in all components of the programme. The programme presented from 2002 to 2018 provided a more substantial academic foundation than its predecessors, which were mainly focused on training in official doctrine, but it only partially demonstrated a deep learning approach.
- The processes of internal and external moderation (verification) as practised by the SANWC, under guidance of SASSETA was a positive point. All assessments were moderated and the liaison with the accreditation officer ensured the correct certification process for the qualification.
- The infrastructure of the SANWC in 2018 was not on a level that would have enabled the institution to present a postgraduate qualification. The installing of an online library service linked to Stellenbosch University in 2018 for use from 2019 onwards somewhat alleviated this problem.
- The scaling down of the personnel strength of the R&D Branch to a section with only three people curtailed the ability of this sub-unit to properly conduct quality assurance. Their role was scaled down to only liaison work with SASSETA and the Military Academy, as they did not have time to use surveys, reviews or impact studies to assess the effectiveness of the programme in order to improve the programme's design, delivery, resourcing, staff development and student support. One gets the impression that there was no comprehension on the part of the management of the SANWC of the importance of the role of the R&D Section in the educational process.

7.4 Discussion

The social problem is that globally the contemporary workplace, especially conflict situations in which military organisations are involved, have become more complicated, demanding leaders that are critical thinkers. Military education has had to adapt to this. In terms of the staff programmes, what complicated this was that staff programmes still had a training component that had to be taught. Thus, both education and training were needed to understand Operational Art, the theory used to assist commanders in the planning and conduct of military campaigns. This is linked to Entwistle's argument that

academic education must be conducted in a manner that will help students to develop skills, attitudes, knowledge and understanding that will be of value in later life, not just for a specific profession but also to cope in the complicated world of the 21st century (Entwistle, 2009:2).

The preamble of the curriculum was mainly focused on outcomes and competencies and not on how to develop students' ability to envision alternative solutions. There was also no justification of the content of the curriculum and how the gaps between the 'intended' and the 'enacted' curriculum would be closed. This is in contrast to what Kelly (2009:4-5) propagated in that a curriculum, that is, to be practically effective, the curriculum should offer more than just a statement about the knowledge that the student must acquire or a descriptive list of the subjects to be presented. There also had to be a justification of the content and the effect that the learning process should have on the students. The effect that the learning process had to achieve on the students' perceptions on work-based problems was not exactly described in Curriculum 2001, most probably because the curriculum was not designed with deep learning in mind.

The confusing structure of the curriculum did not encourage deep learning. This made it difficult for the students to envision how the elements of the structure of the curriculum formed a logical picture of learning, especially as related to the clear understanding of the overarching goals of the programme. This is the first tenet of deep learning in terms of curriculum design (Entwistle, 2009:106). The conversion to unit standards somewhat alleviated this problem, as the specification of specific outcomes and assessment criteria supplemented the curriculum and provided clearer guidelines as to what to achieve and how, whereas the curriculum itself only focused on outcomes. The confusion would also have an impact on the facilitation and assessment of different subjects.

The consequence of presenting Operational Art before Military History was a lost opportunity to develop critical thinking as per deep learning with Military History as a foundation. Therefore, the student could not approach Operational Art with a proper intellectual substance to question some of the tenets of this subject. The first essence of deep learning is that all knowledge is provisional, and students should constantly question its validity (Entwistle, 2009:17).

Although scaffolding learning was not mentioned in the curriculum it was to a large extent utilised during the facilitation process. This is an example of where a tenet of deep learning

was utilised, even though incidental. This is closely linked to the use of threshold concepts in facilitation and the use of formative and summative assessments (Entwistle, 2009:16, 85,157).

A positive point in terms of the structure of the curriculum regarding deep learning was that the structure of the curriculum was designed to increase levels of complexity by moving from theoretical to practical subjects in the sequence of education and training. It must be set at different levels to increase in complexity and be linked to previous understandings (Entwistle, 2009:104). As already mentioned, the sequence of the presentation of the different subjects did not promote the above-mentioned process with Operational Art being presented before Military History. However, Military History still served as a theoretical foundation for practical subjects such as OOTW and the CPP.

Deep learning is thus very focused on understanding phenomena. This is based on the students' experience of the learning process. Rote learning is focused on parts of social phenomena while deep learners would look at the relationships between ideas, using organising principles of various kinds such as narration, logical explanations and theoretical models. But, because all knowledge is deemed to be temporary, there must be flexibility in the used of ideas and theories in every new situation (Entwistle, 2009:17). Students must be taught to think for themselves and always be critical about all evidence and theories. Therefore, using the principles of UDL would allow students to have a more substantive impact on the learning process (U.S. Department of Education, 2010:1). From a practical point of view, I think this will be difficult to implement in a military environment, especially with a programme in which a high volume of information must be facilitated in a relatively short span of time.

In light of the above, research assignments are deemed to be the most effective method of facilitation as far as deep learning is concerned. Therefore, this approach to learning and assessment should at least have been mentioned in the curriculum, which was not the case. Here is another example of how the management cadre of the SANWC and the facilitators incidentally promoted deep learning by using short research assignments as a form of learning and assessment. One must also take into account the important role of the Commandant's research paper in this regard. The main value of research as a form of facilitation and assessment is that it demonstrates to the student that they can discover new knowledge by themselves (Entwistle, 2009:82). The JSCSP of 2018 somewhat adhered to the above-named tenet of deep learning but facilitating learning during the

whole working day gave the students too little time to reflect and especially, to conduct research.

The deep learning process is, however, not over until the students reflect on how they have learnt – metacognitive learning. That is the only way in which students will constantly improve their learning approaches, especially if they strive towards a deep learning approach (Entwistle, 2009:162). In this regard, the replacement of portfolios of learning with portfolios of evidence denied the students the opportunity to reflect on their studies.

The assessment process must be based on formative assessment that provides the basement to be followed by summative assessment that determines the grade of the student's achievement. Certain forms of assessment promote deep learning more than others. For example, multiple-choice questions on their own promotes rote learning, but combined with paragraph-type questions in tests and examinations promotes deep learning (Entwistle, 2009:157). This is another example of how the assessment during the JSCSP of 2018 adhered to deep learning.

Assessment must promote understanding and in the design of a course the critical features of topics must be identified to evoke learning that promotes personal understanding. In this process, feedback is vital. Types of assessments that promote deep learning are essays, case studies, peer assessment, projects, rubrics and student presentations. Open-book examination have the advantage of removing the anxiety of having to memorise large amounts of information and forces the student to use critical thinking in the formulation of answers. Portfolios are the best way to promote self-reflection on the learning process – meta-learning (Entwistle, 2009:161). The JSCSP of 2018, utilised the above-mentioned approach to assessment, although a rubric was only used as an assessment instrument in Military History.

Language could have been a serious barrier to deep learning when most of the students had to study in a language other than their mother tongue. One factor that influenced the learning process, as observed by me, in the assessment of academic essays at the SANWC, was the use of second-language learning and how that influenced the student's capacity to focus on deep processing for execution during the learning activity. Research at the University of Athens, where students had to study in English, indicated that self-confidence in the language of learning (in this case, English) was vital in enabling the

student to focus on deep processing (Andreou, Andreou & Vlachos, 2005:1–11). This was confirmed by research in the USA where extra classes in English enabled immigrant children from Asia and Latin America to gain self-confidence and adopt a deeper approach to studying as a consequence (Goldenberg, 2008:14). In order to promote deep learning, the students on the JSCSP needed language training in English to improve their reading and writing abilities. Consequently, the writing of one academic essay on the pre-course training programme should be supplemented with more language training.

A strong point on the JSCSP of 2018, was the utilisation of the experience of the student group. Their average age of 45 years did not seem to have a detrimental effect on their ability to cope with the pressure of a high volume of learning in a short time span and this was used in a positive sense as several students had experience of deployment in Africa. This was in line with what Knowles propagated in his theory that the knowledge and experience of the adult learner must be utilised to improve the learning process (Knowles, 1973:92-105).

The flow of the educational process was not always based on curricular logic. Operational Art was presented before Military History, which formed the intellectual foundation for Operational Art. The presentation of the subjects was conducted as they were listed in the curriculum, in this case Operational Art being listed before Military History, in a mechanical way. According to Entwistle (2009:106), the learning process is like a jigsaw that depends on correct sequencing. If the pieces are out of place, it may interfere with the relation between the students and the learning content. Holistic thinking is needed to develop a deep understanding of a subject and, if pieces of the puzzle are missing or out of place, this type of understanding is not possible. The same can be said of the visit to the Eastern Cape Province that was out of synch with the flow of the educational process on the programme.

Another factor that was detrimental to the deep learning process was the lack of encouragement by the facilitation process for the students to apply critical thinking. This is underlined by the reality that apart from the ability of the human mind to retain knowledge and apply it in future situations, it can also develop creative insight, adapt cognitive skills by learning from errors and convert from one belief to another. In other words, students must be guided to constantly question the truthfulness of so-called factual information (Ohlsson, 2011:1). In my interview with the Chief Instructor, he confirmed a tendency on

the JSCSP to focus mainly on the retention of knowledge and its application in future, but a lack of willingness to question the validity of such knowledge.

This lack of critical thinking on the part of the students probably explains the lack of interpretation of facts in the assignments in National Security and Geopolitics. Also, the tendency prevailed in the academic essays of the Military History staff ride with some students only providing a chronology of events and some describing where they recognised the theory of Operational Art in the case study. However, they did not carry the argument through to its logical conclusion by analysing how a historic military commander utilised the theory. Even worse was the fact that only one student questioned the validity of the theory based on the findings in the case study.

Apart from the two subjects in the sub-module Security Studies (National Security and Geopolitics), which were mainly based on lectures as facilitation methodology, in the rest of the analysed subjects, group work (SRD) played an important role. Sousa reiterated the importance of using group work so that students can learn from each other, especially if the facilitator ensures that all students are involved in the process (Sousa, 2016:214).

The clash of interest between the academic and military worlds in terms of time pressure and especially a lack of sleep can have a serious, detrimental effect on the promotion of deep learning. When we sleep, the brain reviews the events and tasks of the day, storing them more securely than at the time we originally processed them. What we think and talk about while awake very likely influences the nature and shape of the memory consolidation that occurs during sleep (Sousa, 2016:228). It stands to reason that without adequate sleep little deep learning can take place. The solution to this problem lies in the structure of the timing of the learning process. Consequently, the quality assurance process must also be considered.

Criterion 1 of the CHE stipulated that the programme must be consonant with the institution's mission; form part of the institutional planning and resource allocation; meet national requirements, the needs of the students and other stakeholders; and be intellectually credible (CHE, 2004:10). The fact that the SANWC was part of the South African NQF system through the association with SASSETA made it easy to also incorporate the criteria of the CHE for accreditation purposes.

Criterion 2 of the CHE was no longer a problem in terms of admission requirements of students, as they would not be able to enrol on the postgraduate diploma at Stellenbosch

University without a pre-graduate qualification (CHE, 2004:10). The staff of the SANWC must just ensure that the students that enrol on the SASSETA qualification is in possession of a matriculation certificate.

On criteria 3 and 4 of the CHE, no easy solution is in sight. The stipulation is that the academic staff responsible for the programme must be suitably qualified and have sufficient experience and teaching competence. Also, the number of academic staff must be large enough to ensure that the learning process can be conducted effectively (CHE, 2004:11). Money will most probably not be available to have a permanent faculty on site at the SANWC. Thus, an innovative solution must be found to overcome the disadvantage of the outside lecturers only being used on a part-time basis during the facilitation process.

Criteria 5, 10 and 12 of the CHE stipulate that student learning must be promoted through a proper teaching strategy that is reflected in the programme type, research, modes of delivery and student composition. Also, that there must be opportunities for teaching staff to upgrade their teaching methods (CHE, 2004:12, 14). It was clear that the SANWC had a teaching strategy for presenting the programme, but it only incidentally reflected a deep learning approach. The external lecturers and the directing staff were all subject matter experts, but none of them were qualified in educational sciences. The directing staff did a course in the conduct of assessment, but not in facilitation. A way must be found to educate the teaching staff of the SANWC in the tenets of deep learning in order to improve the quality of academic teaching on the programme.

According to criteria 6 and 13 of the CHE, there had to be appropriate policies in place for the procedures for internal assessment, internal and external moderation and monitoring of student progress (CHE, 2004:12,14; SASSETA, 2018). Criterion 14 referred to the integrity of the assessment system (CHE, 2004:14). The SANWC adhered to the requirements of the DOD and SASSETA with regard to the assessment, moderation and verification process in 2018. There will have to be an adjustment to also comply with the criteria of Stellenbosch University and the CHE.

Criterion 7 of the CHE stipulated that suitable venues, information technology infrastructure and library resources must be available for students and staff in the programme (CHE, 2004:12). The library, capacity of internet access and especially the lack of linking to an online facility of a university library was a serious drawback in terms of deep learning on the programme, especially with reference to research assignments.

The fact that the postgraduate students since 2019 had online access to Stellenbosch University library was commendable, but it is not understandable why the students enrolled on the SASSETA programme were excluded from this facility.

The SANWC adhered to criterion 8 of the CHE in that the institution had an effective administrative service for providing information, managing administration and a certification process base on integrity (CHE, 2004:13,15). The role of the accreditation officer in the R&D Section of the SANWC must be appreciated. The liaison with SASSETA in this regard was extended to close cooperation with Stellenbosch University since 2018. That led to adherence of criteria 9 and 16 of the CHE – the capacity to present a postgraduate qualification – which commenced in 2019.

Criterion 15 of the CHE stipulated that the coordination of work-based learning should be done effectively in all components of the programme (CHE, 2004:15). Criterion 18 stipulated that steps had to be taken to enhance the employability of students and alleviate the shortages of expertise in certain fields (CHE, 2004:15). The programme presented from 2002 till 2018 provided a more substantial academic foundation than its predecessors, which were mainly focused on training in official doctrine. During the interviews with the students at the end of the programme, they expressed their satisfaction with the nature of the programme saying that it prepared them for future operational deployment and their daily tasks. This can be improved through a stronger adherence to a deep learning approach.

The downscaling of the capacity of the R&D Section had a detrimental effect on the quality assurance process. Criteria 11 and 19 of the CHE stipulates that it is imperative that user surveys, reviews and impact studies on the effectiveness of the programme must be undertaken at regular intervals. Results must be used to improve the programme's design, delivery, resourcing, staff development and student support (CHE, 2004:15). The R&D Section holds the key to the implementation of a deep learning approach on the JSCSP. Through a process of surveys by means of questionnaires and monitoring the progress of the learning process they can ensure to the JSCSP complies to a larger extent to the tenets of deep learning.

7.5 Proposed answers to the research questions

The first question posed was to what extent did deep learning take place in the education of senior officers on the JSCSP at the SANWC? Holistically speaking, one can conclude

that there was a partial adherence to the tenets of deep learning, as indicated by my interviews with the students and their answers to the questionnaires at the end of the programme in 2018.

A strong point in terms of deep learning was that the learning process was focused on the future workplace in terms of military employment in Africa. Also, the academic component of the programme laid some foundation for the research abilities of the students in preparation for their future nomination on the Security and Defence Study Programme at the South African National Defence College.

Another strong point, in terms of deep learning, was the utilisation of the experience of the students who had been previously deployed in Africa in the SRD system. This complemented the fact that group discussions promoted deep learning due to the exchange of ideas and that fact that students were more actively involved in the learning process, in contrast to lectures where they were just passively receiving information.

Scaffolding learning, and the use of threshold concepts, although last known, and perhaps conscienceless as a concept by the facilitators, made it easier for the students to grasp theoretical concepts. This also promoted deep learning.

The use of case studies, group discussions and practical exercises in the programme also promoted deep learning. It related to the concept of creating a microcosm in the brains of the students, representing the real world.

The assessment system employed, further, promoted aspects of deep learning. The use of formative and summative assessments relates to scaffolding learning. Also, during the period 2002 to 2018 the SANWC focused on assessment instruments such as group presentations, open-book examination and practical application of knowledge related to the workplace. This was somewhat neutralised by the lack of the use of the principles of UDL during assignments. Students had no choice as to how they could present evidence for assessment purposes and they had no choice but to study all learning material.

However, the learning process also demonstrated a clear lack of specific approaches to promote critical thinking. Not just understanding phenomena, but a questioning of the validity of theoretical concepts. This was aggravated by, for example, the presentation of Operational Art before Military History, creating the impression that Military History just served as justification for the theoretical concepts of Operational Art.

The use of research assignments only partially promoted deep learning. Too much time was spent on lectures and too little time was available for the students to do research as a form of authentic self-directed learning. For the Commandant's research paper, external lecturers from universities in Pretoria were utilised as research supervisors, which promoted deep learning. However, for other research assignments, only the directing staff were available on the mentorship programme to assist the students, few of whom had any academic qualifications.

The biggest lack of deep learning was the absence of metacognitive learning. Students did have debriefing sessions after each module to provide feedback on how they experienced the learning process, but the reports were vague and focused on sometimes unsubstantiated generalities, such as 'for this subject the directing staff were not properly prepared', without citing the person or the incident (SANWC, 2018c:5). There was no opportunity for personal reflection on the learning process.

In terms of the subjects analysed, the extent of deep learning ranged from a focus on rote learning in National Security and Geopolitics, with the main focus on lectures to, for example Military History, where deep learning was to a large extent promoted because I as the facilitator deliberately planned it in that way.

The quality assurance system at the SANWC did somehow contribute to deep learning in that the management of this institution was based on the Quality Management System, as part of the South African NQF system. What also promoted deep learning was the fact that all assessments were internally moderated and verified by SASSETA.

In terms of adherence to CHE criteria for presenting a postgraduate qualification the SANWC adhered to eight to a large extent, seven only partially, and four not at all. Most of this was rectified by the academic partnership with Stellenbosch University during 2018 for implementation during 2019. However, a serious deficiency in terms of deep learning still lay in the fact that not all the academic personnel nor the directing staff were academically qualified in educational sciences. They might have been subject matter experts, but that was no guarantee that it would promote deep learning in the different subjects.

The possible answers to the second question were multiple. Why did the learning process take place in its present manner?

The student group had very little experience in deep learning. Apart from the deficiencies of the school system they came from, they had to study in a language other than their mother tongue, and their military courses in their careers had been focused on training. Even the Junior Staff courses had a limited academic component and the pre-course training programme focused mainly on training for participation in the residential phase of the JSCSP. Lectures on research methodology and one academic essay were not enough to lay a proper foundation for deep learning on the residential part of the JSCSP.

The curriculum design was conducted with OBE in mind and the agreement with deep learning was only incidental. The confusing structure of the curriculum did not help matters, but the use of unit standards at least provided assessment criteria, something absent in the curriculum.

The inclusion of the sub-module on Security Studies at the last moment, before the start of the residential phase of the JSCSP, most probably explains the approach to rote learning, based mainly on lectures. The lack of critical thinking was reflected in the assessment presentations and academic essays in the subject of this sub-module (National Security and Geopolitics).

The lack of experience in historical studies made it difficult to promote deep learning in Military History, as the time for facilitation was too short. This was also reflected in the assignments on the staff ride, demonstrating a lack of critical thinking. To use a case study to comprehend a theory is not enough. What is needed is a critical analysis of the theory itself.

The largest contributing factor to a lack of deep learning was the absence of an internal academic faculty and the lack of qualifications in the educational sciences of the guest lecturers. Although group discussions such as the SRD and case study research somewhat promoted deep learning, that was not enough to rectify the lack of a specific approach to deep learning in the facilitation process.

The inadequate capabilities of the library and internet facilities also contributed to a lack of a deep learning approach. The online service linked to the library of Stellenbosch University was only introduced in 2018 and limited to the students who were enrolled on the postgraduate diploma. Thus, the JSCSP of 2018 had no access to this system.

What could be done to improve the level of deep learning on the programme was the third research question? What follows below should be read with the recommendations made further down.

Since 2019, the SANWC has presented both a postgraduate diploma in Defence Studies as well as a SASSETA qualification, both based on the JSCSP. The lack of approach in deep learning in the curriculum of 2001 could be compared with the new curriculums, to determine if the latter adheres more to deep learning.

It is imperative that all lecturers and directing staff receive some education and training in deep learning, preferably a formal qualification; if not, at least a three-day seminar on deep learning should be considered for all personnel conducting facilitation and assessment. What is needed is a change of mindset towards a balance between training and education.

There should be more focus on research-based learning, and this could be supported by academically qualified people in Pretoria, acting as academic mentors. In the discussion of recommendations, later in this chapter, more detail is provided on how deep learning could be improved on the JSCSP.

7.6 Thesis contribution

A theory of learning strives to explain how information is understood and remembered during the learning process. Further, it tries to explain how the process of learning is influenced by emotional and environmental factors and previous experiences. In explaining learning, the theory indicates the relationships between remembering and understanding information, plus one's experience and mental ability and the environment in which we find ourselves (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014:42).

Senior officers in the armed forces are confronted with a complex environment and stress that is higher than their civilian counterparts in, for example the business environment or any other civilian occupation, for on their decisions depend the lives and well-being of people under their command. Military procedures are still needed to conduct military operations, but it is not enough to enable senior officers to make informed decisions for the best strategic results.

The human brain is designed not just to remember information, but to combine STM and LTM with an analysis capacity to create a microcosm inwardly of the world out there (the

macrocosm). This process, as linked to learning, cannot be properly understood through a positivistic approach to research for there can never be general laws that can be adhered to make the best decisions in wartime. There can only be general guidelines that can be used by military commanders, with the provision that the decisions are critically scrutinised during the thinking process. The quest to find the answers to the appropriate education of senior officers in the armed forces thus lies in the realm of interpretivism with the focus on understanding how people experience the learning process and the utilisation of knowledge gained in the work environment.

The first and most important facet of the above-named process is to comprehend that the shift in focus to more education and less on training of senior officers in the armed forces led to a conflict between two diverging worlds. Before my retirement in 2014 there were already certain generals in the SANDF who accused me and my project team of trying to convert the JSCSP into a purely academic programme. On the other hand, in conversations with lecturers from several universities, who were involved in the JSCSP, they expressed their frustration at the lack of critical thinking and analysis capacity of the average student on this programme and the literature study indicated this to be true even in the USA Armed Forces. Also, in conversations with the directing staff of the South African National Defence College, they complained that several of the graduates from the SANWC, when they enrolled on the Security and Defence Study Programme, were still not able to conduct proper academic research for military purposes.

A theory of learning should then work on the premise that there should be a balancing act between the needs of the military and academic environments. Both training and education are important, and the art of teaching is to understand when the focus must be on which of the two processes during the presentation of the JSCSP as a programme.

The next concept is that, although intelligence and motivation play a role in the learning process, the research on deep learning demonstrated that the influence of the social environment, especially the educational institutions such as the SANWC, were decisive. Students' backgrounds determined to some extent a preference for a deep versus a rote learning approach to learning, but it was up to the educational institution to change the existing approach, if need be.

In order to promote deep learning the curriculum has to be structured to provide a clear understanding of the overarching goals of the programme. The outcomes and assessment

criteria have to be clearly defined and the motivation for the contents of the programme explained. What is also important is that the structure and sequence of the learning process must be in a manner that makes it easy for the facilitators and the students to understand so that they can plan their learning activities accordingly. In this regard it is also important that on staff programmes, Military History, should provide the intellectual foundation for all academic subjects. Thus, the curriculum must be structured accordingly.

During the process of facilitation, the focus has to be on methodologies that promote deep learning. The important aspect to remember is that the learning process should promote critical thinking. Lectures can still be used, but they should not predominate. The study showed that the focus should have been more on group discussions, seminars and especially research-based assignments. Remembering a mass of so-called facts contributed little to what was needed to find creative solutions to work-based problems. Critical thinking was the key. Scaffolding learning, working from the simple to the complex of concepts, and the role of threshold concepts were vital during facilitation. This also related to the affective domain of learning as the engagement with more complicate theoretical concepts in subject matter had a psychological impact on the student that had to be managed by the facilitator.

Assessment had to be based on the premise that it was part of the learning process. Closed-book examinations just improved memorisation abilities and contributed little to academic insight. Open-book assessments which are authentic in nature, took away the stress of having to remember so-called facts, while it forced the student to focus on understanding phenomena and concepts and the application of practical solutions that could later also be applied on the work environment. The use of formative and summative assessment contributed to scaffolding learning and enabled the facilitator to effectively monitor the progress of the students in the learning process. It was also vital that assessments be moderated and verified.

The development of academic personnel and the directing staff to make a paradigm shift towards a deep learning approach is vital to provide the students with the best learning opportunity. It is expected of high school teachers that they be in possession of a pre-graduate qualification as well as a diploma in higher education. Why can all lecturers at universities and technical colleges in South Africa not be compelled to, apart from an honour's degree in their field of speciality, also be qualified in for example a postgraduate diploma in education?

The importance of educational quality assurance can never be underestimated. It is important for an educational institution such as the SANWC to part of a national accreditation system, and linked to that, to base its educational management on a recognised management system, such as the South African Quality Management System. Quality assurance was the process whereby the delivery of the learning process was monitored, and research done to find ways to improve this process. It also played an important role in the liaison with verification authorities such as SASSETA and the CHE and in ensuring that assessments were moderated and verified and thus quality assured.

In this thesis the description above was used as postulated in the theory of deep learning. This provided an intellectual foundation to improve the quality of academic studies on the JSCSP at the SANWC.

7.7 Recommendations

It is proposed that the findings and recommendations of this thesis be presented to the command echelon of the SANDF and the Dean of the Faculty of Military Science of Stellenbosch University (Military Academy) to convince them of the importance of the role of academic education on the JSCSP and that it must preferably be based on a deep approach to the learning process.

- The preambles and structures of the Stellenbosch University based postgraduate diploma in Defence Studies and the SASSETA diploma in use since 2019 can be measured by the R&D Section of the SANWC in comparison with the findings of this thesis. What must be monitored is the curriculum design and structure to promote the students' abilities to envision alternative solutions to work-based problems.
- It should be stipulated in the curriculum and executed during the learning process that Military History be presented before the other academic subjects to provide an intellectual framework for the understanding of the nature of war. It is proposed that the residential part of the JSCSP be extended by one week to give more time for the facilitation in Military History. Alternatively, this subject should be redesigned to be presented as part of the pre-course training programme on the basis of distance education.
- The promotion of critical thinking is vital in all the academic subjects. Facilitation and assessment practices should be redesigned to teach students not just how to

understand theories, but also to question the validity of all knowledge and theories. In this regard, the application of the principles of UDL should be considered.

- Consideration should be given to the global practice in staff colleges for the facilitation process to be presented only until lunchtime on weekdays. This will enable the SANWC to focus more on research assignments and less on lectures. More emphasis on research assignments will also better prepare the students for their eventual participation on the Security and Defence Study Programme at the South African National Defence College.
- The use of portfolios of learning should be reinstituted in place of the current portfolios of evidence. Meta-learning is a vital part of the process in which the students improve their learning practices.
- The use of formative and summative assessments promotes scaffolding learning and should be retained. The focus should, however, be more on research and portfolio assignments. Adjusting the facilitation time and providing the students with the afternoons on weekdays and after hours, will go a long way to make this possible.
- The fact that only 4 per cent of the students are English first language users should receive more attention. One academic essay during the pre-course training programme is not enough to improve this situation. There are alternatives available. The department of English at the University of South Africa (UNISA) has developed special courses to help students to study in English during their university studies. This can form part of the pre-course training programme based on distance education during the year before the residential phase of the programme. Alternatively, the Directorate of Language Services of the SANDF could study the UNISA courses and design a specific language course for the JSCSP, which can be studied as part of the pre-course training programme.
- During the redesign of the JSCSP in the period 2013 to 2014, some people in the SANDF proposed that the average age of the students on the programme should be lower in order to enable them to cope more with the high tempo of learning. That does not seem to be necessary and the advantage of greater maturity in older students, is that the experience of more people who have been deployed in military operations in Africa could be utilised in the learning process. Thus, there need not be a quest to enrol more younger people on the programme.

- Learning activities must supplement one another in a way that pieces in a puzzle fit together. The fact that Military History should be presented before Operational Art was already mentioned. That would prevent the students from experiencing the facilitation of Military History as just an intellectual justification of the theory on Operational Art. Another case in point was the visit to the Eastern Cape Province, which happened during the CPP instead of just after the presentation of National Security and Geopolitics.
- The extensive use of group discussions, some seminars and exercises promoted deep learning and laid a good foundation for preparation of the workplace, specifically deployment in Africa. This practice can be retained.
- The proposed solution of the conflict between the need for pressure on the programme (military need in terms of training) and regular sleep habits (academic need for the brain to process information in terms of deep learning) is the following. The focus should be less on pressure during the part of the programme where the facilitation of academic subjects predominates, while, if need be, pressure can be increased on the students with the facilitation and assessment of OOTW and the CPP.
- If it is too expensive to establish a permanent academic faculty on the site of the SANWC, the use of more academically qualified people in Pretoria should be considered to supplement the roles played by the Military Academy. This is already done, as universities in Pretoria provide research supervisors for the Commandant's research paper. This could be extended to the facilitation process and mentorship programme.
- The qualifications of academic personnel and directing staff should be supplemented with qualifications in the educational sciences. The directing staff could be qualified in unit standards additional to that in assessment practices. For them, education in facilitation is also important. The academic personnel from universities and institutions such as the ISS should be encouraged to enrol in courses such as the postgraduate diploma in education, presented by several South African universities.
- The online access to the library of Stellenbosch University should also be extended to include the students enrolled on the SASSETA programme. After all, as explained, they just follow a different learning path, but the end state is that they can enrol for a master's degree in Defence Studies when they are nominated

to participate in the Security and Defence Study Programme at the South African National Defence College.

- The R&D Section at the SANWC should be upgraded to its former status to that of a branch. This should include an increase in personnel so that they can properly manage the full spectrum of the educational quality assurance system. This thesis could be used to form the foundation for future research on the quality of the learning process on the JSCSP. Action research would be a good approach to determine every year in future if implemented recommendations contributed to the improvement of the learning process.

7.8 Personal and professional reflections

I have come a long way since the days when I was a lecturer in Military History at the Military Academy in the period 1983 to 1989. My frustration with rote learning since then encouraged me to approach facilitation and assessment in a way that promoted critical 'deep' thinking in students. This extended to my teaching practices at the services colleges (Army, Air Force, Navy and Medical Health Services) and at the SANWC and the National Defence College before I knew of the concept of deep learning.

My participation in the postgraduate certificate in Higher Education at the University of Pretoria during 2003 provided me with the opportunity to critically view my own educational practices and introduced me to the writings of Noel Entwistle, for example his book, *Teaching for Understanding at University – Deep Approaches and Distinctive Ways of Thinking* (2009).

This thesis completed the circle and provided me with the opportunity to study, in depth, a theory that I already felt in 2003 was appropriate to measure the JSCSP against. I used the theory to write an article in the SANWC Research Omnibus in 2007 in which I applied some aspects of Entwistle's theory on the facilitation and assessment of Military History on the JSCSP (Jacobs, 2007:44-56). This was followed by a staff paper to the Commandant in 2012, focusing on learning problems on the JSCSP. This provided a research basis for this thesis.

This thesis provided me the opportunity to research the practice of deep learning on a larger part of the JSCSP. It is not complete, as all the subjects were not analysed. I would have preferred to investigate the process of the Commandants' Research Paper and the impact of the academic subjects on the students' ability to apply critical thinking during

the CPP, but time and Covid-19 prevented me from doing so. In this regard, I could also not study the video material of the facilitation sessions.

When I retired in 2014, I was sure that I left a legacy behind in terms of the facilitation of Military History and the research that was done by the then R&D Branch at the SANWC. This thesis provides the SANDF with more substantial research to improve the learning process at the SANWC and better prepare the students for operational deployment in Africa and to participate in the Security and Defence Programme at the National Defence College.

I now turn my reflections to my personal, professional, scholarly and conceptual growth related to the research. Personally, I could not have envisioned in 2017, what an intellectual quantum jump it would entail from a postgraduate certificate in education to a PhD. If I am offered the opportunity to facilitate learning again, I can approach it in a more mature way, now having gained more insight into social science research, in contrast to my previous experience of being a military historian.

This study should have been undertaken when I was still the head of the R&D Branch at the SANWC, especially during the period 2013 to 2014 when the research team under my command were redesigning the JSCSP. I have not studied the new curriculums in use at the SANWC since 2019, and do not know how much they relate to deep learning. The conclusion of this thesis in 2015 could have contributed to the new designs, before implementation in 2019. It can, however, still be used to improve the postgraduate diploma presented by Stellenbosch University and the SASSETA diploma.

Professionally I am still utilised as a military historian on the JSCSP, but only in the facilitation of the Military History staff ride. This study enabled me to determine if I promoted deep learning enough in this learning activity. Even though the students still struggle to apply the theory of Operational Art on the case studies, but also to question its validity, I am satisfied that deep learning was promoted. The fact that some students remarked to me that the staff ride provided them with an intellectual framework for the CPP is justification that deep learning adequately took place on the staff ride.

Scholarly I have learnt not just to think like a historian. During my tenure at the SANWC, I had to think within the paradigm of education, but this thesis has enabled me to improve my scholarly and conceptual capabilities. I now have a much better comprehension of the challenges facing staff colleges in reconciling the needs of two, somewhat diametrically

opposed worlds: the military with its structured thinking and focus of training and the academic world focused on critical thinking. The last aspect to consider is what was achieved through this study.

7.9 Conclusion

The focus of this thesis was on the education of senior officers in the armed forces during Senior Command and Staff Programmes with specific reference to the SANDF's JSCSP. The inclusion of larger academic components in the curriculums of staff programmes was aimed at preparing the students to solve work-based problems. The credibility of the academic subject disciplines presented on the staff programmes was an important facet of education and the development of problem-solving skills. The assumption was that adherence to the theory of deep learning would align this process with the international trend in university education, that is, being focused on developing the insight of students and research skills.

In the JSCSP of the SANDF, the educational process between 2002 and 2018 was conducted in an effort to lend more credibility to the academic component of the programme. The reasons were twofold. First, better education would increase the graduates' ability to solve work-based problems when operationally deployed. Also, since 2019 students had the choice of combining a postgraduate diploma in Defence Studies with the JSCSP, while the students without a pre-graduate qualification enrolled in a SASSETA accredited programme. This qualification enabled them to enrol in a postgraduate diploma in Defence Studies at a university of their choice. This aim of this process was that all students completing the JSCSP could eventually register for a master's degree in Defence Studies when they were nominated to participate in the Security and Defence Study Programme at the South African National Defence College. Thus, the quality of academic studies on the JSCSP has been important to all students and the learning experience since 2002, with specific reference to the programme of 2018, can provide guidelines for improvement to the qualification that was introduced in 2019.

I was personally involved in the process of renewal of the structure of the JSCSP and its curriculum design till my retirement in 2014. After that, I was still involved on a part-time basis in the facilitation of Military History, but no longer in the curriculum design of the JSCSP as a programme. Lecturers from the Military Academy developed the postgraduate diploma in Defence Studies which is since 2019 has been part of the JSCSP,

but none of them have been educated in the theory of deep learning. It is also not known whether they used any of the research results that the project team in the R&D Branch under my leadership produced during the period 2013 to 2014. Due to my background and experience I can still contribute to the learning process on the JSCSP, especially since I have studied the theory of deep learning for several years. My research in this thesis can provide, what is now the R&D Section, with a firm base to quality assure the new curriculum as well as the other components of the learning process, namely facilitation, assessment and quality assurance.

The purpose of this research was to determine to what extent the learning process in a selection of academic subjects on the JSCSP contributed to the students' ability to apply a deep learning approach to their studies.

The final verdict is that the curriculum design and its application in the learning process, from 2002 to 2018, only partially adhered to the tenets of deep learning. The main reason for this was that the curriculum was designed based on the principles of OBE which only incidentally shared some common characteristics with deep learning. This is also applicable to the learning process itself, where the military culture of focusing more on training and less on education requires a paradigm shift in curriculum design based on deep learning. The R&D Section could then use this thesis to benchmark the extent to which the current JSCSP adheres to the theory of deep learning, which would enhance its credibility in terms of the criteria of the CHE.

The above-mentioned all relates to the quest to improve the academic skills of senior officers and to imbed in them the habit of lifelong learning. Personal experience is not enough to enable senior officers to make educated decisions in time of war. As was explained at the beginning of this thesis, the contemporary conflict environment has become too complicated to rely only on personal experience and structured thinking. Hopefully, this thesis contributes to the realisation that senior officers in modern armed forces also need academic education to make informed decisions, that will not make them lesser soldiers.

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APPENDIX

CURRICULUM 2001- ANALYSIS INSTRUMENT

Criteria	Analytical Questions
In order to promote deep learning, Entwistle stated that overarching goals should be defined, with a particular focus on broad aims for the whole programme, related to developing forms of understanding crucial to the subject area (Entwistle 2009, 104). The next step in creating a curriculum designed to promote deep learning is to set out the overarching goals in a manner that makes it easy to keep in mind the goals of the programme and how the different topics relate to them (Entwistle 2009, 104). Topics for facilitation should be designed to be open-ended so as to promote critical thinking and encourage active discussions. Assignments must be designed that develop the understanding of the phenomena. It must be set at different levels to increase in complexity and be linked to previous understandings (Entwistle 2009, 104). Assessment criteria must be specified that are related to the goals for understanding. This must be augmented with frequent opportunities to provide students with feedback in order to increase their levels of	1. How are the overarching goals/outcomes defined? 2. What forms of under-standing crucial to the curriculum are developed? 3. Are the overarching outcomes easy to keep in mind? 4. How do the different subjects relate to the over-arching outcomes?

understanding (Entwistle 2009, 104). Opportunities must be created for students to discuss course material among themselves and to evaluate it in terms of relevance to the learning process and the overarching aims of the programme (Entwistle 2009, 104). Bellanca (2015, L293) claims that curriculums inspired by the concept of deeper learning should integrate learning across the cognitive, interpersonal and intra-personal domains in ways most appropriate for the learning goals. What is also needed is an instructional programme that include research-based teaching methods. According to Bellanca (2015, L3766), the curriculum is especially about what the student must learn and not just the how. The test lies in the following: Did the curriculum lay the foundation for the programme to deliver graduates that can think critically and creatively to provide original solutions, solve problems and bring about positive change? (Bellanca 2015, L3766) There has to be a combination of technical training and education in the human sciences for the graduate to understand systems as well as the people that are part of it. Thus, the focus must be on skills,	5. Are the topics open-ended or closed? Do these topics encourage critical thinking and active discussions? 6. Are assignments set on different levels of difficulty to enhance complexity? 7. Is it a spiral curriculum where understanding is linked to previous understanding? 8. Are assessment criteria related to the goals for understanding? 9. Is feedback to students to increase understanding factored in? 10. Are self-directed learning expected? 11. How is self-directed learning explained?

character and metacognition (Bellanca 2015, L3870). The curriculum must make provision for versatility and a broad basis of knowledge which must be achieved by developing capacity on more than one domain of learning. This can lead to the development of professional skills in real-life context (Bellanca 2015, L3911). Does the curriculum specify how self-awareness and self-directedness – the ability to direct one's own learning and development should be managed in the learning process? (Bellanca 2015, L3911) In 2000 the United States of America (USA) Department of Education developed a curriculum design called a Universal Design for learning (UDL) where the focus is on how the learning process should aid students with learning disabilities, including cognitive deficiencies which should promote the process of directing the students' own learning and promote deep learning. It is based on three principles: • Multiple means of presentation – students are allowed to use a variety of methods to present information. • Multiple means of action and expression – providing students with alternative ways to act	12. What evidence exist of integrated learning? 13. What evidence exist of integrated learning across cognitive and inter/intra personal domains? 14. How do these speak to the learning outcomes? 15. Are research-based teaching methods foregrounded? 16. Are what students must learn foregrounded in a clear way? 17. Are students expected to think critically and creatively to provide original solutions, solve problems and bring about positive change? 18. Are practical training and theoretical education blended?

skilfully and demonstrate what they know. • Multiple means of engagement – in this process the facilitator taps into the student's interests by offering choices on content and learning tools and also motivating students by offering adjustable levels of challenge in the learning process (Anonymous 2010, 1). According to Moore (May 2020, 1), UDL offers the best pathway to deep learning and most educational institutions in the USA try to follow these guidelines for the demands of the 21st century. According to Young (2014, 195), the curriculum must provide access to knowledge of the world with the ability to	19. Is there a focus on skills, character and metacognition? 20. Is more than one domain of learning fore-grounded? 21. Are real life professional skills emphasised? 22. Is there evidence of the promotion of the ability to direct one's own learning and development during the learning process? 23. Are multiple methods of presenting information permitted? 24. Can students present what they know in various ways? 25. Can engagement with the curriculum happen in multiple ways such as panel discussions, group presentation or brain storming? 26. Can students make choices in the curriculum? 27. Do adjustable challenges exist in the curriculum? 28. Does the curriculum give access to knowledge of the world with the ability to

envisage alternatives and that cannot be achieved if it is only driven by outcomes, competencies and specified assessments	envisage alternatives or is it only bent on outcomes, competencies and specified assessments?